

**NATIONAL UNIVERSITY OF LIFE  
AND ENVIRONMENTAL SCIENCES OF UKRAINE**

**BACHELOR CURRICULA  
AND  
TRAINING PROGRAMS**

**2020-2021  
academic year**

**2020**

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# **1. General Information About The National University of Life and Environmental Sciences of Ukraine**

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## 1.1. Historical brief

National University of Life and Environmental Sciences of Ukraine is the university of the IV accreditation level with the status of self-governing (autonomous) research university.

Since 2014, NULES of Ukraine is headed by Rector Stanislav Nikolaenko, corresponding member of National Academy of pedagogical Sciences of Ukraine, doctor of pedagogy, professor.

The history of the National University of Life and Environmental Sciences of Ukraine originated from Agricultural department and Veterinary faculty of Kyiv Polytechnic Institute, Department of Forestry of Agricultural Institute in Marimont (Poland).

The agricultural department of Kyiv Polytechnic institute (opened in August 31, 1898) transformed into Agricultural (Agronomic) faculty in 1918, and later in 1922 into Kyiv Agricultural Institute. In 1923, it became an independent higher educational institution.

The first dean of the agricultural department was M.P. Chyrvynskyi, Master of Agriculture, State Councilor, Honorary Professor and Head of zoo breeding technologies department. His achievements contributed to the national science treasury. The honorary fellow and lecturer of the agricultural department was K.A. Timiriaziev, professor emeritus of the Imperial Moscow University.

The first 32 scientists-agronomists graduated in 1903. D.I. Mendeleyev, a famous scientist and chemist, an honorary fellow of the popular Kiev society of naturalists was the Head of the State Examination Board. He appreciated the high level of graduates' knowledge.

In 1926-1929, architect D.M. Diachenko designed the first educational buildings in Golosiievo in the style of Ukrainian Baroque.

In 1926, Kyiv Agricultural Institute was the leading institution of agricultural science and agronomic education in the central part of Ukraine. The People's Commissariat of Education, as official documents certify, planned to transform KAI into the higher agricultural school of USSR - Ukrainian Agricultural Academy. Subjective and objective reasons prevented the realization of this project.

In the first half of the 1930s, a number of independent institutions operated on the bases of KAI. However, in the mid 1930s the institution regained its name and structure.

During World War II KAI evacuated to Alma-Ata and functioned as part of Kazakh Agricultural Institute.

In 1948, on its 50th anniversary, the institute was awarded with the Order of the Red Banner for outstanding achievements in teaching and research work.

Kyiv Forestry Institute began its history from the Warsaw forest school which affiliated with Institute of Agriculture in Marimont (Poland, 1840), and the latter was reorganized into the Institute of Agriculture and Forestry. In 1862, it transferred to Novo-Alexandriya (now - Pulawy, Poland). At the beginning of World War I (1914), a number of faculties of Novo-Alexandriya Institute of Agriculture and Forestry incorporated into Kharkiv Institute of Agriculture and Forestry (since 1921). In 1930, Forestry Faculty of Kharkiv Agricultural Institute moved to Kyiv and affiliated with Forestry engineering faculty of Kyiv Agricultural Institute to become the Ukrainian Forestry Technical Institute, and the same year it reorganized into Kyiv Forestry Institute.

In 1954, Kyiv Agricultural Institute and Kyiv Forestry Institute merged into the institution "Ukrainian Agricultural Academy of the Order of the Red Banner" (the UAA).

In the 1950s, the UAA was not only the major staff-training center for agriculture in Ukraine, but also the center of its scientific support. From 1956 to 1962, the Ukrainian Agricultural Academy became an educational department of the Ukrainian Academy of Sciences (UAS). This period became one of the most fruitful in the history of the institution, since there was a real possibility of integration of education and research activities, which

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made the institution famous in the former USSR. This was the prototype of large education and research universities functioning in highly developed countries of the world.

By the willful decision of the Government, the Ukrainian Academy of Agricultural Sciences liquidated due to consistent upholding of the strategy of agricultural development by the Presidium of the Ukrainian AAS, which did not coincide with the official opinion. The research institutes reassigned to the All-Union Academy of Agricultural Sciences named after Lenin and Ministry of Agriculture of USSR.

In 1957 Kyiv Veterinary Institute was joined to UAS, the Institute began its work as a veterinary faculty of Kiev Polytechnic Institute (1920), and since 1921 it functioned as an independent Kyiv veterinary and zoo technological Institute. Kyiv veterinary institute has functioned since 1930.

The 1960-80s were the period of developing international relations. During this time, over two thousand foreigners from more than 100 countries of Asia, Europe, Africa, Indochina and Latin America graduated from the academy.

The university developed its research activities, founded world famous schools led by famous scientists. The teaching staff significantly improved forms and methods of training specialists for agriculture and carried out research on current economic problems in the agricultural sector of Ukraine.

In 1982, the Ukrainian Agricultural Academy established Vinnytsia affiliate branch, which in 1991 became an independent institute (now - Vinnytsia State Agrarian University).

From 1962 to 1992, the educational institution was functioning as an autonomous Ukrainian Agricultural Academy, subordinated to the Ministry of Agriculture of the USSR, and later - the USSR.

Acquiring the experience of highly developed countries in the field of higher education, active collaboration with leading agricultural educational institutions, participation in the reform of higher education in Ukraine in the framework of the Bologna process have led to the qualitative changes in the structure and functioning of the institution, resulting in the change of its status and title.

In August 1992, the Ukrainian Agricultural Academy transformed into the Ukrainian State Agrarian University and got the status of National University according to the resolution of the Verkhovna Rada of Ukraine No. 158 from July 29, 1994. Since that time, it existed as the National Agrarian University and according to the above resolution of the Verkhovna Rada of Ukraine and the resolution of the Cabinet of Ministers of Ukraine No. 387 from June 1, 1995 it was subordinated to Cabinet of Ministers of Ukraine.

The structure of the university included a lot of education and research institutions and production subdivisions as entities that later were reorganized into separated subdivisions.

Since 1936 the University has incorporated Boyarka Forest Research Station, since 1957 – training and research farm "Vorzel", since 1966 - Agronomic Research Station (Kyiv region), since 1972 - Velykosnitynka training and research farm named after O.V. Muzychenko.

In 1996, according to the resolution of the Cabinet of Ministers of Ukraine from April 23, 1996 № 448, Nizhyn Agricultural College (Chernihiv region) joined National Agrarian University.

According to the Resolution of the Cabinet of Ministers of Ukraine from 29 May 1997 № 526, Berezhany Agricultural College (Ternopil region), Zalishchyky (Ternopil region) and Boyarka (Kiev region) agricultural colleges, Nemishaivo agricultural college and Irpin Economic College (Kiev region) joined the NAU.

Eventually, according to the results of accreditation, Irpin, Nemishayevo, Zalishchyky and Boyarka Technical Schools received the status of colleges.

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According to the Resolutions of the Cabinet of Ministers of Ukraine from 6 May 2001 No 434 and from May 16, 2001 No 508, Berezhanly and Nizhyn agrotechnical institutes were organized. According to the order of Cabinet of Ministers of Ukraine from August 8, 2001, № 327 of the Ministry of Agrarian Policy of Ukraine the Institute of post-diploma education of managers and specialists of AIC was transferred to the National Agrarian University. Since 2003, the Ukrainian laboratory of quality and safety of AIC products was organized in the National Agrarian University. In 2004, the property complex of state poultry breeding plant named after Frunze (Crimea) was transferred to NAU as training and research farm. The same year, on the basis of the Crimean State Agrotechnological University it was decided to organize the Southern Filial «Crimean Agrotechnological University» (Simferopol), Crimean Agroindustrial College, Bakhchisaray Construction College; Prybrehzhe Agricultural College, College of hydro melioration and mechanization of agriculture. In 2004 the Ukrainian Research Institute of Agricultural Radiology" joined the National Agrarian University.

In 2005, Bobrovytsia College of Economics and Management named after O. Mainova (the present name of the college) joined the National Agrarian University. In 2007, Mukacheve Agricultural College joined the University.

In 2015, the university organised interdepartmental laboratories on the basis of Tarashcha agrotechnical college, Malyn and Lubny Forestry Colleges, SS of NULES of Ukraine - Mukacheve Agrarian College, Bobrovytsia College of Economics and Management University named after O. Mainova, and Berezhanly Agrotechnical Institute.

Since 2016, "Rivne College of NULES of Ukraine" has become the separated subdivision.

In the field of international cooperation the university signed agreements on collaboration with a lot of educational and research institutions worldwide.

To expand the educational, research and innovation activities of the National Agrarian University and to satisfy the needs of agricultural, environmental and other industries, as well as to adapt these activities to the requirements of international organizations of research universities, National Agrarian University was renamed into the National University of Life and Environmental Sciences of Ukraine (NULES of Ukraine) by the Resolution of the Cabinet of Ministers of Ukraine № 945 from October 30, 2008, and in 2010 it received the status of self-governing (autonomous) research national university.

Reforming of the university has been clearly outlined in the Program of development of NULES of Ukraine for 2015-2020 "Holosiivska Initiative - 2020". The realization of the Program is to consolidate training, research, innovation, information, advisory, educational and production activities. Thus, the achievements of the University testify that NULES of Ukraine is a prime example of the institution of the 21st century.

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## 1.2. The concept and objectives of educational activities

**The concept of educational activities of the National University of Life and Environmental Sciences of Ukraine (NULES of Ukraine)** is determined by its **status as a research university**. It conducts educational, research, scientific, innovation, production and consultancy activities aimed to develop modern approaches to problems of life and environmental sciences, the use, reproduction and sustainable development of biological resources in soil and aquatic ecosystems, introduction of new environmental agrobiotechnology, technologies of soil safety and fertility, energy saving agricultural technologies, environmental and legal management in rural areas, monitoring and enforcement of standards, quality and safety of agricultural products, processing technologies and the environment.

The University aims to meet the educational needs of individuals, society and the state in accordance with the Constitution of Ukraine, Laws of Ukraine **"On Education"**, **"On Higher Education"**, **"Regulations on organization of the academic process in National University of Life and Environmental Sciences of Ukraine"**.

NULES of Ukraine as a research university conducts its activities in accordance with the European scientific and educational requirements and standards, participates in research programs and projects, including international cooperation with leading foreign universities and authoritative overseas partners.

Educational activities at the university are secular in nature, independent from political, civic and religious interference. The main objective of the university is to further integrate into the global educational system and achieve the international status.

NULES of Ukraine is a higher educational institution of the IV accreditation level and enjoys the right to train specialists in the following educational and qualification levels:

- Junior specialist – 26 specialties;
- Bachelor – 43 specialties and almost 50 educational programs;
- Specialist – 13 specialties;
- Master – 37 specialties and almost 60 educational programs.

The basic institution of the University (Kyiv) implements the degree system of training "bachelor – master". In addition, the university offers training for candidates and doctors of sciences in 34 specialties, as well as retraining and advanced training of specialists for the agricultural sector.

Over 31,000 students study at 13 faculties and 3 education and research institutes (ERI) of the basic institution of the University (Kyiv) and 11 separated subdivisions of NULES of Ukraine – regional higher educational institutions of II – III accreditation levels.

**The concept of educational activities at the university is grounded on the following principles:**

- access to higher education for individuals who meet the requirements of professional selection (competition) considering the existing benefits for rural youth and those living in the areas contaminated as a result of the Chernobyl catastrophe;
  - equality of conditions for any student, learner, postgraduate, doctoral candidate in order to realize their abilities, talent, all-round personal development;
  - transparency of higher educational institution, creation of preconditions for selecting the specialty and form of training;
  - the priority of universal spiritual values, humanism and democracy in the academic process;
  - logical unity and continuity of the academic process and its integration with science and production;
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- correspondence of the educational level to the international requirements;
- open competition and contracts for vacancy positions of heads of departments, deans, professors, associate professors and other employees.

**The main objectives of the educational activities at the university are:**

- organization of the academic process through innovative master and postgraduate programs of advanced scientific and professional training of masters, candidates of sciences (Doctors of Philosophy) and doctors of sciences for scientific and pedagogical activities at universities, research institutions and high-tech science-intensive industries;
- introduction of training for masters and PhDs, teaching and research staff of the University on the basis of personal research activities through close integration of research activities with the academic process and providing in-depth fundamental component in teaching and research;
  - strengthening and effective use of human resources, scientific, educational and research potential of the University through carrying out efficient, high-level research and training process;
  - development and implementation of new integrated technologies, methods, technical means into the training process;
  - integration of education with science and industry in the framework of the educational, scientific and production associations (including interdisciplinary), basic departments, their subdivisions in the institutions of the NAS and NAAS of Ukraine and other academic institutions for teaching and research;
  - staff training for innovative development of Ukraine on the basis of creativity, information technology competence, methods of development, use and protection of intellectual property, basics of innovation management, marketing, product innovation, commercialization of scientific and technological developments;
  - ensuring a high level of employment for graduates, young scientists with advanced scientific, research and technical training as scientists, university lecturers, developers of new techniques and technologies, managers of scientific and technological business and public administration in education, science and technology;
  - involving students into research, development and implementation of complex scientific and technical knowledge intensive systems as a component of the academic process;
  - ensuring high requirements for competitive selection of the teaching staff taking into consideration their scientific achievements;
  - development of a virtual educational and scientific information environment by involving all academic and research subdivisions of the University and ensuring the access of all participants of the academic process to it;
  - advanced training of managers and professionals of organizations, enterprises and institutions who carry out research and implement the results of technological achievements of the University;
  - promoting the spiritual and cultural development of society, shaping the country's knowledge base, developing high-tech industries and innovative business environment.

**The academic process at the University is based** on a systems approach to foster students' broadmindedness, original thinking and ability to solve industrial and socio-economic problems.

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The educational process is an integral part of academic activities and provides education of future professionals in the best traditions of national and world culture based on common priorities, renewal and development of the national economy, culture, science and spiritual unity of the nation and the people living in Ukraine.

One of the key areas of strategic objectives of the University is development of a new mechanism of interaction of all participants in the academic and educational process, based on respect for the principle of the unity of their interests, educational opportunities and personality needs.

**The main objectives of the academic and methodological activity in the context of implementation of degree education system are:**

- development of a professional of XXI century model and the requirements to the level of professional knowledge, capacity for self-learning, flexibility in market conditions and self-development;

- involvement of the University staff into the scientific-methodological commission of the Ministry of Education and Science of Ukraine and the Ministry of Agrarian Policy and Food of Ukraine engaged in improvement of organizational and methodological support of the academic process, developing branch standards for higher education;

- creation of scientific-methodological complexes in the fields of training (specialties) and discipline teaching methods based on advanced educational technologies and related educational and laboratory facilities;

- compliance with the state standards of higher education;

- adaptation of scientific and methodological literature written by the University staff to the requirements of international standards of WTO and the European Union;

- determining the content and forms of academic activity for various stages of training and certification;

- identifying the content and character of graduates employment in order to make amendments and additions to the content of curricula and organization of the academic process;

- development of guidelines and forms of rating system, assessment criteria, tests to determine the level of professional knowledge, competences and skills;

- development of new information and communication systems to support the academic process.

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### 1.3. Specialties for Bachelor's degree

The National University of Life and Environmental Sciences of Ukraine trains bachelors in the following specialties:

*Accounting and Taxation; Agroengineering; Agronomy; Automation and Computer Integrated Technologies; Biotechnology and Bioengineering; Computer Engineering; Computer Science; Construction and Civil Engineering; Cybersecret; Ecology; Economy; Entrepreneurship, Trade and Exchange Activities; Finance, Banking and Insurance; Food Technologies; Forestry Management; Geodesy and Land Management; Heat power engineering; Horticulture and Viticulture; Hotel-restaurant business; Sectoral engineering; International relations, social communications and regional studies; Journalism; Law; Management; Marketing; Park and Gardening Management; Philology (Germanic languages and literature (translation included)); Physical Education and Sports; Plant Protection and Plant Quarantine; Power Engineering, Electrical Engineering and Electrical Mechanics; Professional Education; Psychology; Public Health; Public Management and Administration; Social Work; Software Engineering; Technology of Production and Processing of Livestock Products; Tourism; Transport Technologies (on Motor Transport); Veterinary Medicine; Water Bioresources and Aquaculture; Woodworking and Furniture Technologies.*

**Bachelor's degree** is an educational degree (ED) in higher education that can be obtained by a person at the first level of higher education. The higher educational institution confers Bachelor's degree to a seeker upon completion of educational and professional program (180-240 credits ECTS). The extent of educational and professional program for Bachelor's degree on the basis of Junior bachelor's degree (EQL Junior specialist) is determined by a higher educational institution.

A person can apply for Bachelor's degree training providing he/she has obtained a complete general secondary education.

The first (bachelor) level of higher education corresponds to the sixth qualification level of National Qualifications Framework (the Resolution of the Cabinet of Ministers of Ukraine № 1341 from 23.11.2011) – the structural unit determined by a certain set of competencies typical for this qualification level.

#### Description of the the sixth qualification level

Level	Knowledge	Skills	Communication	Autonomy and responsibility
1	2	3	4	6
6	Ability to solve complex specialized tasks and practical problems in a particular area of professional activity or in the learning process, which involves the use of certain theories and methods of relevant science and is characterized by complexity and uncertainty of conditions.			
	Conceptual knowledge acquired in the process of training and professional activity, including certain knowledge of modern achievements	Solving complex and unforeseen problems in specialized areas of professional activity and / or training, which involves collecting and interpreting information (data), choice of methods and tools, the use of innovative approaches	presenting information, ideas, problems, solutions and one's own experience in the field of professional activity to specialists and non-specialists	Management of complex projects or actions, responsibility for decision-making in unpredictable conditions

1	2	3	4	6
	Critical awareness of basic theories, principles, methods and concepts in education and professional activity		ability to form effective communication strategy	responsibility for professional development of individuals and / or groups  ability to life-long learning with a high degree of autonomy

Educational and professional training program provides obtaining higher education in the field of training (specialty) and relevant qualification.

Educational and professional program is a system of educational components on the first (bachelor) level of higher education within the specialty that defines requirements for education of persons who can start training in this program. The list of disciplines and the logical sequence of their study, the number of European credit transfer-accumulation system (hereinafter – ECTS) required by the program as well as the expected learning outcomes (competences) that the applicant for Bachelor’s degree should master.

Individuals who successfully completed educational and professional training program for Bachelor’s degree and passed state certification, obtain standard documents about higher education in the relevant field of study and Bachelor’s degree qualifications.

Bachelors are trained at the faculties of the basic institution of the University (Kyiv) and in separated subdivisions (SS) of NULES of Ukraine - higher educational institutions of II-III accreditation levels (Table 1.1). Training in all subdivisions is realized according to agreed curricula and programs, involving the teaching staff of the basic institution of the university to give lectures at separated subdivisions of the university. This makes it possible to successfully implement a degree system, create favorable conditions for capable students.

**Table 1.1. Specialties for Bachelor’s Degree**

№	Code, Specialty	Departments that provide Bachelor degree training and licensed number (full-time/part-time, persons)	
		Faculties and ERI of the basic institution	SS of NULESU
1	2	3	4
1	015 Professional Education	Humanitarian Pedagogical (50/-)	-
2	017 Physical Education and Sports	Humanitarian Pedagogical (50/-)	-
3	035.01 Philology (Germanic languages and literature (including translation), first - English)	Humanitarian Pedagogical (90/5)	
4	035.04 Philology (Germanic languages and literature (including translation), first – German)	Humanitarian Pedagogical (25/5)	-
5	051 Economy	Economic (100/80)	Berezhany agrotechnical institute (40/200)
6	053 Psychology	Humanitarian Pedagogical (75/25)	-
7	061 Journalism	Humanitarian Pedagogical (50/-)	-

**CURRICULA AND PROGRAMS OF BACHELOR DEGREE**

**Table 1.1 Continuation**

1	2	3	4
8	071 Accounting and Taxation	Economic (150/140)	Berezhany agrotechnical institute (60/60) Nizhyn agrotechnical institute (40/25)
9	072 Finance, Banking and Insurance	Economic (130/90)	–
10	073 Management	Agrarian Management (150/60)	Nizhyn agrotechnical institute (30/25)
11	075 Marketing	Agrarian Management (60/60)	–
12	076 Entrepreneurship, Trade and Exchange Activities	Economic (50/25)	–
13	081 Law	Law (160/90)	–
14	101 Ecology	Plant Protection, Biotechnology and Ecology (100/50)	Berezhany agrotechnical institute (30/30)
15	121 Software Engineering	Information Technologies (75/25)	–
16	122 Computer Science and Information Technologies	Information Technologies (75/25)	–
17	123 Computer Engineering	Information Technologies (75/25)	–
18	125 Cybersecret	Information Technologies (50/-)	–
19	133 Sectoral engineering	Construction and Design (170/120)	–
20	141 Power Engineering, Electrical Engineering and Electrical Mechanics	Energetics, Automation and Energy-saving (175/125)	Berezhany agrotechnical institute (75/100) Nizhyn agrotechnical institute (60/60) Nemishayevo Agrotechnical College (50/50)
21	144 Heat power engineering	Energetics, Automation and Energy-saving (50/-)	–
22	151 Automation and Computer Integrated Technologies	Energetics, Automation and Energy Saving (70/15)	–
23	162 Biotechnology and Bioengineering	Plant Protection, Biotechnology and Ecology (100/50)	–
24	181 Food Technologies	Food Technologies and Quality Management of AIC Products (150/50)	–
25	187 Woodworking and Furniture Technologies	Forestry, Park and Gardening Management (50/100)	–
26	192 Construction and Civil Engineering	Construction and Design (50/50)	–
27	193 Geodesy and Land Management	Land Management (110/65)	–
28	201 Agronomy	Agrobiology (220/90)	–
29	202 Plant Protection and Plant Quarantine	Plant Protection, Biotechnology and Ecology (75/50)	–
30	203 Horticulture and Viticulture	Agrobiology (60/30)	–
31	204 Technology of Production and Processing of Livestock Products	Livestock and Water Bioresources (125/60)	–
32	205 Forestry Management	Forestry, Park and Gardening Management (215/200)	–
33	206 Park and Gardening Management	Forestry, Park and Gardening Management (100/60)	Berezhany agrotechnical institute (30/30)
34	207 Water Bioresources and Aquaculture	Livestock and Water Bioresources (75/75)	–

**Table 1.1 Continuation**

1	2	3	4
35	208 Agroengineering	Mechanics – Technology (200/200)	Berezhany agrotechnical institute (75/100) Nizhyn agrotechnical institute (75/75) Nemishayevo Agrotechnical College (50/40)
36	211 Veterinary Medicine	Veterinary Medicine (300/-)	–
37	229 Public Health	Food Technologies and Quality Management of AIC Products (50/-)	–
38	231 Social Work	Humanitarian Pedagogical (50/50)	–
39	241 Hotel-restaurant business	Continuous ducation and tourism (90/-)	–
40	242 Tourism	Continuous education and tourism (70/20)	–
41	275 Transport Technologies (on Motor Transport)	Mechanics – Technology (100/100)	Nizhyn agrotechnical institute (30/-)
42	281 Public Management and Administration	Continuous education and tourism (50/-)	–
43	291 International relations, social communications and regional studios	Humanitarian Pedagogical (95/5)	–

Upon completion training and obtaining bachelor's degree graduates have an opportunity to choose a future master program according to the specialties and Master's degree programs.

Preparation of master's degrees is carried out at the basic institution of the University (Kyiv) and at SS of NULESU «Berezhany agrotechnical institute». Master degree training is provided at the basic institution of the University (Kyiv) in 3 educational and research institutes (ERI) and 13 faculties (Table 1.2).

**Table 1.2. Master's Degree Specialties and Educational Programs**

ERI, faculty 1	Specialty 2	Educational Program 3
ERI of Energetics, Automatics and Energy Saving	Automation and Computer Integrated Technologies	Automation and Computer Integrated Technologies
	Power Engineering, Electrical Engineering and Electrical Mechanics	Power Engineering, Electrical Engineering and Electrical Mechanics
ERI of Forestry and Garden-Park Management	Woodworking and Furniture Technologies	Woodworking and Furniture Technologies
	Forestry	Forestry
	Park and Gardening Management	Park and Gardening Management
ERI of Continuous Education and Tourism	Management	Management of innovative activity
Agrobiology faculty	Agronomy	Agronomy
		Agrochemistry and Soil Science
		Selection and genetics of agricultural crops
Economic faculty	Horticulture and Viticulture	Horticulture and Viticulture
	Economy	Economics of enterprise Applied Economics
Economic faculty	Accounting and Taxation	Accounting and audit
	Entrepreneurship, Trade and Exchange Activities	Entrepreneurship, Trade and Exchange Activities
	Finance, Banking and Insurance	Finance and credit

**CURRICULA AND PROGRAMS OF BACHELOR DEGREE**

**Table 1.2 Continuation**

1	2	3
Humanitarian Pedagogical faculty	Management	Management of educational institution Human Resources Management
	Educational, Pedagogical Sciences	Pedagogy of higher school Information and Communication Technologies in Education
		Social Work
	Philology (Germanic languages and literature (translation inclusive), first – English)	English and second foreign language
	Philology (Germanic languages and literature (translation inclusive), first – German)	German and second foreign language
	Psychology	Psychology
	Mechanics – Technology faculty	Agricultural Engineering
Transport Technologies (on Motor Transport)		Transport Technologies (on Motor Transport)
Motor Transport		Motor Transport
Faculty of Agrarian Management	Management	Administrative management Management of foreign economic activity Management of organization and administration Management of investment activities and international projects
		Marketing
Faculty of Veterinary Medicine		Veterinary Hygiene, Sanitation and Examination
	Veterinary Medicine	Veterinary Medicine
Faculty of Plant Protection, Biotechnology and Ecology	Biotechnology and Bioengineering	Environmental biotechnology and bioenergetics
	Ecology	Ecological control and audit Ecology and environmental protection
		Plant Protection and Plant Quarantine
Faculty of Land Management	Geodesy and Land Management	Geodesy and Land Management
Faculty of Information Technology	Economy	Economic cybernetics
	Computer Science	Information managing systems and technologies Computer ecological and economic monitoring
		Software Engineering
	Computer Engineering	Computer Systems and Networks
Faculty of Construction and Design	Construction and Civil Engineering	Construction and Civil Engineering
	Industrial Mechanical Engineering	Machinery and equipment of agricultural production Equipment of forest complex Technical Service of Machinery and equipment of agricultural production
		Water Bioresources and Aquaculture
Faculty of Livestock Science and Water Bioresources	Technology of Production and Processing of Livestock Products	Technology of Production and Processing of Livestock Products
	Faculty of Alimentary Technologies and Managing of Quality of Productes of ASE	Metrology and Information and Measurement Technique
Food Technologies		Technologies of storage, preserving and reprocessing of meat Technologies of storage and reprocessing of aquatic bioresources
		Nutritionology
Law faculty	Law	Law

## 1.4. Admission requirements

Admission to full-time study and by correspondence on Bachelor degree programs at National University of Life and Environmental Sciences of Ukraine is conducted according to the current admission requirements approved by the Academic Council of the University.

The educational activity is provided according to the license of the Ministry of Education and Science of Ukraine, serial number AE № 636425 on 20.05.2015.

### Terms for submission of application forms and documents, competitive selection and enrolment for full-time study and by correspondence by the state order

Dates for submission of documents based on		Entrance exams on the basis of		Rating list		Terms for applicants to meet the enrolment requirements		Enrolment by state order		
CGSE	JS	CGSE	JS	CGSE	JS	CGSE	JS	CGSE	JS	
13-22.07.2020*		24.06.-08.07.2020	23-30.07.2020	09-11.07.2020	27.07.2020 at the latest	31.07.2020 at the latest	by 18 <sup>00</sup> 31.07.2020	by 18 <sup>00</sup> 04.08.2020	by 12 <sup>00</sup> 01.08.2020 at the latest	by 12 <sup>00</sup> 05.08.2020 at the latest

Note: CGSE – Complete General Secondary Education; JS – Junior Specialist

\* applicants admitted based on the entrance examinations

NULES of Ukraine trains specialists **in the specialty 211 "Veterinary Medicine" (Veterinary support of troops)**, the deadline for submission of documents is on July 16th, 2020 by 18.00, entrance examinations - July 17th, 2020, publication of the rating list – at 12.00 July 18th, 2020, meeting the enrolment requirements – 12.00 July 19th, 2020 and terms of enrolment – 12.00 July 20th, 2020.

#### Applicants submit the paper application form and the following documents:

- Two copies of personal ID (1st, 2nd pages and place of registration);
- a copy of a state document of previously obtained education (educational and qualification) level on which the entrance is done, and a copy of the appendix to it;
- a copy of the certificate(s) of the Ukrainian Centre for Educational Quality Assessment (for applicants with complete general secondary education and educational and qualification level of Junior Specialist);
  - 4 color photos 3x4 cm;
  - two copies of personal identification number.
  - a copy of military registration card (for conscripts);
  - medical certificate of 086/o standard.

All copies of documents are submitted by applicants in person to NULES of Ukraine and are certified by the original documents by Admission Committee. **Copies without the original documents are not considered.**

Copies of documents certifying special conditions for an applicant to participate in competitive selection to obtain higher education on the basis of Complete General Secondary Education in accordance with the admission requirements or admission by quotes are submitted in paper and electronically by an applicant in person within the specified dates. Applicants who fail to submit in due time the documents certifying special conditions for participation in competitive selection to obtain higher education based on Complete General Secondary Education are not entitled to get these special conditions.

Applicants for a Bachelor's degree on the basis of complete general secondary education for full-time study and by correspondence **submit electronic applications only**. Applicants may submit up to five applications on state and regional order. The number of applications for participation in the competition for study at the expense of individuals or legal entities is not limited.

While filling in application forms for participation in competitive selection, applicants specify in each application form the priority of this form in relation to the other application forms submitted by them, where "1" being the highest priority.

In 2020, the certificates of External Independent Evaluation issued in 2017, 2018, 2019 and 2020 are recognized, except grades in English, French, German and Spanish. In case the foreign language is the competitive subject, an applicant can submit the grade in the certificates of External Independent evaluation obtained in 2018, 2019 and 2020.

**List of competitive subjects in the certificates of the Ukrainian Centre for Educational Quality Assessment (entrance examinations)**

Specialty (Specialization)	List of Competitive subjects		
	1	2	3 (chosen by an applicant)
Economics ( <i>Economy of Enterprise, Economic Cybernetics, Digital Economics</i> ); Accounting and taxation ( <i>Accounting and Audit</i> ); Finance, Banking and Insurance ( <i>Finance and Credit</i> ); Management Marketing. Entrepreneurship, trade and stock activity	Ukrainian language and literature	Mathematics	Foreign Language / Geography
Software Engineering; Computer Science; Computer Engineering; Cybersecurity; Construction and Civil engineering; Industry Engineering ( <i>Industry Engineering, Robotics Systems and Complexes</i> ); Power Engineering, Electrical Engineering, and Electromechanics; Heat and Power Engineering; Automation and Computer Integrated Technologies; Transport Technologies ( <i>road transport</i> )			Physics / Foreign Language
Agro-engineering			Physics / geography
Food Technologies ( <i>Food Technologies, Restaurant Technology</i> ); Forestry; Landscape Gardening			Chemistry / Biology
Wood processing and Furniture Technology			Physics / Biology
Geodesy and Land Management			Geography/ History of Ukraine

**CURRICULA AND PROGRAMS OF BACHELOR DEGREE**

Psychology			Biology / Foreign Language
Public Management and Administration		Biology	Foreign language / History of Ukraine
Ecology			Mathematics / Chemistry / Geography
Biotechnology and Bioengineering; Agronomy; Protection and Quarantine of plants; Horticulture and Viticulture Technology of Production and Processing of Livestock Products; Water Bioresources and Aquaculture; Veterinary Medicine (Veterinary Support of Troops); Veterinary Hygiene, Sanitation and Expertise			Chemistry / Mathematics
Physical Education and sport			Creative competition
Professional education (Agricultural production, processing of agricultural products and food technology)		Mathematics	Chemistry / Foreign Language
Journalism; Law; Social work		History of Ukraine	Mathematics / Foreign Language
Philology (Germanic languages and literature (translation included) Main language – English; Philology (Germanic languages and literature (translation included) Main language – German		Foreign Language	History of Ukraine / Geography
Tourism Hotel and Catering Business			Mathematics / Geography
International Relations, Public Relations and Regional Studios			History of Ukraine / Mathematics
Public health (Nutrition of healthy eating)		Biology / chemistry	Physics / Mathematics

In order to obtain a bachelor's degree on the basis of complete general secondary education, the competitive score is calculated by adding grades of external independent assessment in competitive subjects (entrance exams) specified in the table of competitive subjects in the certificates of the Ukrainian Center for Educational Quality Assessment (entrance examinations), the average score of the certificate of complete secondary education and a score for successful completion of the training courses in NULES of Ukraine or a contest of NULES of Ukraine in the year of admission (for specialties defined by the List of specialties that get special support) taking into account the inalienable valuable coefficient according to the Admission Requirements of NULES of Ukraine.

Finally, the competitive score is multiplied by the branch and rural coefficients.

The branch coefficient is equal to 1.02 for applications submitted with the priority 1 and 2 in the specialty (specialization), which are provided in the List of specialties that have special support; 1.00 - in other cases;

The rural coefficient is equal to 1.02 for persons registered in villages and who obtained complete general secondary education in educational institutions located in rural areas in the year of entrance (1.05 - for specialties (specializations), which are provided in the List of specialties of special support and specialties in the field of knowledge 21 "Veterinary Medicine", 1.00 - in other cases.

Winners (persons awarded with diplomas of I-III degrees) of the IV stage of the National Ukrainian Student Contests in the year of entrance in basic subjects, winners of the III stage of the National Ukrainian contest-defense of research works of students - members of the Small Academy of Sciences of Ukraine in the year of admission in the specialties' defined by the List of specialties which get special support, get the final score 10.

Participants of National Ukrainian contest of NULES of Ukraine aimed at professional guidance of applicants on the basis of complete general secondary education in the specialties defined by the List of specialties that are given special support, obtain additional scores to the certificate of External Independent Evaluation on one related subject within the range from 1 to 20 points.

NULES of Ukraine offers training courses for External Independent Evaluation on the comprehensive subjects. After completing the course program, the participants can obtain up to 10 additional points when they apply for the specialties defined by the List of specialties', which are given special support.

For applicants on the base of obtained educational and qualification level of a junior specialist in the **specialty 051 "Economics", 071 "Accounting and Taxation", 072 "Finance, Banking and Insurance", 073 "Management", 075 "Marketing"** the competitive score is calculated by the amount of points in the EIT certificate in Ukrainian language and literature, mathematics (mathematics or history of Ukraine for study at the expense of individuals and / or legal entities) (not less than 100 points) and the result of professional entrance examination in NULES of Ukraine; for all other specialties the calculation is based on the sum of the points in the EIT certificate in the Ukrainian language and literature (not less than 100 points) and the result of the professional entrance examination in NULES of Ukraine. **Applicants who got at least 124 points on the professional entrance exam can participate in the competition in all specialties.**

Persons who submitted application forms in paper and / or electronic form, and participate in the competitive selection for state and regional orders after the admission committee decides on the recommendation for enrollment according to the terms, are obliged to meet the requirements for enrollment in state and regional order, namely: to submit personally the originals of the document on educational (educational-qualification) level and appendix to it, certificates of external independent assessment and / or other documents according to the Rules of admission to the selection committee of NULES of Ukraine. Applicants submitted applications in electronic form are also required to sign their own application form printed out by the selection committee.

Persons who did not fulfilled the requirements for enrollment in the state or regional order in due time lose the right to enroll (transfer) to study on the state and regional order in the current year.

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**Applicants submit the documents to the address:**

03041, Kyiv-41, 19, Generala Rodimtseva st., building № 1.

How to get to the Admission Committee:

from the metro station "Lybidska", or "Teremky" take bus 212.

Documents are accepted daily from 9<sup>00</sup> to 18<sup>00</sup>, on Saturday and Sunday- from 9<sup>00</sup> to 14<sup>00</sup>.  
lunch break – 13<sup>00</sup> -14<sup>00</sup>

**Phone:** (044) 258-42-63, 527-83-08

(098) 660-08-48; (063) 804-49-93

**e-mail:** [vstup@nubip.edu.ua](mailto:vstup@nubip.edu.ua)

For more information, join [facebook.com/vstupnubip](https://www.facebook.com/vstupnubip)  
or see the University official website <http://www.nubip.edu.ua>.

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### 1.5. Organization of educational process

There are the following forms of studying at National University of Life and Environmental Sciences of Ukraine:

- full time study;
- part-time studying (distance).

Forms of studying can combine.

**Full time studying** is the basic form of obtaining a certain level of education. It is carried out in accordance with the Regulation on organization of educational process in NULES of Ukraine introduced by Rector's order № 379 from 30.03.2015.

**Part-time studying (distance)** is obtaining a certain level of higher in-service education and qualification.

**The educational process** in part-time studying (distance) form of studying is organized during a calendar year - during examination sessions and inter-session period, considering the benefits required by law for persons who combine work with study.

**An educational process** is a structuralized system of organizational and didactic measures aiming to realize the education content of a certain education and qualification level according to the requirements of the standards for higher education.

Scientific, humanistic, democratic principles as well as the principle of continuity and degree system in education are **the fundamentals of the academic process**. The main objective is to educate and train intelligent and harmoniously developed personalities who can extend their knowledge, develop professional mobility and flexibility in the transitional period of reforming the economy of agriculture and forestry.

According to the Law of Ukraine "On Higher Education", NULES of Ukraine implements **a degree system** of higher education "**junior bachelor-bachelor-master**". This system gives a wide range of possibilities to satisfy educational needs and to solve educational problems for a person, increasing universal educational flexibility for professional training and the level of social protection regarding the changes of the needs of the economy and the labor market. It ensures obtaining a desired qualification or extended professional training in specialties and offers correspondent educational and qualification programs.

The regulatory and legislative framework for organization of the academic process at the University is **the Laws of Ukraine "On Education", "On Higher Education"**, the national standards for higher education and standards for educational activity, "The Regulation on the educational Process at NULES of Ukraine", professional educational programs for training qualified specialists of correspondent directions and qualification levels (EQL).

**The content of education** is a scientifically grounded system of the didactically and methodologically framed teaching material for different educational and qualification levels. The content of education is determined by professional and training programs, structural and logical training schemes, curricula for disciplines, as well as other regulative acts of the state administrative and executive bodies for education and by higher educational institutions. The content is reflected in course books, textbooks, methodological materials, references, and didactic means. It is also implemented during academic classes and other forms of educational activity.

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**An educational and professional training program** is a list of standard and elective disciplines with the defined number of hours for their studying and forms of control.

**Structural and logical scheme of training** is scientific and methodological substantiation for implementation of an educational and professional training program.

**The main normative document** determining the academic process organization in a specific field of study **is a curriculum** that is implemented by the dean's offices (director's offices of ERI) on the grounds of educational and professional training programs and structural and logical scheme of training and defines the list and the volume of compulsory and optional disciplines, sequences of studying the disciplines, corresponding forms of classes and their quantity, schedules of the academic process, forms and means of control. The curricula are approved by the Rector of the University and compiled every academic year.

In the curriculum, the volumes of the disciplines are distributed as follows:

- **Compulsory** - 60% of the total student workload (their list, scope and forms of certification are determined by the standard of higher education, in accordance with the requirements of the Ministry of Education and Science of Ukraine within a relevant specialty);

- **Compulsory by the decision of the Academic Council of the University** - 15% of the total student workload (their list, forms of study (classroom or independent) and certification are determined by the Academic Council of the university). Such components are studied by the bachelor students of the I-II years of study;

- **Optional** - not less than 25% of the total student workload. Such disciplines are studied by undergraduate bachelor students of the III-IV years of study.

Optional disciplines are divided into:

- disciplines of free choice in the specialty (educational program);
- disciplines of free choice according to students' preferences.

The place of a discipline and its importance, its content, and the requirements to the level of knowledge and skills obtained are determined by the course program. The training program of the discipline which specifies the outlines, the sequence, organizational forms and hours, means and forms of current and final control is compiled on the basis of the curriculum and the syllabus of the discipline by correspondent departments.

**The educational process at the University has the following forms:** classes, individual tasks, student independent learning, practical training, and examinations.

Lectures, laboratory research, practical classes, seminars, individual classes, consultations are the main forms of studying.

The classes are organized into semesters (trimesters) according to the annual schedule of the academic process.

Student independent learning is the main form to obtain knowledge and skills in out-of-class time. The hours for student independent learning are regulated by the curricula and should take no less than half the total hours of studying a specific discipline by a student.

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**Student practical training** is a compulsory component of the training program for qualification level that aims to help students acquire professional skills. It is held at the independent subdivisions of NULESU educational and research farms and research stations, at advanced modern agricultural and forestry enterprises under scientific supervision of scientific and training staff of the University and experts of the enterprises.

Control includes current control and final control. The current control aims to assess students' readiness to carry out specific tasks during practical classes, laboratory research and seminars. Forms of the current control are determined by the correspondent departments. Moreover, in accordance with the requirements of a module-rating system of training implemented at the University, at the end of each content module there is an obligatory assessment of the level of students' mastering the material.

The final control aims to assess the results of training at a certain education level or at certain completed stages. According to "The Regulations on Examinations and Credits at NULESU", the final control takes two forms: an examination or a credit in a specific academic discipline.

**A Test** is a form of assessing students' laboratory and practical tasks, student knowledge of certain parts of academic disciplines, course projects (papers), educational and practical training activities. Credits in laboratory research tasks and practical activities are to be over before examination sessions start.

**Exam (course exam)** aim to assess students' knowledge of the academic disciplines, their abilities to apply knowledge and skills obtained to solve practical problems in their professional activities.

**Exams** are to be taken during the period of examination sessions according to the academic calendar of the University and the schedules of the educational process.

Examination results are scored according to the national four-grade scale – "excellent", "good", "satisfactory", "unsatisfactory". Tests results are scored by the national grades "Accepted" and "Not Accepted".

**Student academic workload** is determined by the number of time measure units for training programs. An academic hour, an academic day, a week, a semester, a course, and a year are student academic workload time measure units.

**An academic hour** is a minimum academic student workload unit which takes 45 minutes.

An academic student day lasts no longer than 9 academic hours, an academic week for full time form of studying for ED Bachelor – 30 academic hours (1<sup>st</sup> year); 28 hours (2<sup>nd</sup> year); 26 hours (3<sup>rd</sup> year); 24 hours (4<sup>th</sup> year); for ED "Master" – 18 hours.

One of the peculiarities of the academic process organization at NULESU is a **credit-module system of training** for all training courses and programs of professional training of ED "Bachelor" and ED "Master" witch is regulated by "The Regulations on the Credit-Module System of Education at NULES of Ukraine".

**The principle of module training** consists in dividing the content of each academic discipline in terms of its volume and structure into several content modules. **A content module** is a logically complete part of theoretical and practical material of the academic disciplines containing, as a rule, several lecture themes, practical classes (seminars), laboratory research, calculation problems etc. The number of content modules for one discipline is determined by the lecturer who is responsible for the discipline and approved

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at the chair meeting. Content modules are included into the curriculum for the discipline.

It is recommended that there be from 2-3 content modules for one discipline within the period of one semester with an obligatory control of the competences gained. The content of each module is learned by students in-class or independently.

Total academic workload (in-class and out-of-class activities, individual tasks, etc.) is measured in hours and ECTS-credits (one ECTS-credit corresponds to 30 hrs.)

**Table 1.3. Ratio between student’s rating and the Ukrainian National grades**

Student’s rating, points	The Ukrainian National Grades	
	Exams, differential tests	Tests
90 – 100	Excellent	Accepted
74 – 89	Good	
60 – 73	Satisfactory	
00 – 59	Unsatisfactory	Not Accepted

An overall student academic workload should be no less than 60 ECTS-credits per academic year, 30 ECTS-credits per semester, and 20 ECTS-credits per trimester.

**Student rating is assessed** after a logically completed part of lectures and practical classes (a content module) for disciplines and during the final control of knowledge and skills. The student assessment rating does not eliminate a traditional grading system. Both assessment systems, being used together, make the assessment system more flexible, objective and promote systematic and active individual student performance during the whole period of studying, ensuring a sound competition among the students in their learning, facilitating students’ development and creativity.

The student assessment rating in academic disciplines, course papers (projects), reports on all training practices (training and production), state examinations, graduation projects (graduation bachelor’s papers, graduation papers (projects) and graduation master’s papers) is scored according to **the 100-point scale**.

The student rating for the academic discipline includes the training rating – 70 points the highest, and the attestation rating – 30 points the highest. Consequently, a content module as part of an academic discipline is scored in 70 points the highest. Rating grades in content modules, as well as attestation rating, are scored according to the 100-point scale.

The student's rating in different types of academic performance in points is transformed into national grades and is recorded into an examination record, a student grade record and a student assessment register (see *Table 1.3*).

The students having 60 points and more for their academic performance have the right not to take an examination (credit) and to get an examination grade (a credit) "Automatically" according to the number of the points they gained. Points are transformed into national grades (see *Table 1.3*).

If students want to get a higher rating to get a better grade in an academic discipline, they are to go through a semester attestation. The latter is obligatory to be taken by the students gaining less than 60 points. To be allowed to take an attestation, a student is required to have no less than 60 points for each content module, overall, no less than 42 points for academic performance.

The students with a higher academic rating have the following benefits:

- guaranteed workplace after graduating from NULES of Ukraine;
- accommodation and scholarships;
- a choice of the place to have production and training practices;
- training according to individual academic plans and schedules;
- transfer to a new specialty;
- selection for internship abroad;
- advantages in competitive contests for master's degree program.

To promote mobility of students and faculty, academic disciplines are taught in the English language at NULES of Ukraine. Most disciplines are taught in English for special groups of students in sixteen bachelor programs and the corresponding specialties of master's degree training programs:

- Agronomy;
- Biotechnology (Ecological Biotechnology and Bioenergetics);
- Veterinary Medicine;
- Industrial Mechanical Engineering;
- Geodesy and Land Management;
- Ecology;
- Economy;
- Plant Protection and Plant Quarantine;
- Management;
- Law;
- Accounting and Taxation;
- Economic Cybernetics;
- Social Work;
- Construction and Civil Engineering;
- Philology;
- Finance, Banking, and Insurance,

which allow the graduates with proficiency in the English language to adapt quickly to the contemporary requirements of the national and international labor markets, or to continue their education at the leading universities of the world and occupy top positions in different international companies.

Another peculiar feature of the academic process at the University is **a possibility for students with a Junior specialist degree to continue their education on a shortened (up to two years) bachelor's degree training program**, if their specialty is included into the field of study they apply for. There are 30 specialties:

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- Wood Processing and Furniture Manufacturing Technologies;
- Ecology;
- Economy;
- Power Engineering, Electrical Engineering and Electrical Mechanics;
- Plant Protection and Plant Quarantine;
- Software Engineering;
- Computer Engineering;
- Computer Science and Information Technologies;
- Forestry Management;
- Marketing;
- Management;
- Accounting and Taxation;
- Law;
- Professional Education;
- Horticulture and Viticulture;
- Landscape-Park Management;
- Social Work;
- Technology of Production and Processing of Livestock Products;
- Transport Technologies (Motor Transport);
- Tourism;
- Finance, Banking and Insurance;
- Food Technologies.

According to the results of entrance examinations, junior specialists are enrolled in the first year of studying in a separate batch with the shortened two-year period or the vacant places of the second or third year of studying, the choice of which depends on their academic gap in the curricula (in this case, they study according to their individual plans).

## 1.6. Practical training of Students

Student practical training is a constituent part of the academic process at National University of Life and Environmental Sciences of Ukraine. It is regulated by “The Regulations on Student Practical Training at NULES of Ukraine”, approved by Rector’s Order on 19.10.2019.

**Student practical training aims to** generalize theoretical and practical knowledge, obtain professional knowledge and skills to train qualified professionals with higher education according to the requirements of education and qualification level and ensure high professional training quality.

**The objectives of practical training are:**

- to train professionals able to solve production problems in current market conditions, to apply methods and techniques of innovative technology;
- to obtain skills in:
  - making decisions in specific work situations;
  - implementing advanced technology and scientific findings into production;
  - team working and cooperation;
  - a corresponding profession.

Student practical training is a continuous and coherent process going on during the whole period of studying in order to facilitate acquiring certain competences of future bachelors, specialists and masters.

Practical training includes laboratory and practical classes, training and production practices of students.

**Laboratory classes** take place at university laboratories specially equipped with facilities for the academic process (training hardware, machinery, etc.). Laboratories for the students of Technology of Production and Processing of Livestock Products, Veterinary Medicine, Agrobiology, Plant Protection, Engineering for Agrobiosystems, Design Engineering for Machinery and System of Nature, Forestry, Economics, Agricultural Management, Food Technology and Quality and Safety of Livestock Products take place in real professional environment – at educational, research and production laboratories of the educational and research farms of NULESU.

**Practical classes** take place in computerized classrooms or in the University laboratories equipped with necessary technical teaching facilities. Practical training includes teaching materials – tests - to assess the level of students’ knowledge of crucial theoretical principles, a set of tasks of different level of complexity.

**Training practices** are held during the first and second years of bachelor’s degree programs at educational, scientific, production laboratories, clinics, workshops, on the fields of the educational and research farms (ERF) of NULESU, as well as at the leading companies, enterprises, organizations and institutions of Ukraine and other countries that meet the requirements of the educational and professional programs for bachelor’s degree. The practices aim to introduce specific features of the field of study and specialties for the students to be competent in accordance with educational and qualification characteristics, and, in some cases, to get a working profession from a wide range of professions of a corresponding field. Training is supervised by the scientific and teaching staff of the University and the leading specialists of ERF of NULESU. According to the Rector’s order, they are responsible for training practice programs. The practices are also supervised by the staff of the student practical training educational and scientific center (SPTESC) assisting to carry out the training programs’ tasks.

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**Production training** (technological, operational, engineering, teaching, economic etc.) is taken by undergraduates in bachelor's and master's training programs. The training aims to extend and deepen the skills obtained by the students while studying cycles of special disciplines, which helps the students get new skills required to be able to use their knowledge and skills in production. It also aims at improving professional skills and gathering actual material and data for graduation course papers (EQL "Bachelor" and EQL "Master"). Production training takes place at educational and educational-scientific-production laboratories, ERF of NULESU, as well as at the leading companies and enterprises of Ukraine and other countries according to the contracts signed. Training is supervised by the scientific and teaching staff of the department chairs and top managers of farms, enterprises, organizations and institutions. Moreover, the staff of SPTESC assists in production training at ERF of NULESU.

Scientific and research graduation practice is a final stage of practical training and a preparatory period for writing graduation papers (EQL "Bachelor" and EQL "Master"). Students take it during their last year of studying to generalize and improve their skills, to get professional experience and readiness for further independent work, as well as collect data for graduation papers.

### **Places for student practical training**

Educational, educational-scientific, educational-scientific-production laboratories of the basic institution of NULESU and its separate subdivisions (SS), mainly ERF of the University for labs and classes, as well as training, technological, scientific and research, graduation and other training in Plant Growing, Animal Husbandry, Processing and Storing of Crop Production, Technology for Biodiesel Production, Livestock and Fish Breeding, Methods for Diagnosing and Preventing Animal Diseases, Maintenance Technology, Agricultural Machinery Maintenance and Testing, Forestry, Wood processing, Hunting Industry and its Legal Support, Economics, Accounting, Marketing and Management in agricultural production, etc.

NULESU has its own places for practical training:

2 research stations - SS of NULES of Ukraine "Agronomy Research Station", SS of NULES of Ukraine "Boyarka Forest Research Station" (Kyiv region),

5 educational and research farms - SS of NULES of Ukraine "Velyka Snitynka Training and Research Farmstead named after O.V. Muzichenko", SS of NULES of Ukraine "Training and Research farmstead "Vorzel" and ERF SS of NULES of Ukraine "Nemishayevo Agrotechnical College" (Kyiv region), ERF SS of NULES of Ukraine "Zalishchyky College of Agriculture named after E.Khraplyvyi" and ERF SS of NULES of Ukraine "Nizhyn Agrotechnical Institute" (Chernihiv region);

special places for practical training at regional higher education institution of NULESU of I-II accreditation levels;

Botanic Garden of NULESU.

The total area of agricultural lands under the structures mentioned above is more than 35 000 ha, including approximately 18 000 ha of woods, fields under research, green houses, livestock complexes, automobile and tractor garages, workshops, polygons, manufactories etc.

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The farms of the University are located in different soil and climatic zones of Ukraine – Woodlands, Steppe. The specific features of the practical training places of the University are organization of corresponding departments and their branches, as well as over 80 training-production and training-scientific-production laboratories where the students have laboratory and practical classes, training and production practice, etc.

Bases practical training of students (trainees) of Nulesu is educational, educational-scientific, educational-scientific-production laboratories of basic institution of the University (Kyiv), its subdivisions (OP), and in the first place – NDG University, where he conducted laboratory and practical classes, training, technology, research, undergraduate and other practices in the areas of: crops, livestock, processing and storage of crop production technology of biodiesel production, breeding animals and fish, development of methods of diagnostics and prevention of animal diseases, technology repair, maintenance and testing of agricultural machinery, forestry, wood industry, hunting case and its legal support, Economics, accounting, marketing and management in the sphere of agricultural production.

At **SS of NULES of Ukraine “Agronomy Research Station”**, students study modern technologies for crop production, and take part in raising elite seeds of winter and spring crops, vegetable and fruit elite seedlings. There is a bank of agricultural crop varieties with approximately 300 kinds of wheat, barley, peas, oats, maize, sugar beet, rapeseed, soybeans, potatoes, vegetables, etc. There are also training and production subdivisions of raw processing of crop and livestock products.

There are 5 forestry parks and 2 wood processing manufactures, a botanic garden of the University which has more than 700 kinds of trees and bushes in the structure of **SS of NULES of Ukraine “Boyarka Forestry Research Station”**. These subdivisions of NULESU are perfect training places for the students of the faculties of Forestry and Park, Gardening and Landscape. These students study advanced technologies of forest plantations, forest pests control, forest care, logging and wood processing.

**SS of NULES of Ukraine "Velyka Snitynka Training and Research Farm named after O.V. Muzychenko"** has educational, scientific and production laboratories in crop production and livestock breeding. Wheat, peas, oats, triticale, buckwheat, vetch, sugar beet, rape, maize, potato, vegetables, root crop, annual and perennial grasses are grown there. There is a department of Machinery Testing and Practical Training that provides the agricultural machinery and electrical facilities of the farm with maintenance provided by the students. There are also processing enterprises manufacturing cheese, sausages, pasta and bakery products, and equipped educational laboratories.

The specialization of **SS of NULES of Ukraine "Training and Research farm "Vorzel"** is dairy and meat products. During their training practice, the students study the cycle of breeding aberdeen-angus and Ukrainian black speckled breed of cattle, growing vegetables in greenhouses. Oats, potatoes, vegetables, corn, annual and perennial grasses are grown there.

Training and production practice of the students of **SS of NULES of Ukraine “Berezhany Agrotechnical Institute”** takes place at arboretums “Berezhansky”, “Raivskyi Park”, educational and production station “Garden”, nursery ornamental crops, educational and research laboratories of biogas and biofuel, production workshops.

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At **SS of NULES of Ukraine “Nizhyn Agrotechnical Institute”**, professional practical training is provided by ESF with a laboratory of crop production, a farm with loose boxed cattle keeping and De Laval milking equipment. Barley, pea, oats, maize, rape, annual grasses are grown there.

Agricultural lands, collection and research fields, educational-scientific-production laboratories of mycology, fisheries, livestock, poultry, farm pond (19.6 ha), machine and tractor garage with workshops, operated granaries are the places of the student practical training.

Wheat, oats, potato, vegetables, maize, annual and perennial grasses are grown at **ERF SS of NULES of Ukraine “Nemishayevo Agrotechnical College”**. It also has fish-breeding and fruit processing production units.

ERF of **SS of NULES of Ukraine “Zalishchyky College of Agriculture named after Ye. Khraplivyi”** has a laboratory of ecological expertise, collection and research field, an arch greenhouse for training and production practice of students. Wheat, oats, peas, buckwheat, maize, potato, vegetables are grown there.

**Ukrainian laboratory of quality and safety of agricultural products.** Practical training is carried out for students of (ERI): agrobiological; plant protection, biotechnology and ecology; livestock and aquatic bioresources; veterinary medicine.

The mentioned above ERF are the places where NULESU implements advanced agrotechnologies at the expense of the cooperation with well-known foreign companies: John Deere (the USA), Valtra Valmet (Finland), M&P Farma (Switzerland), ACCO (Denmark), Alfa Laval Agri in Ukraine (Sweden), VUZT (Czech), FML (Germany) that provide the University with advanced technology, equipment, agricultural machinery etc.

The places for student practical training include leading institutions, enterprises, organizations of different ownership in Ukraine and abroad that meet the requirements of the education programs for professional training. The University and ERFs make agreements and draw up passports which are kept in the Academic department and deans' offices. The period of the agreements corresponds the period of a definite practical training or a five-year term.

### **1.7. Teaching and research staff**

About 3 000 of the academic staff ensure the academic process and scientific research at National University of Life and Environmental Sciences of Ukraine.

1372 scientific and pedagogical specialists work in the basic institution of the University (Kyiv). 84 % of them have scientific degrees and academic titles. The average age of the academic staff is 47.

At the request of the Ministry of Education and Science of Ukraine, to simplify the licensing procedure, currently information on all teaching and research staff of the University is fully entered into the Unified State Electronic Database on Education.

Qualitative composition of scientific and pedagogical staff:

- Doctor of Sciences and professors – 270;
  - Candidates of Sciences and associate professors – 890;  
including:
    - Academicians of the NAAS of Ukraine – 11;
    - Academicians of the NAPS of Ukraine – 1;
    - Correspondent Members of the NAS of Ukraine – 3;
    - Correspondent Members of the NAAS of Ukraine – 15;
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Correspondent Members of the NAPS of Ukraine – 1;  
Honored Workers of Science and Technology of Ukraine – 20;  
Honored Workers of Education of Ukraine – 24;  
Honored Workers of Higher School of Ukraine – 1;  
Honored Inventors of Ukraine – 2;  
Honored Workers of Veterinary Medicine of Ukraine – 1;  
Honored Workers of Agriculture – 11;  
Honored Workers of Transport of Ukraine – 1;  
Honored Electrical Engineers – 1;  
Honored Constructors of Ukraine – 1;  
Honored Economists of Ukraine – 4;  
Honored Foresters of Ukraine – 1;  
Honored Journalists of Ukraine – 2;  
Honored Workers of Physical Education and Sports of Ukraine – 1;  
Honored Workers of Culture of Ukraine – 2;  
Honored Artists of Ukraine – 2;  
Honored Coaches of Ukraine – 1;  
People's Artists of Ukraine – 4;  
Masters of Sports of Ukraine – 11.

The scientific and academic staff of a higher qualification take post-graduate and doctoral courses. Currently, 397 postgraduate students (including 111 part-time) and 25 seekers are taking postgraduate programs, 20 candidates are doing doctoral programs.

The work of 20 specialized scientific boards on dissertation defense in 49 specialties of 7 Field of Science, of them 16 specialized scientific boards - for a degree of Doctor of Sciences in 43 specialties. Organized and coordinated by the educational and scientific center of training and attestation of the academic staff of a higher category. The faculty members and postgraduate students submitted and defended 22 dissertations to get a degree of Doctor of Sciences and 53 dissertations to get a degree of Candidate of Sciences in 2019.

In 2019, 23 doctors of sciences joined the academic staff of the University.

### **1.8. Material and Technical Infrastructure**

The basic institution of National University of Life and Environmental Sciences of Ukraine is located in Golosievo, one of the picturesque places of the City of Kyiv.

The university has 17 educational buildings of the basic institution as well as educational, educational-scientific and educational-scientific-production laboratories in separate subdivisions – educational and research farms and research stations – in Kyiv, Chernihiv, Ternopil regions. They have all necessary facilities to provide high quality academic process.

There is a modern scientific library with the fund of 1 000 000 books, 400 000 of which are course books, textbooks and reference-books 610 000 – scientific literature; there are 14 residence buildings providing accommodation for approximately 80% of full time students, a canteen, snack bars, etc. Moreover, the educational and research farms (ERF) and research stations of the University have their own student residence buildings to provide the students doing practical training with accommodation:

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- Agronomy Research Station –100 people,
- Velyka Snitynka Training and Research Farm named after O.V. Muzychenko –110 people,
- Boyarka Forestry Research Station – 120 people,
- Educational and Research Farm "Vorzel" – 75 people.

The sports complex of the basic institution of the University includes a modern open stadium and a building for physical education and sports.

The Ukrainian Laboratory of Quality and Safety of Agricultural Products, the Ukrainian SRI of Agricultural Radiology, the State Research and Project Institute "Conservpromcomplex" (Odessa) and other facilities form the structure of the University.

There are separated subdivisions at NULESU – 11 regional higher educational institutions of I-III accreditation levels in different regions of Ukraine: Berezhany Agrotechnical Institute and Berezhany Agrotechnical College (Ternopil region), Nizhyn Agrotechnical Institute and Nizhyn Agrotechnical College (Chernihiv region), Irpin' College of Economics, Nemishayevo Agrotechnical College, Boyarka College of Ecology and Natural Resources (three institutions are located in Kyiv region), Zalishchyky College of Agriculture named after E.Khraplivyi (Ternopil region), Bobrovytsia College of Economics and Management named after O. Mainova (Chernihiv region), Mukacheve College of Agriculture (Zakarpattia region), Rivne College (Rivne region).

Each institution has its own educational buildings and student residence buildings, some of them having training and research farms, research fields etc.

### **1.9. Information and telecommunication support of the academic process**

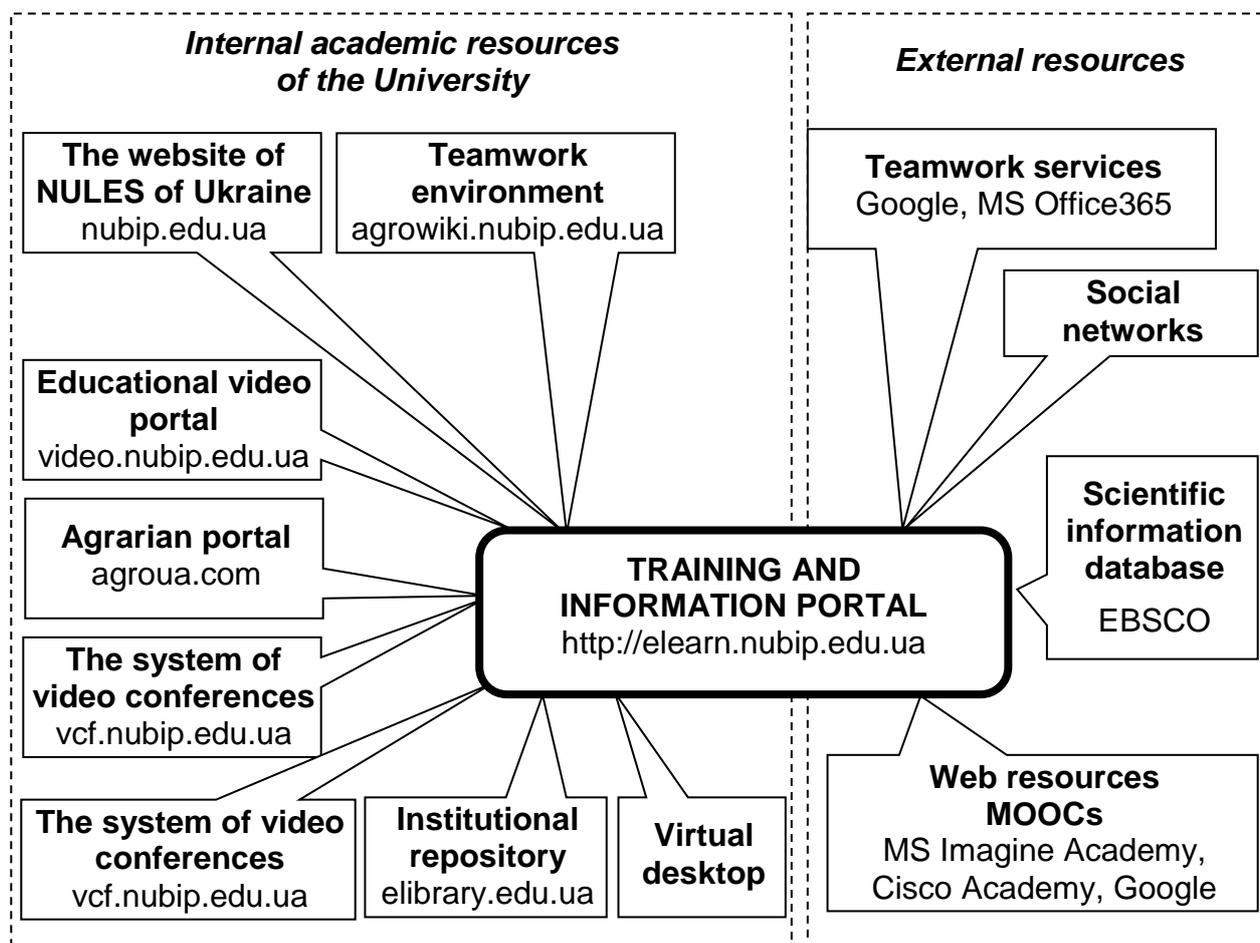
The main objective of the university – to train highly qualified specialists for the agricultural sector with up-to-date computer knowledge and skills. In order to make efficient use of ICT in the educational process, a corporate information-educational environment (IEE) has been organized at NULES of Ukraine. It includes the following components: well-developed computer infrastructure, software platforms, information and educational resources and a system of IEE management. The university educational cluster functions on cloud-based technologies, and is integrated with MS O365 and Google, where the university has corporate accounts and unified state electronic database on education (USEDE). Hybrid cloud-oriented educational environment of the university has internal resources - educational information portal (platform Moodle), institutional repository (ePrints), video portal, video-conferencing system, conference support system, etc., as well as external resources - Google and Microsoft O365 services to organize teamwork, academic portals Microsoft and Cisco etc. (Figure 1).

The University infrastructure provides students with an access to information and educational resources. On average, there is one computer per 3.4 students at the University. By the end of 2015, the university information system had 3000 computers. They are supported by servers with the licensed software, including licensed Microft Enrollment for Education Solutions.

All educational buildings and student residence buildings are connected to the Local Area Network (LAN) with a bandwidth of 1 Gbps in each direction, and there is also a local Wi-Fi network with free access to the Internet.

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A web system LDAP Account Manager is used to administer a unified base of users. The Centre of distance learning technologies provided the Ukrainian localization for this system and integrated it into the unified state education base (USEB).



**Fig. 1. Hybrid cloud-oriented educational environment at NULES of Ukraine**

To support teaching activities in information-educational environment the university makes use of the following software platforms:

Learning and Information Portal ([elearn.nubip.edu.ua](http://elearn.nubip.edu.ua)), which contains e-learning courses (ELC) for students at 13 faculties and 3 educational and research institutes. Each academic discipline is supported by e-course with theoretical material and resources for laboratory and practical work, independent work, formative, interim and final control. University experts have developed a standard structure of ELC, its certification, as well as training system for teaching personnel to develop such e-courses;

electronic dean's office management system;

an electronic archive of scientific and educational materials ([elibrary.nubip.edu.ua](http://elibrary.nubip.edu.ua)), which includes electronic copies of papers of the university lecturers, proceedings of the conferences held at the University, abstracts of theses defended at NULESU, Masters' scientific papers and theses, books and teaching guidelines to support the learning process, description of open e-learning courses, patents;

Wikiportal ([agrowiki.nubip.edu.ua](http://agrowiki.nubip.edu.ua)), where scholars, educators and students place thematic articles on the problems of research, standards (Codex Alimentarius, ISO, JMA, BS), portfolios;

Video Portal ([video.nubip.edu.ua](http://video.nubip.edu.ua)), which houses educational videos, video lectures and other video resources produced at the University and used in training, educational and cultural activities;

Library repository on DSpace platform ;

Web-platform for Internet-conferences at NULES of Ukraine on Openconference basis. Internet-conference address is [econference.nubip.edu.ua](http://econference.nubip.edu.ua);

On-line system UNPLAG to check diploma and course works of students, scientific and educational-methodical literature of NPP to identify plagiarism in the text.

In the field of information and computer training, the University maintains cooperation with Ukrainian and foreign IT companies — IBM, Microsoft, Intel, Cisco, 1C, CyberBionicSystematics etc. There are educational laboratories: «1C competence centre», «Microsoft Imagine Academy», «Cisco Academy». To provide students and faculty access to International full-text publications the university subscribed to Scientometrics EBSCO database.

The university closely cooperates with regional educational institutions using the technologies provided by information and educational environment of NULESU. In particular, the university teachers give video lectures to students at the separated subdivisions: "Mukacheve Agricultural College", "Bobrovytsia College of Economics and Management named after O.Mainova ", "Zalishchyky Agricultural College named after Ye. Khraplyvy ", "Berezhany Agrotechnical Institute ", "Irpın Economic College ", "Nizhyn Agrotechnical Institute". In 2015, during the international conferences held at NULESU, the university provided video support of foreign participants from Poland, Great Britain, the Netherlands etc.

### **1.10. Scientific Library**

Scientific library is a modern scientific, cultural, educational, information center that ensures the implementation of users' needs in obtaining the latest information, at the same time forms the information culture of future specialists who will work in fundamentally new conditions of the information society.

The library fund is diversified; it has more than one million copies of domestic and foreign literature, including rare publications, specialized types of scientific and technical literature and documents (since 1984), abstracts of dissertations (since 1950), dissertations (since 1946), more than 500 names of magazines and more than 50 names of newspapers. The fund is staffed with materials on agriculture and forestry, economics, technology, and related sciences.

Library services for readers are carried out at 8 subscriptions, in 7 reading rooms for 527 places, of which 4 are branch, 1 – universal and 1 – specialized reading room for academic staff, post-graduate students and masters – Reference Room; MBA; library catalogues, including electronic one (more than 206,292 units of records); bibliographic card indexes including personalities (since 1954), a collection of reference and bibliographic publications. Such an extensive library system makes it possible to annually serve all structural divisions of more than 40,000 users per year, including 14,000 students. Book issuance is more than a million copies per year.

The reading room is provided with wireless Internet access. All library resources are available at the University website: <https://nubip.edu.ua>.

Among electronic resources, it should be noted that the digital library of the NULES of Ukraine, which was created in November 2019, is available from the Internet and now contains 790 full-text documents, including:

- 150 textbooks and manuals;
  - 117 monographs;
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- 420 abstracts of dissertations;
- 98 digitized rare and valuable publications from the library funds (1795-1932).

An important electronic resource is also an electronic library (from the local network of the University); there are more than 6409 full-text documents (textbooks, manuals, monographs, methodological recommendations).

From January 1, 2017, NULES of Ukraine has opened access to one of the largest science metric databases Web of Science.

Web of Science allows to organize a search by keywords, an individual author and organization (university), while connecting a powerful apparatus for analyzing the results found.

Since November 2017, access to the science metric and universal abstract database SCOPUS of Elsevier publishing house has been open at NULES of Ukraine. Access is provided from the University's local network at <https://www.scopus.com>

SCOPUS database indexes about 22,000 titles of various publications (including 55 Ukrainian) from more than 5,000 publishers.

SCOPUS provides its users with the opportunity to get thematic search results from one platform with a convenient interface, track their rating in SCOPUS (citing one's own publications, Hirsch index) and more.

**User service** for scientific, educational, and artistic literature is carried out at 8 subscriptions and 7 reading halls of the central library and branches of the library in educational buildings No. 1, 6, 10, 11, 12.

In 2019 the number of readers for one registration account amounted to 15517 persons, which issued 1005248 copies of documents.

**Mass and educational work.** In the framework of classes on information culture, a library quest was introduced, during which students got acquainted with the location of library departments and reading rooms. Each group of students was divided into two teams and received separate tasks. In the process of completing assignments and searching for clues, students visited each department of the library, gained skills in working with classical library catalogs, and learned about the location of subscriptions and reading halls. The goal of the quest was to make statements about libraries and reading. Winners received nice gifts. A total of 41 lessons were held.

In November 2019, the library organized the meeting of students with a modern Ukrainian writer Maks Kidruk within the framework of his all-Ukrainian tour presentation of the new novel "Doky Svitlo Ne Zgasne Nazavzhdy" ("Until the Lights Turn Off Forever").

In 2019, for the first time, on World Embroidery Day, a photo zone was equipped in the library and a competition was announced among students and academic staff for the best photo in an embroidered shirt. Winners received incentive prizes.

By 2019, 117 thematic exhibitions were organized at which 2262 documents were presented, and 401 documents were issued from them.

Mass work of the library was aimed at promotion of Ukrainian literature, acquaintance with prominent figures of science and culture, formation of readers' national consciousness, love of the motherland and people, nurturing respect for parents, women-mothers, culture and history, developing high degree speech culture, mastering the Ukrainian language, instilling a respectful attitude to culture, customs, traditions of the Ukrainian people, law-abiding attitude to the Constitution, legislation of Ukraine, respect for state symbols.

Thematic and other cultural events are organized in the library branches and departments. Mass work is aimed at promoting the books, covering the main dates and events in the life of the country, promoting the folk traditions of the Ukrainian people, promoting native literature and language. Native language is not just a means of communication, not only a source of information, but the life of society and the most important means of patriotic education of youth, as it is considered one of the main tasks

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of expanding students' acquaintance with the work and the library fund and providing them with the necessary information.

In general, in 2018, the total number of information events (reader conferences, debates, bibliographic reviews, thematic exhibitions) amounted to 184.

**Reference and bibliographic and information services** for users were conducted based on plans of research and educational work of the university and according to collective and individual applications received during the year.

For information and bibliographic support of basic research and applied developments in the field of topical issues of agricultural science and education, namely:

- environmental problems of Ukraine;
- economic development of agriculture of Ukraine;
- problems of feeding, cultivation, and treatment of agriculture animals;
- technologies and ecology of growing individual crops;
- methodologies of higher education

4 thematic bibliographic indexes and 6 thematic lists have been prepared.

For the anniversary of the University, a retrospective bibliographic index "Systematic index of dissertations available in the scientific library of the National University of Life and Environmental Sciences of Ukraine" (1939-2018) has been compiled in the amount of 5812 titles of documents.

According to the topics of master's theses, 8 thematic lists were prepared.

For all categories of users 2 bibliographic and information indexes have been compiled:

- ✓ "Periodicals subscribed by the scientific library for 2019");
- ✓ "Bulletin of new acquisitions of literature of the scientific library for 2018-2019";
- ✓ According to the program "Information culture" classes were held with first and senior students (98 hours);
- ✓ During the year, consultations were provided to bachelors, masters, graduate students, instructors:
  - ✓ - consultations on the methodology of information retrieval in science metric and universal abstract databases SCOPUS and Web of Science (WoS);
  - ✓ - consultations on the methodology of information retrieval in the EBSCO international database;
  - ✓ - consultations on drawing up the list of the used literature, the list of references according to GOST 71-2006 and DSTU 8302: 2015 "Bibliographic reference" to bachelor's, master's, candidate's works.
- ✓ During the year, according to the tables of UDC and BBK, indexation of scientific works of scientific and pedagogical workers, articles, abstracts to conferences of bachelors and masters was carried out. Master's theses were indexed according to orders received from the deans' offices.
- ✓ In 2019, a total of 4389 titles of all printed products were indexed according to UDC tables. Of these, 1,297 UDC indexes were sent by e-mail; according to the tables of BBK 450 titles of documents and the author's mark on monographs, textbooks, manuals were defined.

**Acquisition and accounting of funds.** Replenishment of the funds of the scientific library of NULES of Ukraine with educational and methodical literature and periodicals is carried out based on orders from the departments of faculties and institutes of the university. During 2019, the scientific library received a total of 6781 copies of new documents, and the general fund on 01.01.2020 has 1031889 copies of documents.

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In 2019, library staff took an active part in library seminars. Thus, in particular, the library staff participated in the following events:

- ✓ Training and methodological seminar "Effective use of science metric databases of the EBSCO HOST platform in research activities", Kyiv, March 12, 2019;
- ✓ International scientific-practical conference "Taras Shevchenko's phenomenon: linguistic, historical and socio-philosophical aspects", Kyiv, March 12, 2019;
- ✓ Educational and methodical seminar "Development of native scientific journals in order to promote them in international science metric databases", Kyiv, March 19, 2019;
- ✓ International Conference "Academic integrity: practical dimension", Kyiv. April 11-12, 2019;
- ✓ Scientific-practical conference "Modern trends in the development of the library in the structure of the information process and scientific activities of the Free Economic Zone", Chernihiv, April 23-24, 2019;
- ✓ Presentation of dictionaries of the Ukrainian language of the Shot renaissance era, Kyiv, April 24, 2019;
- ✓ Seminar-presentation "Formation of academic integrity in a modern university", Kyiv, May 15, 2019;
- ✓ International Conference on science metric and bibliometrics, Kyiv, June 4, 2019;
- ✓ International Conference "Scientific evolution of research in the library and information noosphere", Odessa, June 19-21, 2019;
- ✓ Workshop "Search and evaluation of international cooperation and grants with the help of Web of Science Group tools", Kyiv, September 12, 2019;
- ✓ XVIII International scientific-practical conference "Development of an information society: resources and technologies", Kyiv, September 19-20, 2019;
- ✓ Scientific-practical seminar "Educational mission of the modern library of an agricultural institution of higher education", Zalishchyky, September 25-26, 2019;
- ✓ All-Ukrainian scientific-practical conference "Library and information environment as a driver of changes and educational innovations", Kharkiv, October 24-25, 2019.

***Informatization of library and bibliographic processes.*** In 2019-2020, several organizational and technological measures were taken in the direction of informatization of library and bibliographic processes:

- filling of electronic catalog databases was continued;
- use of bar code-based technologies was continued;
- the process of automated book publishing on the subscription service of scientific and fiction literature has started;
- work was carried out to ensure access to full-text documents hosted on the servers of the university and the library;
- the formation and use of the database of users of the scientific library for automated book publishing was continued;
- collection of data on the use of electronic resources by readers of the scientific library of NULES of Ukraine, the university and world information resources were continued;
- users have access to the resources of the NULES network of Ukraine (website, admin-portal, e-mail, departmental servers), and the world, including electronic catalog of the library through the web interface, bibliographic indexes, resources for access to full-text scientific publications and bibliographic databases;
- information on the University portal on the library page was constantly updated ([nubip.edu.ua/structure/library](http://nubip.edu.ua/structure/library));

- information content of the scientific library page on the social network Facebook ([www.facebook.com/nbnubib.ua](http://www.facebook.com/nbnubib.ua)) was regularly updated.
- the filling of the electronic library of NULES of Ukraine with publications of scientific and educational works of instructors and employees of NULES of Ukraine was continued. Among them - textbooks and manuals, teaching materials for practical and laboratory classes, abstracts of dissertations, monographs;
- a digital library of NULES of Ukraine was created on the open software Space, which will house publications of research and teaching staff of the university according to the concluded copyright agreements, abstracts of dissertations, digitized rare and valuable publications, articles and conference abstracts;
- reference and information service of users was carried out in the mode of electronic consultation, with the help of the package application to WEB-IRBIS, service "Ask the librarian" (Virtual help);
- consultations were provided to the staff of the scientific library and libraries of separate subdivisions of NULES of Ukraine on the issues of automation of library processes and use of AIBS "IRBIS-64";
- library staff participated in training seminars and training on the use of ABIS and automation of library processes.

### **1.11. Educational, sports and social work**

TSC of educational work and social development organizes and coordinates the educational work of the university together with the departments of military training, cultural sciences, physical education, humanitarian direction, student self-government bodies.

The work of the Council for the organization of educational activities at the university has been initiated to coordinate and conduct high-quality university activities and educational work in the basic educational institution and separate departments. The "Student Education Program "Citizen, Patriot, Specialist" and a comprehensive plan of educational work for the period 2020-2025 have been developed. On its basis the Concept of national education of student youth in NULES of Ukraine and the Concept of educational work of NULES of Ukraine have been developed and implemented.

The work of the Museum of the History of NULES of Ukraine to the 120th University has been restored. 3D-virtual tours of the museum and the territory of the educational buildings, the Emblem Hall of the University have been launched.

The university has 5 art studios, 10 creative teams, 5 of them having the honorary title of "folk amateur" (3 were received last year). Traditional events held annually remain unchanged, namely: University Day "Knowledge Day", competition for the best song group "Song battles", International Student day, "Beauty of NULES of Ukraine", International festival of artistic creativity "Holosiivska Vesna", "University day", etc.

But TSC of EW and SD introduces and conducts new ones, among them: the university project "School of leadership of NULES of Ukraine" was launched and the first graduation was made, the chess club "Chess king of NULES of Ukraine" was created, as well as the military sports competitions "Patriot of NULES of Ukraine", military sports competitions on fire training "Sniper of NULES of Ukraine", competition for the best intellectual group using the test to determine the IQ level, track and field relay "Holosiivske kiltse", competition for "University day" for the best sports group, sports contest among residents of dormitories in new sports, such as paintball, floor push-ups, squats, rolling pins, volleyball on the ground, accurate shots on goalposts from a distance and many others.

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TSC of educational work and social development together with the department of pedagogy organizes scientific and methodological seminars for mentors of academic groups of the first year of study, which allow to carry out activities, apply pedagogical influences and techniques aimed at forming the student body and group.

According to the order of the Ministry of Family, Youth and Sports of Ukraine, the Ministry of Education and Science of Ukraine, the Ministry of Defense of Ukraine, the Ministry of Culture and Tourism of Ukraine dated 27.10.2009 № 3754/981/538/49 "On the Concept of national-patriotic education of youth" at the department of military training the military-patriotic education of students and pupils of educational institutions was carried out both during classes and outside the classroom during the morning examination.

The department of military training traditionally holds events aimed at forming personal responsibility for the defense of the motherland, education in the best military and labor traditions of the Ukrainian people, rituals of dedication to cadets, ceremonial presentation of junior lieutenant's shoulder straps, and events on the occasion of Defender of Ukraine Day, the Day of the Armed Forces of Ukraine, Victory Day. Much attention is paid to promoting the heroic history of the Ukrainian people and the Armed Forces, acquainting students with the history of the university, with the participation of its staff and students in heroic events, regular meetings with participants (ATO) JFO, soldiers of the Armed Forces of Ukraine (graduates of the university and the department of military training) and the participants of World War II, explaining to students the purpose of the military bloc (NATO).

With the assistance of the TSC, a sports competition "UNI-sportman" has been launched among employees and students of NULES of Ukraine, where participants compete in 15 sports. The national teams of the university on rope pulling (tug of war), powerlifting, and arm wrestling have been created and function effectively.

There is also a permanent commission to monitor compliance with the Rules of procedure in the dormitories of NULES of Ukraine.

Physical culture and sports work in NULES of Ukraine is carried out by the staff of the department of physical education, together with the Student organization of NULES of Ukraine, the trade union of NULES of Ukraine under the leadership of TSC of educational work and social development, by involving students, researchers and university staff in physical education, mass sports and sports of the highest achievements.

Every year there are sports contests among students of faculties (TSI) in 16 sports, residents of dormitories in 12 sports, "Zdorovya (Health)" among researchers, research and teaching staff and employees of structural units in 6 sports, athletics relay among students "Zolota osin (Golden Autumn)". There are also intra-faculty competitions in football, mini-football, park volleyball, table tennis, chess, and checkers.

The national teams of the university and individual athletes take part in competitions of various levels: district, city, national, international and have repeatedly won award winning places.

To maintain the physical culture and health of young people in 2012, an outdoor mini-football field with artificial turf was built. In 2017-2018, a large-scale renovation of the educational building № 9 was carried out, which houses the department of physical education of the university, reconstruction of the open volleyball court, stadium, etc. In 2020, an outdoor playground for mini-football and volleyball with artificial turf has been built near the second and tenth dormitories on the university campus. Reconstruction of the new building for 4 gyms for the department of physical education based on the former old hangar has begun.

Dormitories have no less important influence on the education of students, creating a basis for the development of the personalities of the future qualified specialists, the owners of their land, a comprehensively developed and harmonious personalities. Every year the quality of living conditions in the dormitories of NULES of Ukraine is improving.

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The rector's office has purchased and installed hot water boilers in each dormitory, purchased new furniture for the rooms, living rooms equipped with hard and soft equipment, created conditions for self-study: there are reading rooms with free Internet access, educational and cultural and mass work. Self-service laundries are available in almost all dormitories. There are sports rooms in the dormitories for sports. Reconstruction of the volleyball court in front of the dormitory № 6, children's playground near the dormitory № 12, and equipped sports grounds near the dormitories №1, 2, 6, 8, 10, 11 and a modern hall for martial arts (students who are part of the university guard), dormitory № 4 is underway. Equipping and arranging of the student Campus has been started.

A joint dormitory council has been created and elected. Student faculty organizations and research institutes and student dormitory councils have meeting rooms. It has become a tradition every year to hold a review-competition for the best dormitory to identify the best mechanisms for organizing living conditions, education and recreation of students.

### **1.12. Reserve Officers Training**

Reserve officers training is provided by the department of military training of National University of Life and Environmental Sciences of Ukraine.

The department of military training of NULES of Ukraine was created in 1926, when the position of a military leader appeared in the Kiev State Veterinary and Zootechnical Institute by the order № 33111 of the Military educational institutions from 11.05.1926.

Since 1999, the head of the department of military training is colonel A.A. Yesaulov.

Currently, the Department of Military Training trains students in six military specialties:

- Military use of mechanized formations and units;
- Military use of armoured units, military units;
- Use of vehicle formations and units;
- Maintenance and repair of machines of armoured vehicles;
- Maintenance and repair of electrical and special equipment and automation of armoured vehicles;
- Radiology and veterinary toxicology.

Today, 674 citizens of Ukraine do the training course of reserve officers at the department of military training.

Besides, the department provides training of regular officers for Armed Forces of Ukraine and other military formations in speciality "Veterinary medicine", specialization "Veterinary medicine".

The main tasks of the department of military training of NULES of Ukraine are:

- training and advanced training of specialists of different educational and qualification levels for military service under the contract in Armed Forces of Ukraine and other military formations;
  - military training of students of higher educational institutions according to the reserve officers program;
  - military patriotic education;
  - improvement of teaching and material resources.
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The Department of Military Training has highly qualified specialists, among them there are veterans.

To achieve its objectives the department conducts training and methodological work, as well as research and scientific-technological activities. The training process consists of lectures, laboratory, tactical, practical classes and seminars, group exercises, tactical training, etc.

Teaching and methodological meetings, scientific conferences and seminars, demonstrations and open classes, pedagogical experiments are regularly held.

Military training department has various educational facilities, including shooting range; computer lab equipped with modern teaching aids (interactive whiteboards, multimedia systems); rooms for tactical, fire and technical training; maintenance station, field veterinary laboratory; library; marching parade, tactical town.

Weapons and military equipment are widely used for training of students and cadets. These are armored vehicles (tanks T-64B, BMP-1, BMP-2, BTR-80), automotive vehicles (UAZ-3151-01, ZIL-130 GAZ- 66, ZIL-131), engineering equipment (mine detectors, training mines), communication means (radios 105m P-and R-123M, tank intercom R-124), battle and training hand firearms. (AK-74M, Machine Guns RPK-74M, PKM and PKT grenade launchers AGS-17 and RPG-7V, pistols PM, SVD sniper rifles, small-caliber rifles and pistols).

Students are trained for 2 years and complete the course with military training session. During the training session students are engaged in physical training, get practical skills in driving tanks and infantry fighting vehicles, repair and maintenance of armored vehicles and do the course of firing with hand firearms.

The department of military training of NULES of Ukraine has all necessary conditions to achieve its objectives.

In 2019, the university graduated 244 reserve officers.

Now the department trains:

- First year of study – 290 students;
- Second year of study - 274 students.

### **1.13. International mobility**

***International mobility*** is a process of integration in the field of education that provides an opportunity for students, postgraduates, teaching staff to participate in diverse academic or research programs. The main objectives of these programs are to improve the quality of education, to develop cross-cultural exchange, train future qualified specialists. Participation in mobility programs gives a student the opportunity to receive a quality European education in their chosen specialty, to broaden their knowledge in all fields at of European culture, to feel like a citizen of Europe.

International mobility in NULES of Ukraine is one of the main areas of international activity, which offers its students the exceptional opportunities to obtain quality education, do research or internship, and get experience abroad in the framework of international cooperation. Developing the mobility through the implementation of the mechanism of student exchange and participation in the dual diploma programs, individual grants, the University participates in the processes of internationalization and globalization, develops

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the training of professionals, highly qualified specialists; supports the social, economic, cultural, political relations and ties with other countries.

Today, motivated students of our University can get the experience in conditions of different system of higher education. Cooperation is based on agreements between NULES of Ukraine and foreign higher educational institutions in different countries according to agreed and approved individual educational plans of students and programs of academic disciplines, and in the framework of intergovernmental agreements on cooperation in the field of education.

Fruitful cooperation with leading universities of the world facilitated the reformation and adaptation of education system of NULES of Ukraine to the requirements of leading universities in the world. The two universities of the United States (State of Iowa – 1996, 2011, 2014 and State of Louisiana – 1998, 2009), University of Ghent (Belgium, 2002) and the University. Humboldt (Germany, 2002) have recognized education system of NULES of Ukraine as corresponding to their requirements.

During period from 2005-2019 memorandums were signed about the possibility of obtaining the double diploma between NULES of Ukraine and universities-partners:

- "International bio-business" in Tokyo agricultural University (Japan);
- Master of Business Administration in Agriculture (MBA) at the University of applied sciences Weihenstephan – Triesdorf (Germany);
- Master of Food and Agribusiness (MFA) at the University of applied Sciences Anhalt (Germany);
- Energy and automation of biological systems" at Warsaw University of life Sciences (Poland).
- «Ecology», «Social pedagogy» - Pomeranian university in Slupsk;
- «Economics and management» - Slovakia agrarian university, Nitra;
- «Quality and safety of products», «Management» and «Computer technologies» – Academy of business (Dombrova Gurnica, Poland).

There are agreements between the mentioned universities and NULES of Ukraine according to exchange of scientific pedagogical and pedagogical staff and students.

### **Main International Projects (Programs)**

ERASMUS+ - is the European Union Programme for 2014-2020 to support projects, partnerships, events and mobility in the areas of education, training, youth and sport (signed 16 agreements);

Project QANTUS -"Qualifications measures in the field of natural sciences in Ukrainian universities";

Project "System of differentiated forest management in forest ecosystems in the Ukrainian Carpathians, Czech Republic – Ukraine";

Innovative research project "Decreasing risks of catastrophic fires in the exclusion zone";

Regional Project of technical cooperation MAGATE "Radiological Support for the Rehabilitation of the Areas Affected by the Chernobyl Nuclear Power Plant Accident";

Project for the development of grain warehouses and agricultural cooperatives of Ukraine, SOCODEVI;

"Use of natural waterpots to extinguish forest fires with apply of new technologies";

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COMET "Coordination and implementation of Pan-European instrument for Radioecology", project of the European Commission FP7;

"Ecological law", "Food safety control in the EU", project "Erasmus +", Jean Monet direction;

"Biofuel production from new biomass sources";

Program of academic exchanges MELVANA.

Every year in NULES of Ukraine:

- **about 200 students** train and do internship at overseas universities;
- **about 500 students** have practical training at the leading agricultural enterprises in different countries;

- **more 200 lecturers** do internship in foreign institutions train, establish cooperation and represent the university in international events.

### 1.14. Student self-governing

There is a Student Organization at the National University of Life and Environmental Sciences of Ukraine which is actively developing. Its activities focus on the organization and consolidation of the students, protection of rights and legitimate interests of students, developing leadership skills, creative abilities by organizing their leisure and the activities of the hobby clubs.

Hobby clubs and centers of the Student organization:

- Tourist club;
- Scientific club;
- Social center;
- Fan club of the university sports teams;
- University guard.
- ART-HUB Holosiiv is a separate area.

Student organization collaborates with many organizations and agencies. Students are members of Student Council under the auspices of the head of Holosiivskyi district of Kyiv city administration, the Student Council of Kyiv. Collaboration with the student councils of other universities makes it possible to find new perspectives, to carry out joint activities and to implement projects.

### 1.15. Areas of graduates' employment

According to state regulatory documents of Ukraine graduates of higher educational institutions of environmental, biological, technical, agricultural areas, who have received a degree of **bachelor**, are provided with areas of employment, depending on the field of study (specialty) for positions of technicians, engineers, foresters, forestry engineers, economists, accountants, agronomists, doctors of veterinary medicine, specialists, etc. in industries of agriculture, forestry and fisheries, veterinary services, processing industry, energy, technical services, engineering; public administration, commerce.

Employment of graduates of the National University of life and environmental Sciences of Ukraine is carried out in the agricultural enterprises of different forms of ownership, fisheries, meat and fish processing enterprises, state agricultural and land inspection agencies, environmental companies, the central executive authorities in the

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sectors of agriculture and land resources and their territorial subdivisions, the state quarantine service, state reserves, nature reserves, regional and district agricultural agencies, state veterinary medicine institution, private clinics of veterinary medicine, state forestry, forest hunting and hunting enterprises, zoological parks, institutions of natural reserve fund, public and commercial woodworking and furniture enterprises, public housing companies, trusts engaged in landscaping of green spaces, private firms on gardening and landscape design, landscape design offices, joint ventures and subsidiaries of international firms etc.

Graduates of NULES of Ukraine can also continue their education in the basic institution of the University (Kyiv) and SS of NULES of Ukraine “Berezhany agrotechnical institute” in the specialties and specializations of master's programs given in table 1.2 in the part "Specialties for Bachelor's degree" of this Catalog.

## **2. Bachelor's Degree Programs**

### **2.1. General Regulations**

### **2.2. Agrobiolology Faculty**

201 Agronomy

203 Horticulture and Viticulture

### **2.3. Faculty of Plant Protection, Biotechnology and Ecology**

202 Plant Protection and Plant Quarantine

162 Biotechnology and Bioengineering

101 Ecology

### **2.4. Faculty Livestock Science and Water Bioresources**

207 Water Bioresources and Aquaculture

204 Technology of production and processing of livestock products

### **2.5. Education and Research Institute of Forestry and Garden-Park Management**

205 Forestry Management

206 Park and Gardening Management

187 Woodworking and Furniture Technologies

### **2.6. Faculty of Veterinary Medicine**

211 Veterinary Medicine

### **2.7. Faculty of Alimentary Technologies and Managing of Quality of Productes of Agricultural Sector of Economy**

181 Food Technologies

229 Public Health

### **2.8. Faculty of Mekhaniks-Technology**

208 Agroengineering

211 Transport Technologies (on Motor Transport)

### **2.9. Faculty of Construction and Design**

133 Sectoral engineering

192 Construction and Civil Engineering

### **2.10. Education and Research Institute of Energetics, Automatics and Energy Saving**

141 Power Engineering, Electrical Engineering and Electrical Mechanics

144 Heat power engineering

151 Automation and Computer Integrated Technologies

### **2.11. Faculty of Land Management**

193 Geodesy and Land Management

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**2.12. Law Faculty**

081 Law

**2.13. Economic Faculty**

051 Economics

072 Finance, Banking and Insurance

071 Accounting and Taxation

076 Entrepreneurship, Trade and Exchange Activities

**2.14. Faculty of Agrarian Management**

075 Marketing

073 Management

**2.15. Faculty of Information Technology**

051 Economy (Educational program «Economic Cybernetics»)

051 Economy (Educational program "Digital Economy")

121 Software Engineering

122 Computer Science

123 Computer Engineering

125 Cybersecret

**2.16. Humanitarian Pedagogical Faculty**

231 Social Work

035.04 Philology (Germanic languages and literature (Including translation), first – German language)

035.01 Philology (Germanic languages and literature (Including translation), first – English language)

291 International relations, social communications and regional studies

015 Professional Education

053 Psychology

061 Journalism

017 Physical Education and Sports

**2.17. Education and Research Institute of Continuous Education and Tourism**

242 Tourism

241 Hotel-restaurant business

281 Public Management and Administration

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## 2.1. General Regulations

In the curricula for bachelors, the components of educational and professional programs (EPP) are structured according to the following constituent parts:

1. Cycle of general training.
2. Cycle of special (professional) training.

In the curriculum, the volumes of the EPP components are distributed as follows:

- **Compulsory components** - 60% of the total student workload (their list, scope and forms of certification are determined by the standard of higher education, in accordance with the requirements of the Ministry of Education and Science of Ukraine within a relevant specialty);

- **Compulsory components by the decision of the Academic Council of the University** - 15% of the total student workload (their list, forms of study (classroom or independent) and certification are determined by the Academic Council of the university). Such components are studied by the bachelor students of the I-II years of study;

- **Optional components** - not less than 25% of the total student workload. Such components are studied by undergraduate bachelor students of the III-IV years of study.

Optional components are divided into:

- components of free choice in the specialty (educational program);
- components of free choice according to students' preferences.

The list of free choice disciplines in the specialty is formed by the departments of faculties (ERI) and their volume in ECTS credits makes for the students with:

- 4-year term of study - 54 credits;
- 3-year term of study - 45 credits;
- 2-year term of study - 30 credits.

The list of disciplines of free choice in the specialty (educational program) with their annotations is posted (updated) on the website of the faculty or ERI until November 1 of the current year and on the educational information portal of NULES of Ukraine (<https://elearn.nubip.edu.ua/>) on page of the relevant faculty or ERI.

The organization of the choice of disciplines for the next course of study is provided by the deans of faculties and ERI directorates in the previous course of study until December 1 in paper form or on the educational information portal of NULES of Ukraine according to the instructions on the page of the faculty or ERI.

The list of disciplines of free choice according to the preferences of students is formed by the educational department at the request of faculties and research institutes. In the curriculum, their volume is 6 ECTS credits (two disciplines of 3 ECTS credits each).

The list of Optional disciplines to the liking of students ("Selective courses") with their annotations is posted (updated) on the website of NULES of Ukraine (<https://nubip.edu.ua/>) in the section "Educational work", subsection "Organization of the educational process", subsection "Student" and on the educational and information portal of NULES of Ukraine according to the instructions on the page of the relevant faculty or TSI until November 1 of the current year.

In 2020-2021 academic year 107 optional disciplines have been formed; from their list each student chooses **any two disciplines** to his/her liking.

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The Compulsory components EPP by the decision of the Academic Council of the university" include those that are studied by students in all specialties of the bachelor's degree:

***History of Ukrainian Statehood, Ethnocultural, Philosophy, Ukrainian language for professional purposes, Foreign language, Physical education, Safety of labor and vital activity, Legal culture of a personality, Crop production technologies, Animal husbandry technologies, Information technology (in branch), Starting your own business based on business design, Business protocol and communication ethics.***

The following are annotations of these components.

### **Annotations of Compulsory components by decision of the Academic Council of the University**

**History of Ukrainian Statehood.** The content of the educational discipline "History of Ukrainian Statehood" is the study of basic stages of formation and development of statehood on the Ukrainian lands, distinctive state building way of the Ukrainian nation. Building of the independent state needs highly skilled, patriotically inclined, socially oriented professionals able to continue the best traditions of the Ukrainians. The response to these circumstances is the study of this discipline in universities. It will allow to master the theoretical course, creatively apply their knowledge in practice and comprehend their own laws of the state building process, orientate in political life and feel their involvement in the state-thousand-year tradition of the Ukrainian people.

**Ethnocultural.** Content «Ethnocultural» due course need comprehensive development of strategic directions of Ukrainian statehood, achieve, the role and place of Ukrainian culture in the context of foreign culture. In the discipline given meaningful information about the origin of Ukrainian, their spiritual culture, economy, life, family. The realization of economic, social and political reforms require an appropriate level of human and national culture. Only through the mind of the individual, because of its high ethical and patriotic feelings may be real change in Ukrainian society.

**Philosophy.** The course introduces the system of knowledge in such fields of philosophy as ontology, gnoseology (theory of cognition), social philosophy, historical types of philosophy that explain the essence of relation "a human-being – the world" in its most important manifestations. The course is characterized by world outlook orientation which allows to synthesize obtained knowledge of special and humanitarian disciplines in integral conception of the world – theoretical basis of university level of specialists training.

**Ukrainian language for professional purposes.** The objective of the discipline is the improvement of the level of general language training, communicative competencies of students, practical mastering in the principles of stylistics of Ukrainian language that will provide professional communication at proper language level. The discipline is aimed at generalization and systematization of the knowledge in Ukrainian language, to form abilities and skills for optimal language behavior in professional sphere.

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**Foreign language (English, German, French, Spanish).** The course develops communicative competency in students, especially the use of skills, abilities and knowledge of foreign language during business communications with the representatives from other countries specialized in various issues concerned business and labor market in agriculture, preparation to the participation in international conferences, projects and discussions as well as making presentations, business correspondence (formal and informal letters, c.v., various kinds of research articles and reports), in such way contributing into versatile development of student's personality and his/her socialization in a society speaking another language.

**Physical education.** The aim of the discipline is formation of physical culture of junior specialist and the ability to realize it in social and professional training and in family life. The objectives of the discipline are to improve students' health and develop physical abilities in accordance with the professional activity of a future specialist.

**Safety of labor and vital activity.** The aim of study of the discipline that combines such disciplines as «The fundamentals of labor protection» and «Safety of vital activity» is to obtain skills and knowledge for realization of effective professional activity providing optimal control of labor protection at enterprises, to form in students responsibility for personal and collective safety considering risk of anthropogenic emergencies, nature disasters and industrial accidents.

**Legal culture of a personality.** One of the features of a legal state is the high level of legal culture of the citizens characterized by the common respect to the law, sufficient awareness of its norms and the ability to apply them in all life situations. The discipline «Legal culture of a personality» will permit students to develop legal thinking and cultural style of legitimate behavior in everyday life in interpersonal relations as well as in communication with representatives of court and law enforcing authorities.

**Crop production technologies.** Academic discipline "Crop production technologies" involves gaining knowledge about the technically perfect and economically profitable growing of high yields of the best quality agricultural crops. It includes the study of the theoretical basis of modern technologies for the cultivation of crops, technical, energetic, medical plants; the development of technological maps and understanding of the requirements for conducting technological operations for the cultivation of the field crops. It supposes mastering the methods of the state of crops diagnostics in the field through the methods of forecasting and programming of the yields, risks assessment of field crops cultivating as a control system of the production, sale and use of standardized quality of crop production.

**Animal husbandry technologies.** The aim of the discipline is to form students' strong knowledge, skills and abilities of scientifically based technologies of production of livestock products using innovative technologies. The task of the discipline is to provide future specialists with a set of knowledge on the organization of feeding, breeding and reproduction, the keeping of farm animals and the production of products from them.

After studying the discipline, the student has to know: a system of theoretical knowledge related to the production of eco-friendly livestock products, in accordance with legislative acts, standards, standard management decisions, goals of the enterprise. Students should be able to: manage the technological processes of production of livestock products in different economic systems in order to obtain maximum productivity.

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**Information Technology (in branch).** A digital citizen is a modern requirement. Information and data: forms of the presentation and means of processing. Information processes. System maintenance of information processes, software tools for working with structured documents, network technologies, application of the Internet resources and services in the branch. Special software (support of business processes of the chosen branch). Fundamentals of web design, organization of computer security and information security, software tools for working with databases and data warehouses, prospects of the development of information technology. Modern digital communications in the global space. Monitoring and evaluation of digital competencies. Building a self-educating trajectory of a future specialist (non-formal learning). Professional certification in accordance with the professional development of the Microsoft Office Specialist.

**Setting up your own business based on business design.** The aim of the discipline is the formation of knowledge and practical skills to set up own business on the basis of business design. The task of the discipline is to study the theoretical foundations and normative and legal support for setting up own business. The content of the discipline is in the following topics: entrepreneurial activity and its types, administrative and legal forms of entrepreneurship, the mechanism of setting up own business, business planning of entrepreneurial activity, drawing up of investment projects, economic evaluation of technologies, financial and credit support of entrepreneurship and taxing, accounting and reporting in business structures, economic efficiency of business entities.

**Business protocol and communication ethics.** The protocol is called the form of a hierarchical order, demonstrating good manners of the partners from different countries. It is a set of conduct rules, norms and traditions at formal and informal meetings. Even in the ancient times, it was said that the protocol was a sign of friendship. The protocol defines methods, frames, behavior and etiquette.

Etiquette is the game rules called "life". These rules are equal for all, regardless of the age, gender, status. As they dictate not what to do, but how to do it. Communication plays an important role in our life, and its psychological nature is too complicated. In the process of communication, the desired organization and unity of actions of individuals are achieved, intellectual and emotional-sensory interaction is realized among them, a common sense of attitudes and opinions are formed, mutual understanding and coherence of action, cooperation and solidarity are achieved, so team work is impossible without that.

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## 2.2. AGROBIOLOGY FACULTY

**Dean – Oksana Tonha**, Doctor of Agricultural Sciences, Associate professor  
tel.: (044) 527-82-13, E-mail: oksana16095@gmail.com  
Location: Building № 4, room 41<sup>a</sup>

The Faculty organizes and coordinates the educational process of bachelors in specialties:

### **201 Agronomy**

Educational-professional Program «**Agronomy**»

Guarantor of the program – Candidate of Agricultural Sciences, Associate professor  
V.M. Zavgorodniy Tel.: (044) 527-82-13 E-mail: zavgorvlad@gmail.com

Graduating departments:

Plant Growing

Tel.: (044) 527-86-26 E-mail: dep.plant@gmail.com

Head of department – Doctor of Agricultural Sciences, Professor, S. M. Kalenska

Agriculture and Herbology

Tel.: (044) 527-82-14 E-mail: zemlerob1@ukr.net

Head of department – Doctor of Agricultural Sciences, Professor, S. P. Tanchyk

Technologies of Storage, Processing and Standardization of Plant Production named after Professor B. V. Lesyk

Tel.: (044) 527-86-66 E-mail: 1968storage@gmail.com

Head of department – Candidate of Agricultural Sciences, Professor G. I. Podpriatov

Forage production, Melioration and meteorology

Tel.: (044) 527-85-15 E-mail: kafedra-kormovirobnitstvo@ukr.net

Head of department – Doctor of Agricultural Sciences, Professor G. I. Demydas.

Genetics, breeding and seed them. prof. M.O.Zelenskoho

Tel.: (044) 527-86-26 E-mail: breedingdepartment@gmail.com

Head of department – Candidate of Agricultural Sciences, Associate professor O. S. Makarchuk

Agricultural Chemistry and Agricultural Production Quality named after O. I. Dushechkin

Tel.: (044) 527-88-17 E-mail: quality\_chair@mail.ru

Head of department – Doctor of Agricultural Sciences, Professor A. V. Bykin

Soil Science and Soil Protection named after Professor V. I. Shykula

Tel.: (044) 527-81-02 E-mail: grunt\_nubip@ukr.net

Head of department – Doctor of Agricultural Sciences, Professor A. D. Balaev

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### ***203 Horticulture and Viticulture***

Educational-professional Program «**Horticulture and Viticulture**»

Guarantor of the program – Candidate of Agricultural Sciences, Associate professor  
B.M. Mazur Tel.: (044) 527-85-59 E-mail: mazurborism@gmail.com

Graduating departments:

Vegetable Growing and Soil under Cover

Tel.: (044) 527-81-69 E-mail: ovochi.z@i.ua

Head of department – Candidate of Agricultural Sciences, Associate professor I.O.  
Fedosiy

Gardening named after Professor V. L. Symyrenko

Tel.: (044) 527-85-59 E-mail: hortdep@gmail.com

Head of department – Candidate of Agricultural Sciences, Associate professor  
B.M. Mazur

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**Bachelor**  
**field of knowledge "Agricultural science and food"**  
**in specialty "AGRONOMY"**  
**Educational-professional program «Agronomy»**

Form of Training:	Licensed number of persons:
– Full-time	220
– Part-time	90
training period	4 years
Credits	240 ECTS
Language of training	English, Ukrainian
Qualification of graduates	Technologist of Agronomy

### Concept of training

Education Of bachelors from direction is aimed at training professionals able to use adaptive technology for growing and logistics crops, to ensure their economic, energy, economic and environmental efficiency, seed organizing work, agrochemical conduct and maintenance of modern technological processes in the plant, take measures of rational use and restoration of soil fertility.

### Practical training

Students receive practical training in educational research farms of NUBiP Ukraine: NUBiP Ukraine "Agronomic Research Station," "Velykosnitynske educational and research farm named after O.V. Muzychenko," and as well as leading agricultural enterprises of different ownership.

### Proposed Topics for Bachelor theses

- 1.State industrial and business and technology of growing crops in the particular sector.
2. Agroeconomic analysis of the agricultural system and technology of cultivation of field crops in an agricultural enterprise.
3. Technological and product quality crops, depending from factors cultivation, post harvest handling and storage.
4. Ahroekonomichnyy analysis of the feed and cultivation technology of forage crops in the economy.
5. Technology of production of high-quality seeds and the results of the investigation of varieties and hybrids under condition specific farm.
6. Optimize Power and fertilize crops.
7. Power Diagnostics crops and crop quality management.
8. Influence of conservation and soil-protective technologies of cultivation of crops on the properties of soils..
9. Evaluation of soil erosion stability under different systems of tillage and fertilization and development of anti-erosion measures.
10. Technology, organization and the results of the state qualifying examination varieties..

**Academic rights of Graduates:** graduates can apply for Master's Degree Specialties and Educational (Educational-professional or Educational-scientific) programs specified in Table 1.2 Section 1.3 this Catalog.

### **Employment of Graduates**

Place of employment of bachelors include: agricultural enterprises of different ownership, public health centers of quality of soil fertility and of crop production; Ukrainian State pomology inspection, Ukrainian State Seed Inspection, the State Committee for Land Resources, with its vertical in regions and districts, elevator company, state security service soil.

**Bachelor`s Program and Curriculum  
in Specialty «Agronomy»  
Educational-professional program «Agronomy»**

Code n/a	Components of the educational-professional program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits ECTS	The final control
1	2	3	4
<b>1. GENERAL TRAINING CYCLE</b>			
<b>Compulsory components</b>			
CC 1	Botany	6	exam
CC 2	Agrophysics	4	exam
CC 3	Chemistry	10	exam
	(incl. inorganic and analytical organic, physical and colloidal)	6	exam
		4	exam
CC 4	Agroecology basics of radiobiology	4	exam
CC 5	Genetics	4	exam
CC 6	Plant physiology with the fundamentals of biochemistry	4	exam
CC 7	Agrometeorology	4	exam
CC 8	Stockbreeding and beekeeping	4	exam
<b>Total</b>		<b>40</b>	
<b>Compulsory components EPP by decision of the Academic Council of the University</b>			
CCU 1	History of Ukrainian Statehood	4	exam
CCU 2	Philosophy	4	exam
CCU 3	Physical training	4	test
CCU 4	Ukrainian for professional purposes and ethnocultural	7	exam
CCU 5	Foreign language (English, German, French, Spanish)	5	exam
CCU 6	Safety of work and life	4	exam
CCU 7	Legal culture of personality	4	exam
CCU 8	Information technology in the industry	4	exam
<b>Total</b>		<b>36</b>	
<b>2. SPECIAL (PROFESSIONAL) TRAINING CYCLE</b>			
<b>Compulsory components EPP</b>			
CC 9	Soil Science with the bases of geology	7	exam
CC 10	Agricultural Entomology	5	exam
CC 11	Phytopathology	5	exam
CC 12	Farm equipment of agricultural production	6	exam
CC 13	Basic research in agronomy	4	exam
CC 14	Agriculture	9	exam
CC 15	Herbology	4	exam
CC 16	Plant Growing	11	exam
CC 17	Field and meadow fodder	5	exam
CC 18	Agrochemical chemistry	8	exam
CC 19	Fruit-growing	8	exam
CC 20	Vegetable growing	5	exam
CC 21	Breeding and seed growing of crops	8	exam
CC 22	Technology of storage and processing of plant products	7	exam
CC 23	Standardization and management of planting products quality	5	exam
CC 24	Economics and business	5	exam
CC 25	Technologies of Protected Cultivated	5	exam
<b>Total</b>		<b>104</b>	
<b>The total amount of Compulsory components</b>		<b>180</b>	
<b>Optional components EPP</b>			
<b>Optional components by specialty (block 1 «Agronomy»)</b>			
OB 1.1	Agricultural microbiology and virology	6	exam
OB 1.2	Land reclamation	6	test
OB 1.3	Fundamentals of agribusiness and management	4	test
OB 1.4	Biotechnology	4	exam

**CURRICULA AND PROGRAMS OF BACHELOR DEGREE**

OB 1.5	Programming and forecasting crop yields	4	test
OB 1.6	Seed Studies	5	exam
OB 1.7	Technological examination of crop production	6	exam
OB 1.8	The management of the functional value of the crop products	5	exam
OB 1.9	Mathematical and statistical methods of analysis in agronomy	5	exam
OB 1.10	Seasonal phytocenoses	4	test
OB 1.11	Breeding and Seed-growing heterosis hybrids	5	exam
<b>Total</b>		<b>54</b>	
<b>Optional components by specialty (block 2 «Agrochemistry and Soil Science»)</b>			
OB 2.1	Agricultural microbiology and virology	6	exam
OB 2.2	Fundamentals of land management and land cadastre	4	test
OB 2.3	Land reclamation	6	test
OB 2.4	Fundamentals of agribusiness and management	4	test
OB 2.5	Biotechnology	4	exam
OB 2.6	System of the fertilizers application with the basic of the differential fertilizers application	7	exam
OB 2.7	The methodology of the agrochemical investigation with basic of the remote field monitoring	6	exam
OB 2.8	The management of the quality of crop products	5	exam
OB 2.9	Technology of rational land use	4	test
OB 2.10	Soil cartography	4	exam
OB 2.11	Soil conservation	4	exam
<b>Total</b>		<b>54</b>	
<b>Optional components by specialty (block 3 «Selection and Genetics of Agricultural Crops»)</b>			
OB 3.1	Agricultural microbiology and virology	6	exam
OB 3.2	Fundamentals of land management and land cadastre	4	test
OB 3.3	Land reclamation	6	test
OB 3.4	Fundamentals of agribusiness and management	4	test
OB 3.5	Biotechnology	4	exam
OB 3.6	Special genetic field crops	10	exam
OB 3.7	Special breeding and variety studding crops	10	exam
OB 3.8	Seed-growing of the field crops	10	exam
<b>Total</b>		<b>54</b>	
<b>Optional components by Student's Choice</b>			
OS 1	Selective discipline	3	test
OS 2	Selective discipline	3	test
<b>Total</b>		<b>6</b>	
<b>The total amount of Optional components</b>		<b>60</b>	
<b>3. OTHER TYPES OF TRAINING</b>			
CC 26	Military training course	29	
CC 27	Academic Practice	23	
CC 28	Production Practice	5	
CC 29	Bachelor Thesis writing (Graduate thesis or Project)	4	
<b>THE TOTAL AMOUNT OF EPP (without military training)</b>		<b>240</b>	

## Annotations of Components in the curriculum

### 1. GENERAL TRAINING CYCLE

#### Compulsory components EPP

**Botany.** The aim of the course is learning patterns of plants and vegetation as an essential component of bioenergy biosphere. As a result, the study of botany student has to learn self-study method with a microscope, the self-production of medicines and analysis of the cellular and tissue level and at the level of individual organs and the whole organism, which is of great cognitive and practical importance. Therefore, the importance given to the organization and conduct summer field practical training during which students independently collect and plants, conduct research geobotanical certain types of vegetation, which is the final stage of study and analysis of the current state of vegetation, studied ways to improve forecasting of natural plant communities. The aim of the course is also a botany student mastery of botanical knowledge, botanical terminology necessary for conscious and competent study of other related disciplines that form the professional agricultural training profile.

**Argophysic.** The course is studied the physical, physico-chemical and biophysical processes in the system "soil-plant-active layer of the atmosphere," the basic laws process developed scientific basis, methods, means and ahrozahody rational use of natural resources. During the study abiotic factors of productivity of plants, such as moisture, heat, air, food, soil located in the column and describe their effects on plant growth and development, apply classical laws of physics. Argophysic explores the physical processes in the soil, plants and atmosphere, develop physical models, schema specifies relationships between the main components.

**Chemistry.** The program includes theoretical principles of modern inorganic chemistry and peculiarities of chemistry of biogenic elements such as Hydrogen, Halogens, Oxygen, Sulfur, Nitrogen, Fluorine, Carbon, metals. The chemical processes involving these elements and their compounds are considered from the standpoint of electrolytic dissociation, hydrolysis, redox processes and possibility of forming complex compounds. The basic classes of inorganic compounds: oxides, hydroxides, acids, salts are discussed. The analytical module includes the basics of qualitative and quantitative chemical analysis. Discusses quantitative methods of gravimetry, acid-base titration, redoxometry, complexometry. During the study of physical and colloid chemistry deals with the issues of thermodynamics, thermochemistry, theory of solutions, chemical kinetics and catalysis, the main provisions related to highly dispersed state of matter, surface phenomena and adsorption. The nomenclature, being in nature, the role in the living organism, structure, laboratory and industrial methods of obtaining, chemical properties of the main classes of organic compounds: alkanes, alkenes, alkadienes, alkines, cycloalkanes, aromatic compounds, terpenes, and halogen derivatives, alcohols, phenols, aldehydes and ketones, carboxylic acids and their esters, anhydrides and halogenate, amines and amides, carbohydrates, amino acids and proteins, nucleic acids are studied in the course of organic chemistry.

**Agroecology.** Actuality of its study consists in that in the process of studies students meet with basic problems which exists in agrosphere. The main aspects are studying belongs acquaintance with the harmful action of pesticides, contamination of environment, as result of mineral fertilizers application, and agricultural produce - by nitrates. The special attention is devoted the degradation processes of soils: humus damages, wind and water erosion, undepressed. Questions are also consider in relation to the alternative ways of support of agriculture, bringing of organic; fertilizers and biological protection of plants, soil protection cultivation till and general ecological situation, in agro landscapes.

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**Genetics.** Discipline envisages the acquaintance of students with the basic divisions of genetics modern knowledge. Includes next divisions: bases of molecular genetics, structure and functions of proteins, nucleic acids and chromosomes, mechanisms of expression of genetic information, structure of genome, cytogenetic aspects of inheritance of genes, changeability, her reasons and consequences, features of reproduction of plant organisms, basis of population genetics, some problems of the applied genetics. Discipline envisages listening of course of lectures, conducting of practical employments and solutioning of tasks from all basic subdivisions from molecular biology to the population genetic.

**Plant physiology with the fundamentals of biochemistry.** Discipline is one of the basic disciplines in the training of specialists in "Agronomy". Discipline involves studying the functions of plant organism and the laws of its life. The role of the discipline is to provide future specialist deep and comprehensive knowledge of the biology of the plant cell, water regime of plant organism, mechanisms of respiration and photosynthesis, mineral nutrition, plant growth and development, adaptation and mechanisms of resistance to adverse environmental factors. Acquired knowledge of plant physiology will allow future specialists in the area of agriculture practice to implement the latest achievements of science, have scientific and professional approach to technologies in crop growing and to independently develop and adjust agronomic activities by understanding the physiological processes of plant organism. The study of the chemical composition, structure, transformation of substances and energy that occur in plants. Patterns of occurrence and the relationship between the various metabolic pathways principles of regulation in plant cells. Establishing patterns of metabolism major classes of organic compounds - carbohydrates, proteins, fats, vitamins, etc., to create conditions for crops that provide the largest amount of receiving substance.

**Agrometeorology.** The course covers a wide range of topics regarding the effects of weather and climate on the agricultural productivity. The main focus of the training discipline is on the modern methods used for agrometeorological assessment of the climate, microclimate and weather. Specifically, such issues as agro-climatic zoning, modern technics for agrometeorological measurements/observations and forecasting methodologies are considered in details due to their key importance for agricultural management. Besides, the attention is also addressed to the extreme weather events, which might have negative influence on the agriculture plants, and the methods for their mitigation. Finally, the importance of the meteorological and climatological information to enhance or expand agricultural crops is discussed.

**Stockbreeding and beekeeping.** The program stipulates studying a condition of the basic ways of development of animal industries at the present stage in Ukraine and the advanced countries of the world, biological bases of cultivation and feeding of agricultural animals, and also "know-how" production animal industries in conditions of an intensification of an agricultural production in economy of different patterns of ownership, finding of habits of an estimation of the ex-terrier, the constitution of animal different kinds of productivity, and also definition of norms of feeding and drawing up of diets for separate kinds of agricultural animals. Study module "Beekeeping" required to get the students knowledge on plants honey and pollination of crops by bees. Expected learning products plants collected bees for their power and provide a marketable product. Served as melliferous plants characteristic of plants, their classification, use to create tricks in different periods of the season. Reveals the role of bees as pollinators of plants, equipment and organization pollination of various crops, effectiveness in increasing yields of fruit and seeds.

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## Compulsory components by decision of the Academic Council of the University

Annotations of components "History of Ukrainian statehood", "Philosophy", "Physical education", "Ukrainian language for professional purposes and ethnocultural studies", "Foreign language for professional purposes", "Safety of work and life", "Legal culture of personality", "Information technologies in the industry" see Section 2.1. Catalog

## 2. SPECIAL (PROFESSIONAL) TRAINING CYCLE

### Compulsory components EPP

**Soil Science with the bases of geology.** This course is an introductory designed course for the Bachelor student, which provides the basic concepts of all aspects of geology and soil science. It encompasses: Earth's origin; internal and external Earth's dynamics; minerals and rocks – formation, composition, diagnostics and properties changes; agronomic ores properties and application; anthropogenic influence on geologic environment. The course presents the soil composition and genesis; physical, chemical, and biological properties; soil water; classification and mapping; soil geography, soil conservation; management practices; and soil fertility and productivity (soil testing, use of fertilizers and liming), soil quality assessment. This course gives practical experience as an aid in developing understanding of the minerals, rocks and soils as natural bodies, the use of which has an influence on environmental, human society and life in general. Students will gain an appreciation of soil as a valuable natural resource and as an integral and essential part of terrestrial ecosystems, and will be able to utilize their knowledge of soil science to solve relevant issues confronted in their academic and professional careers.

**Agricultural Entomology.** The course deals with Introduction to entomology and insect-pest management, including morphology, life processes, ecology and biology of key agricultural pests. Students are provided with knowledge of tactics of population suppression, and ecological backlash and level of entomophagous efficacy.

**Phytopathology.** Plant pathology studies phytopathology, reasons of their appearance features in development, symptomatology pathologies, species composition, morphology and bioecology of agents plant against pathogens, methods and systems of immunity, protection. On the basis of knowledges of phytopathology methods should be able determine of symptoms disease to carry out identify of pathogens and diagnose of diseases. On explicit data its need to conduct phytopathology monitoring as a results which it is differentiated to realize the prophylactic and therapeutic measures of control plant disease.

**Farm equipment of agricultural production.** The general issue of mechanization processes in crop, destination, general structure and workflow of machines for growing and harvesting crops and general issues mashynovykorystannya in crop. Study ways of regulating the working process and setting up machines and methods to control performance of the machines in a production environment. Consolidation of theoretical knowledge occurs during training practice.

**Basics of scientific research in agronomy.** Lectures on discipline covers the theoretical foundations of research and their application in practice, planning and research in agronomy, application of statistical methods in agronomic research and a plan of research using application software. Laboratory and practical course dedicated to the study of methods and algorithms statistical analysis of experimental data, variation, variance, correlation, regression, Pearson analysis, probit analysis.

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**Agriculture.** Following the completion of this course the student should know the task agriculture as an industry, discipline and science; possess the scientific principles and laws of agriculture. Know the factors of life of plants and field methods to be able to introduce regulation in agriculture. The student must know the basic soil types and rates of fertility regulation and ways of reproduction of soil fertility; the scientific basis of crop rotation, principles of design, development patterns and development acreage field crop rotations. To know the scientific basis of measures, methods and systems of cultivation; agronomic requirements for sowing crops i care measures for crops; types of soil erosion and deflation i measures to prevent them; features of farming in contaminated areas. Master the scientific principles of farming systems and their features in different soil and climatic zones; the features of the system of industrial, environmental, organic (biological) systems and erosion control farming no-till, mini-till.

**Herbology.** Discipline is one of the basic professional training in agronomy. In the lecture course covers the scientific foundations of Herbology, description and place segetal plants in modern agrophytocenoses and its negative impact on crops. The course is finalized to the development of measures and systems for the control of weeds in modern farming systems. Laboratory course devoted to the study of weeds and the acquisition of practical skills of development of systems of weed control in agricultural crops.

**Plant growing.** The course forms future specialists with knowledge and skills of technological measures for maximizing the biological potential of yield cultivated crops; Includes studying of the trends in development of plant growing industry in Ukraine, commercial value, diversity of use, distribution and yield potential of crops and samples of their implementation in production; environmental and biological and agrochemical bases of crop; advanced cultivation technologies for getting high environmentally friendly yields of crops in different soil and climatic conditions of Ukraine; requirements of state standards for the quality of crop production and ways of it improving; measures for reducing to a minimum losing of crop during harvesting, transportation.

**Field and meadow fodder.** The course deals with technological issues of growing basic fodder crops and production of high quality fodder from them, which is the basis for the development of animal husbandry and providing the population with sufficient quality food products of animal origin. The technological measures of increase of productivity of fodder plants and methods of estimation of their nutrition are studied, the methods of creation of high-yielding forage areas on field lands are considered, the skills on the choice of ways of improvement and effective use of natural forage lands and creation of high-yielding cultural pastures on them are acquired. The discipline acquaints with modern technologies of harvesting and storage of fodder and production of seeds of fodder crops.

**Agrochemical chemistry (agrochemistry).** The goal of the studding of the theoretical materials and laboratory classes are mastering for bachelor of the agronomy in theoretical knowledge and practical skills into basic of plant nutrition, their chemical composition and nutrients take up, soil properties in interaction with plant nutrition and fertilizers application, fertilizers classifications, fertilizers types and kinds, fertilizers production, fertilizers using and fertilizers influence on environment. And, this discipline helps formation practical skills in determination of the level of the crop nutrients supply, levels of the nutrients supply of the soils, identify of the fertilizers kinds and fertilizers forms, their interaction with soils, determination of the soil need in soil melioration.

**Fruit growing.** The program provides study of fruit, berry plants and grapes - their value, morphological and biological characteristics, methods of propagation, rootstocks, the structure of fruit nurseries and technology of growing seedlings, lay the fruit trees, systems maintenance and cultivation in gardens, fertilization and irrigation plantation, forming and trimming of fruit trees, care for the harvest and other work in gardens,

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preparing and harvesting technology, biological features and technology of growing small crops and grapes.

**Vegetable growing.** This lecture course covers the issues of biological foundations of vegetables, the features of the preparation and fertilization of soil, plant propagation, the seedlings' planting into the open ground, the common measures for plants' caring, the harvest and cultivation technology of the main vegetables such as: white-head cabbage, red-head cabbage, cauliflower, tomato, pepper, eggplant, cucumber, zucchini, squash, carrots, beet, onion, lettuce, spinach, fennel, rhubarb, sorrel. The morphological characteristics of vegetable crops and their classification are studying in the laboratory practical classes. The ways of propagation, the calculations in seedlings' needs of different vegetable crops are also considered. The methods of control and the regulation of temperature, lighting regime, carbon dioxide, humidity and nutrient regime are in this theme. The estimation in seeds' needs of various vegetables, the scheme of sowing and feeding area are considered.

**Breeding and seed growing of crops.** Discipline envisages an acquaintance and fixing of knowledge from: tasks to the breeding and seed-grower in modern terms; theoretical principles and methods of breeding; essences of plant-breeding process; State qualifying examination; studing of basic quality signs, variety and hybrids of basic cultures that is brought to the State register varieties of plants of Ukraine; organization and technology of conduct of primary and certificated seed-growing; concepts about ecology of seed and ecological seed-grower; State and farming variety and seminal control of sowing and quality of seed; documentation quality sowing and seminal material; adaptation of home seed-grower to the international scheme and procedures; relations between breeders, producers and consumers of seminal products. Discipline envisages listening of course of lectures, implementation of practical and departure studing.

**Technology of storage and processing of plant products.** The discipline examines on the final course for the "Bachelor" when students have already learned agricultural techniques of production cereals, legumes, groats, oil, technical, vegetable and fruit plants. The program includes technology of post-harvest handling, storage and primary processing cereals, legumes for the different purpose, fruits, vegetables, potatoes and industrial crops (sugar beet, flax, hops, essential oil crops). The program of discipline provides study keeping capacity (the ability to be stored) of harvest yield and its ability to provide certain processed products obtained under favourable growing conditions and unfavourable conditions and how affecting factors of protection, agrochemical on the quality of fresh or processed products. The program of discipline included the basics of drying, cooling, chemical preservation and storage of grain and other products. The keeping capacity of potatoes and vegetables depend on the factors of cultivation, post-harvest handling. Theoretical foundations of long-term storage, the foundations of primary processing of plant products must be learn. Students must learn the requirements of the standards and methods of quality evaluation crop production.

**Standardization and management of planting products quality.** The course includes the study of the following questions: tasks, principles and methods of standardization, national and international systems of standardization, standardization of indicators and methods of determining the quality of products, information on domestic and foreign experience of the management of product quality. With using discipline we study current national and international requirements to the crop products with aim to produce quality and competitive products. The definition of quality and purpose of the consignment of wheat, barley, oats, buckwheat, peas, apples, potatoes, tomatoes, cucumbers, carrots, beets and other crops with aim to obtain maximum profit observed. To develop effective measures of management of product quality for produce quality, safe, organic and competitive products. The principles and procedure of certification of products for the domestic market and export will master. Peculiarities of creation and implementation on

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the manufacturing system of standard ISO 9000 with following accreditation of system of quality management are considered. The current laws of standardization, certification and safety of crop production are taken into account in teaching of the discipline.

**Economics and business.** A course foresees the study economics of the system of agrarian relations of productions in intercommunication with development of productive forces of agriculture. Criteria and indexes, which characterize development of agricultural production, ways and methods of the rational use of earth, financial and labours resources, are herein examined. The necessity of development and improvement of resource potential of agriculture opens up, the method of determination of economic efficiency of agricultural industries is given. The terms of forming of prime price and profitability of products of agriculture, development and functioning of market of food light up. The problems of intensive development of industries of agriculture are studied on the basis of the wide use of industrial technologies, rational placing and specialization of agricultural production on the base of agro industrial integration in the conditions of relations of markets.

**Technologies of Protected Cultivated.** The program of discipline's are subscribes for the gist of the greenhouses vegetable, mushroom's and flower growing. Describes the biological capacities of the objects growing for the terms of Protected Cultivated, technological methods for the growing of the vegetable, flower crops and mushrooms. In the course is devoted to the greenhouse's constructions for the crops and it's using. The gist of growing the ecological production's are describes.

### **Optional components EPP**

#### ***Optional components by specialty (block 1“Agronomy”)***

**Agricultural microbiology and virology.** The subject give knowledge about morphology, structure, classification, genetic, physiology and ecology of basis groups of microorganisms, their role in utilization of complex plant and animal remains, breaking them down into simpler chemical forms which are returned to the soil. The importance of microorganisms in human practice activity, microorganisms interaction between themselves and high plants, give knowledge about microbiological means of protection against diseases and pests of plant, perspective means of plant protection for graving harvest agricultural crops. Main purpose of study course is acquisition a theoretical foundations and formation of practical skills of students who will investigate plant viruses and methods of struggle of viral spread. The practical part of course includes study modern methods which can be used by a work with plant viruses, especially for viral diagnostic and identification by means of biological testing, electron microscopy and immunoassay methods also for getting a unviral landing material by microcline method of reproduction. Knowledge of above methods is necessary for training of high educational specialists in agriculture.

**Land reclamation.** The course is designed to present the peculiarities of the profitable use of current reclamation technologies (irrigation, drainage, sustainable water management, chemical, and agroforestry melioration) in modern agricultural production. The training course is based on a combination of the latest scientific achievements and real-world experience of their use. The course is organized into a series of theoretical and practical classes, discussions, and meetings with leading industry experts including field trips to visit actual sites with successful experience in the implementation of reclamation technologies.

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**Fundamentals of agribusiness and management.** The purpose of discipline - to give students a comprehensive system of knowledge of nature management in agricultural enterprises and organizations, the skills process control in farms; provided that the impact of economic structures; diagnosis and designing system of agricultural management, adequate goals and objectives of market economy in agriculture. Ability of future professionals to streamline the organizational structure and management system to form the company, to ensure the dynamic development and competitiveness.

**Biotechnology.** Discipline focuses on cultivation of isolated cells and tissues, callus and suspension cultures, microclonal propagation of plants and their recovery from viral infections, morphogenesis and regeneration of plants in vitro (organogenesis, embryogenesis, rhizogenesis), culture of isolated protoplasts as a basic of cell engineering, selection of plants in vitro, cell and genetic engineering, methods for transgenic plants obtaining.

**Programming and forecasting crop yields.** The goal is to produce high, stable, economically justified and forecasted yields of agricultural crops. The solution of this problem is possible in case of determination of the complex influence of natural and organizational technological factors on the growth and plants development and the formation of their productivity, determining the level of needs of agricultural crops by these factors in specific soil and climatic conditions and justifying the need for resources to regulate them. The basic principle is the programming of plant life factors in accordance with the requirements of the laws of agronomy. Programming and forecasting yields are focusing at the organization of agrophytocenosis as a system for maximizing its performance and based on efficient use of solar energy, resources of heat, humid, carbon dioxide, soil minerals and fertilization, creation of the necessary biological, agro-environmental and energy conditions for obtaining programmed yields with high economic efficiency. Modern methods and ways of forecasting programming of yields allow to take into account an adequate production function of the dependence of yield on a complex of factors evaluate the impact of limiting factors of crop formation and provide for management decisions and adjustment of zonal elements of cultivation technologies during the growing season based on the use of innovative methodological approaches to agronomic, economic and environmental justification of possible yield levels (potential, real-production, climate-secured) agricultural crops.

**Seed Studies.** Discipline is the essence of nutrition, the development of motherhood, motherhood, achievement, achievement and development, beginning of life and understanding, I'm always aware that I'm more physical-mechanical, biochemical and physiological authorities; and that of gardening material; the sovereign and the international legislative and regulatory frameworks of virobnost, realizatsii and vikoristannya nasinnya sylskogospodarskikh cultures; methods for the identification of the most recent nastiness; internal and sovereign control over the pre-laws of the rule of religion on all etapahs; of international business associations in the galaxy of society and national knowledge, including the supply of trade and high-quality certification in the form of OECD schemes. As a result of vivchenny discipline, the student is guilty of nobility: history and development of knowledge in the context of applied science and universal discipline; morphological, anatomical and biologic particularities of social and gardening materials; physical and mechanical, biological and physical power and social and functional material; methods of analysis of the latest insights on the basis of the material for the most recent hours of the DSTU. You need to know how to work with agronomic theoretical knowledge and practical skills in secured state thanks to the most recent material.

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**Technological examination of crop production.** The discipline focuses on the issues of determining the quality and safety of raw materials and finished products, the characteristics of the elements technologies of cultivation, postharvest handling, storage and processing which provides the highest quality and safety of food products. The discipline establishes the conformity of plant raw materials and finished products to the requirements of normative documents, identifying errors in the technological process, which may be cause disconformity of products, detecting of violations in the accounting of raw materials and materials due to the introduction of new technological equipment on the enterprise, the use of new types of raw materials, detecting deviations of the parameters of the technological process that affecting on the quality and safety of products, the size of technological costs and losses, the output of the final product, detecting possible off-the-books and counterfeit products and so on. Studying the discipline will allow students to conduct on a high professional level a technological examination of the production and processing of crop production, the assessment of the quality and safety of food products and food raw materials, to establish compliance with its requirements of the relevant standards, including international, in order to improve the quality and competitiveness of domestic products.

**The management of the functional value of the crop products.** The goal of the studding of the theoretical materials and laboratory classes are mastering for bachelor of the agronomy in theoretical knowledge and practical skills in basic of the protein metabolism, carbohydrates metabolism, lipids metabolism, vitamins complex formation, mineral complex formation into crops and their management during of the plant vegetation into modern crop production systems according to climatic conditions, weather conditions, level of oil fertility, sorts and hybrids features for improving of the functional value of crop products according to standards.

**Statistical analysis of agronomic research.** The purpose of the course to give theoretical and practical knowledge of the main methods of agronomic research, the ability of independent research and statistical evaluation of data for future agricultural specialists. The objects of study are variational data series of observations, soils. The subject of study are statistical criteria of quality research, information indicators of growth and development of plants, the environmental conditions. The program brings together two sections: mathematical statistics and analysis of variational series; application of statistical methods in agronomic research.

**Seasonal phytocenoses.** The discipline program familiarizes students with distribution and composition of grasslands and their soil, hydrological and weather conditions. The course identifies ways to improve natural pastures and their rational use. The discipline focuses on the of transformation (change) meadow vegetation ways depending on use and farming items. The course covers of discipline the transformation (change) of meadow formation ways depending on use and agricultural methods. The discipline offers scientific measures on ecologizing and biologization grassland ecosystems.

**Breeding and Seed-growing heterosis hybrids.** The contemporary concepts of heterosis and conformities of its displays, the types of hybrid and technology breeding process of their creation are reporting by course. The types initial material and methods of creating inbred lines, specificity rating its combining ability, selecting hybrids combinations different genetic structure and synthetic varieties are displaing. Discipline involves the assimilation of methods industrial production of hybrid seed field crops by fertile and sterile base.

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**Optional components by specialty  
(block 2 “Agrochemistry and Soil Science”)**

**Agricultural microbiology and virology.** The subject give knowledge about morphology, structure, classification, genetic, physiology and ecology of basis groups of microorganisms, their role in utilization of complex plant and animal remains, breaking them down into simpler chemical forms which are returned to the soil. The importance of microorganisms in human practice activity, microorganisms interaction between themselves and high plants, give knowledge about microbiological means of protection against diseases and pests of plant, perspective means of plant protection for graving harvest agricultural crops. Main purpose of study course is acquisition a theoretical foundations and formation of practical skills of students who will investigate plant viruses and methods of struggle of viral spread. The practical part of course includes study modern methods which can be used by a work with plant viruses, especially for viral diagnostic and identification by means of biological testing, electron microscopy and immunoassay methods also for getting a unviral landing material by microcline method of reproduction. Knowledge of above methods is necessary for training of high educational specialists in agriculture.

**Fundamentals of land management and land cadastre.** Efficient and effective use of land remain issues of concern in agricultural production. The basis of effective agricultural are the proper land use organization. And its basis is performed systematic, coherent organization of all elements of management. The course reveals the features of the state policy on formation of rational land ownership and land use, organizing areas of agricultural enterprises with the creation of spatial conditions that ensure the ecological and economic optimization of the use and protection of agricultural land, the introduction of advanced forms of management of land use, improving the value and location of the land, the system of crop rotation and hay-pasture rotation. It reveals a system of measures to preserve and improve the natural landscapes, restoration and improvement of soil fertility, protection from erosion.

**Land reclamation.** The course is designed to present the peculiarities of the profitable use of current reclamation technologies (irrigation, drainage, sustainable water management, chemical, and agroforestry melioration) in modern agricultural production. The training course is based on a combination of the latest scientific achievements and real-world experience of their use. The course is organized into a series of theoretical and practical classes, discussions, and meetings with leading industry experts including field trips to visit actual sites with successful experience in the implementation of reclamation technologies.

**Fundamentals of agribusiness and management.** The purpose of discipline - to give students a comprehensive system of knowledge of nature management in agricultural enterprises and organizations, the skills process control in farms; provided that the impact of economic structures; diagnosis and designing system of agricultural management, adequate goals and objectives of market economy in agriculture. Ability of future professionals to streamline the organizational structure and management system to form the company, to ensure the dynamic development and competitiveness.

**Biotechnology.** Discipline focuses on cultivation of isolated cells and tissues, callus and suspension cultures, microclonal propagation of plants and their recovery from viral infections, morphogenesis and regeneration of plants in vitro (organogenesis, embryogenesis, rhizogenesis), culture of isolated protoplasts as a basic of cell engineering, selection of plants in vitro, cell and genetic engineering, methods for transgenic plants obtaining.

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**System of the fertilizers application with the basic of the differential fertilizers application.** The goal of the studying of the theoretical materials and laboratory classes are mastering for bachelor in theoretical knowledge in realizing of the modern systems of the fertilizers fertilization for crops based on determination of the balance and cycle of the nutrients in crop rotations, determination of biological features nutrition and fertilization for direct crops according to levels of the soil fertility and prognosticate crop yield for different crop production systems based on differential fertilization.

**The methodology of the agrochemical investigation with basic of the remote field monitoring.** The goal of the studying of the theoretical materials and laboratory classes are mastering for bachelor in theoretical knowledge into the remote field monitoring, planning, elaboration of the methods for agrochemical investigation, systematization, analyzing of the investigation results and giving of the recommendation for optimization of the fertilizers using such as effective factor for increasing of the crop productivity. The program of the discipline includes planning of the agrochemical investigation, methods and technologies of the making of the field trials, lysimetric experiments, greenhouse experiments, methods and technologies of the making of laboratory analyses for soils, plants and fertilizers, types and methods for the monitoring of the crop nutrition, methods selection, methods of the statistical analyses.

**The management of the quality of crop products.** The goal of the studying of the theoretical materials and laboratory classes are mastering for bachelor in theoretical knowledge and practical skills into optimization of the formation of the quality of crop products during the vegetation by making of the technical elements for improvement of the agrochemicals and other agrosources in modern crop rotations based on abiotic environmental factors, biotic environmental factors and anthropogenic factors, determination of the nutrients cycle according to crop demands, production demands and power management. These knowledge and skills lets to make and effective implement the complex of the operations for optimization of crop nutrition for improvement of the quality of crop products.

**Technology of rational land use.** The course helps students in gaining knowledge about sustainable environmentally sound land use, introducing modern technologies use various land and soil in order to protect them from degradation processes and achieve expanded reproduction of soil fertility. As a result of the course students possess knowledge of the current state of land resources of Ukraine, the principles of rational use of noncommercial portion harvest for reproduction of soil fertility, modern soil system tillage, especially the rational use eroded, sour, salty, salted, drained, irrigated, technological and contaminated and learn how to design and implement measures to prevent degradation processes. After studying the theoretical and practical knowledge, students will learn to develop and apply modern technologies of cultivation of crops on the basis of soil and resource conservation in order to ensure environmentally sustainable sustainable land use and taking into account the features of soils and lands.

**Soil Cartography.** Soil Cartography is a unique discipline that helps to understand the creating and use of different maps. The General Cartography section provides an overview of the different types of maps, map projections, scales, toponymics, map symbols and nomenclature. Students will be get acquainted with GPS positioning system, will learn to: determine the object coordinates on a base of degree and rectangular coordinate system, key objects to a topographic map or terrain in azimuth directions. The Applied Mapping section offers a study of cartographic basics, thematic maps, contour plans of land use, cartograms, aerial photographs and satellite images. Soil Cartography will teach future professionals to organize and carry out preparations, field and cameral work. Particular attention is given to the creation of: soil maps, agrochemical cartograms and thematic maps based on the results of field research or according to data base. Students will be learned to: form the team of the future expedition; collect the necessary

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instruments; determine the volume of work; carry out reconnaissance; perform some field soil-geographical and cartographic studies; select soil samples; determine the list of analytical works; create a field and original map. Students of the course will be able to use soil-cartographic materials for: accounting of agricultural lands, land management, soil tillage application, fertilization systems, crop rotations planning, identification of adapted plant varieties and technologies for specific soil conditions, development of ameliorative and soil protection management, soil quality assessment, economical land evaluation, etc.

**Soil conservation.** The course studies the main types of soil degradation and measures for their prevention, reduction or complete removal action. The aim of the course is to provide students obtaining knowledge about the current state of land resources of Ukraine, laws of Ukraine on land protection, causes, extents and consequences of land resources degradation as a result of natural processes and human activities as well as methods of preventing degradation and soil fertility reproduction.

***Optional components by specialty***  
**(block 3 “Selection and Genetics of Agricultural Crops”)**

**Agricultural microbiology and virology.** The subject give knowledge about morphology, structure, classification, genetic, physiology and ecology of basis groups of microorganisms, their role in utilization of complex plant and animal remains, breaking them down into simpler chemical forms which are returned to the soil. The importance of microorganisms in human practice activity, microorganisms interaction between themselves and high plants, give knowledge about microbiological means of protection against diseases and pests of plant, perspective means of plant protection for graving harvest agricultural crops. Main purpose of study course is acquisition a theoretical foundations and formation of practical skills of students who will investigate plant viruses and methods of struggle of viral spread. The practical part of course includes study modern methods which can be used by a work with plant viruses, especially for viral diagnostic and identification by means of biological testing, electron microscopy and immunoassay methods also for getting a unviral landing material by microcline method of reproduction. Knowledge of above methods is necessary for training of high educational specialists in agriculture.

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**Fundamentals of agribusiness and management.** The purpose of discipline - to give students a comprehensive system of knowledge of nature management in agricultural enterprises and organizations, the skills process control in farms; provided that the impact of economic structures; diagnosis and designing system of agricultural management, adequate goals and objectives of market economy in agriculture. Ability of future professionals to streamline the organizational structure and management system to form the company, to ensure the dynamic development and competitiveness.

**Biotechnology.** Discipline focuses on cultivation of isolated cells and tissues, callus and suspension cultures, microclonal propagation of plants and their recovery from viral infections, morphogenesis and regeneration of plants in vitro (organogenesis, embryogenesis, rhizogenesis), culture of isolated protoplasts as a basic of cell engineering, selection of plants in vitro, cell and genetic engineering, methods for transgenic plants obtaining.

**Special genetic field crops.** Total problems the genetics of plants. Genetics determination and inheritance mechanisms of qualitative and quantitative traits. The specific nature of genetic systems for propagation of plants. Classification and karyology the primary agricultural crops: wheat, rye, barley, soya, pea, beet, corn, potato, sunflower, flax. The genetics of morphological, physiological and biochemical traits. The genetics mechanisms of plants resistance control against the agents of disease and invaders. Principal directions of selection by primary agricultural crops.

**Special breeding and variety studding crops.** Methods of breeding crops: selection, hybridization, polyploidy, induced mutagenesis, heterosis, biotechnology and genetic engineering. Laboratory evaluation of breeding material by product quality, the studding species, varieties and varietal characteristics appropriate and their cultivation technology, variety certification, agricultural variety crops suitable for dissemination in Ukraine.

**Seed-growing of the field crops.** Theoretical bases of seed-growing. A law of Ukraine "About seed and planting material". Organizational principles of seed-growing. A variety and hybrid are objects of seed-growing. Principles of conduct of seed-growing in economic conditions. Systems of seed-growing of basic crops. A production of seed is in the primary links of his reproduction. A value of biotechnology and genic engineering in the receipt of high-quality seed. Attestation requirements are to the subjects of seed-growing. The using of heterosis in a seed-growing. Features of seed-growing on sterile basis. Ecology of seed and ecological seed-growing. Principles of zonal seed-growing. The adaptation of national seed-growing to the international charts and procedures. International organization of control quality of seed. State and farming control in a seed-growing. The variety certification.

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**Bachelor**  
**field of knowledge "Agricultural science and food"**  
**in specialty "HORTICULTURE AND VITICULTURE"**  
**Educational-professional program «Horticulture and Viticulture»**

Form of Training:	Licensed number of persons:
– Full-time	60
– Part-time	30
training period	4 years
Credits	240 ECTS
Language of training	English, Ukrainian
Qualification of graduates	Technologist of Agronomy

### Concept of training

Preparation of bachelors in the specialty focused on current and future trends in the development of horticulture and viticulture. Education Bachelor specialty allows to acquire special skills and knowledge of innovative character in Horticulture to produce high quality and diversification of produce for domestic consumption and export. A graduate of this specialty theoretically and practically prepared, has the knowledge and skills of modern technologies in the field of horticulture and viticulture.

### Practical training

Students undergo practical training in educational farms NUBiP Ukraine: NUBiP Ukraine "Agronomic Research Station," "Velykosnitynske educational and research farm named after O.V. Muzychenko," as well as advanced agricultural enterprises of different ownership forms, collection nurseries teaching and research fields NUBiP" Produce Garden "research institutions Academy of Agricultural Sciences and National Academy of Sciences of Ukraine, state-ampelohrafichnyh pomology inspections.

### Proposed Topics for Bachelor theses

1. Features of new varieties of fruit, berry and nut crops and study their growth and fruiting.
2. Evaluation methods (measures) aimed at improving production technologies fruits and planting material of fruit, berry, nut and vine crops.
3. Hospodarsko biology grade varieties (heterosis or hybrid) different types of vegetables in order to highlight the most suitable for growing conditions in certain areas.
4. Vychennya some effective elements of technology of cultivation of vegetables, including effect of sowing (planting seedlings, bulbs, tubers, etc.), methods of preparation of seeds and planting material, methods of sowing (planting), density and forming plants, methods of irrigation, the application of plant growth regulators, biological products, etc. to obtain high yields and environmentally-friendly products .
5. Introduction of rare species of vegetables in order to highlight the most suitable for growing conditions in certain areas.
6. Optimizations of technology's methods of vegetable growing in different type's greenhouses.
7. Investigations of technological aspects of flower growing in Protected Cultivated.
8. Investigations of mushroom's technologies depended to growing's terms and technology's elements.

9. Experimental investigations for capacities of edibles and medical mushrooms in laboratories terms.

10. Modeling of highly efficient production of planting material and fruit grapes agrotechnical and economic analysis of growing conditions in farms of different ownership.

**Academic rights of Graduates:** graduates can apply for Master's Degree Specialties and Educational (Educational-professional or Educational-scientific) programs specified in Table 1.2 Section 1.3 this Catalog.

### **Employment of Graduates**

Place of employment of bachelors include: agricultural enterprises of different ownership, farms, greenhouse and mushroom plants, the structure of the supply of equipment and materials for greenhouses, structures engaged in landscape gardening, delivery of equipment, seeds, planting material, protection plants and materials for orchards, vineyards, research institutions.

**Bachelor`s Program and Curriculum  
in Specialty «Horticulture and Viticulture»  
Educational-professional program «Horticulture and Viticulture»**

Code n/a	Components of the educational-professional program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits ECTS	The final control
1	2	3	4
<b>1. GENERAL TRAINING CYCLE</b>			
<b>Compulsory components EPP</b>			
CC 1	Botany	7	exam
CC 2	Agrophysics	6	exam
CC 3	Chemistry	10	exam
	(incl. inorganic and analytical	5	exam
	organic, physical and colloidal)	5	exam
CC 4	Genetics	6	exam
CC 5	Plant physiology	6	exam
CC 6	Agrometeorology	5	exam
<b>Total</b>		<b>40</b>	
<b>Compulsory components EPP by decision of the Academic Council of the University</b>			
CCU 1	History of Ukrainian Statehood	4	exam
CCU 2	Ukrainian for professional purposes and ethnocultural	7	exam
CCU 3	Philosophy	4	exam
CCU 4	Physical training	4	test
CCU 5	Foreign language (English, German, French, Spanish)	5	exam
CCU 6	Safety of work and life	4	exam
CCU 7	Starting your own business based on business design	4	exam
CCU 8	Information technology in the industry	4	exam
<b>Total</b>		<b>36</b>	
<b>2. SPECIAL (PROFESSIONAL) TRAINING CYCLE</b>			
<b>Compulsory components EPP</b>			
CC 7	Soil Science with the bases of geology	6	exam
CC 8	Entomology	4	exam
CC 9	Phytopathology the basics of virology	5	exam
CC 10	Farm equipment and instruments	4	exam
CC 11	Basic research	4	exam
CC 12	Agriculture and herbology	6	exam
CC 13	Agrochemical service for vegetable growing, horticulture and viticulture	5	exam
CC 14	Plant Growing	6	exam
CC 15	Viticulture	7	exam
CC 16	Agrochemical chemistry	6	exam
CC 17	Fruit-growing	11	exam
CC 18	Vegetable growing	11	exam
CC 19	Selection of vegetable, fruit and berry crops	5	exam
CC 20	Technology of storage and processing of of fruits and vegetables	5	exam
CC 21	Standardization and commodity science of fruit and vegetable and viticulture	4	exam
CC 22	Economics, entrepreneurship and management in fruit and vegetable production	4	exam
CC 23	Mushroom growing	5	exam
CC 24	Technologies of Protected Cultivated	6	exam
<b>Total</b>		<b>104</b>	
<b>The total amount of Compulsory components</b>		<b>180</b>	
<b>Optional components EPP</b>			
<b>Optional components by specialty</b>			
OB 1.1	Agricultural microbiology	4	exam
OB 1.2	Seeds of vegetable crops	4	exam

**CURRICULA AND PROGRAMS OF BACHELOR DEGREE**

OB 1.3	Land reclamation	4	test
OB 1.4	Ornamental horticulture	4	test
OB 1.5	Biotechnology	4	test
OB 1.6	Pomology	7	exam
OB 1.7	Olegrafia	6	exam
OB 1.8	Potato	4	test
OB 1.9	Greenhouses	6	exam
OB 1.10	Nursery	7	exam
OB 1.11	Beekeeping	4	exam
<b>Total</b>		<b>54</b>	
<b>Optional components by Student's Choice</b>			
OS 1	Selective discipline	3	test
OS 2	Selective discipline	3	test
<b>Total</b>		<b>6</b>	
<b>The total amount of Optional components</b>		<b>60</b>	
<b>3. OTHER TYPES OF TRAINING</b>			
CC 25	Military training course	29	
CC 26	Academic Practice	23	
CC 27	Production Practice	5	
CC 28	Bachelor Thesis writing (Graduate thesis or Project)	4	
<b>THE TOTAL AMOUNT OF EPP (without military training)</b>		<b>240</b>	

## Annotations of Components in the curriculum

### 1. GENERAL TRAINING CYCLE

#### Compulsory components EPP

**Botany.** The aim of the course is learning patterns of plants and vegetation as an essential component of bioenergy biosphere. As a result, the study of botany student has to learn self-study method with a microscope, the self-production of medicines and analysis of the cellular and tissue level and at the level of individual organs and the whole organism, which is of great cognitive and practical importance. Therefore, the importance given to the organization and conduct summer field practical training during which students independently collect and plants, conduct research geobotanical certain types of vegetation, which is the final stage of study and analysis of the current state of vegetation, studied ways to improve forecasting of natural plant communities. The aim of the course is also a botany student mastery of botanical knowledge, botanical terminology necessary for conscious and competent study of other related disciplines that form the professional agricultural training profile.

**Agrophysics.** The aim of the course by students are obtain knowledge about the physical basis for the formation of berry productivity, agricultural and perennial plants. Argophysics studies the basic regularities of the production mechanism, methods and tools for optimizing the parameters agrophysical soil properties, gives reasons for forecasts a comfortable living environment fruits, berries, vegetables and other plants. On the basis of knowledge developed agrophysical scientific basis, methods, means and ahrozahody rational use of natural resources.

**Chemistry.** The theoretical principles of modern inorganic and analytical chemistry are considered. Basic laws of chemical reactions, especially processes that occur in nature, chemical and agricultural production are studied. Attention is focused on the

peculiarities of chemistry of compounds of biogenic elements, their role in the life of garden crops. The essence, advantages and disadvantages of various methods of analytical experiment are considered. Attention is drawn to the applied aspects of the methods of qualitative and quantitative chemical analysis of natural and artificial objects that are of great importance in horticulture and viticulture: soils, mineral fertilizers, plant protection products and seed treatment, horticultural products and viticulture etc. The main theoretical positions of organic chemistry, nomenclature, methods of obtaining and applying the main classes of organic compounds in various branches of agricultural production, their biological effect and the impact on the environment, and the mechanisms of chemical processes occurring in natural objects are studied.

**Genetics.** Discipline envisages the acquaintance of students with the basic divisions of genetics modern knowledge. Includes next divisions: bases of molecular genetics, structure and functions of proteins, nucleic acids and chromosomes, mechanisms of expression of genetic information, structure of genome, cytogenetic aspects of inheritance of genes, changeability, her reasons and consequences, features of reproduction of plant organisms, basis of population genetics, some problems of the applied genetics. Discipline envisages listening of course of lectures, conducting of practical employments and solutioning of tasks from all basic subdivisions from molecular biology to the population genetic.

**Plant physiology.** Discipline is one of the basic disciplines in the training of specialists in "Agronomy". Discipline involves studying the functions of plant organism and the laws of its life. The role of the discipline is to provide future specialist deep and comprehensive knowledge of the biology of the plant cell, water regime of plant organism, mechanisms of respiration and photosynthesis, mineral nutrition, plant growth and development, adaptation and mechanisms of resistance to adverse environmental factors. Acquired knowledge of plant physiology will allow future specialists in the area of agriculture practice to implement the latest achievements of science, have scientific and professional approach to technologies in crop growing and to independently develop and adjust agronomic activities by understanding the physiological processes of plant organism.

**Agrometeorology.** The course focuses on the studding of the impact of weather, microclimate and climate on the agricultural productivity, in particular on gardening and grape production. Extreme weather events and phenomena, which might have negative effect on fruit trees and vineyards, are considered in details, as well as possible mitigation activities and measures. Specifically, the issue of the modern climate change and variability is discussed in context of agricultural management in the gardening and viticulture (short and long term planning).

### **Compulsory components by decision of the Academic Council of the University**

Annotations of components "History of Ukrainian statehood", "Philosophy", "Physical education", "Ukrainian language for professional purposes and ethnocultural studies", "Foreign language for professional purposes", "Safety of work and life", "Starting your own business based on business design", "Information technologies in the industry "see subsection 2.1. Catalog.

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## 2. SPECIAL (PROFESSIONAL) TRAINING CYCLE

### Compulsory components EPP

**Soil Science with the bases of geology.** This course is an introductory designed course for the Bachelor student, which provides the basic concepts of all aspects of geology and soil science. It encompasses: Earth's origin; internal and external Earth's dynamics; minerals and rocks – formation, composition, diagnostics and properties changes; agronomic ores properties and application; anthropogenic influence on geologic environment. The course presents the soil composition and genesis; physical, chemical, and biological properties; soil water; classification and mapping; soil geography, soil conservation; management practices; and soil fertility and productivity (soil testing, use of fertilizers and liming), soil quality assessment. This course gives practical experience as an aid in developing understanding of the minerals, rocks and soils as natural bodies, the use of which has an influence on environmental, human society and life in general. Students will gain an appreciation of soil as a valuable natural resource and as an integral and essential part of terrestrial ecosystems, and will be able to utilize their knowledge of soil science to solve relevant issues confronted in their academic and professional careers.

**Entomology.** The course deals with Introduction to entomology and insect-pest management, including morphology, life processes, ecology and biology of key agricultural pests. Students are provided with knowledge of tactics of population suppression, and ecological backlash and level of entomophagous efficacy.

**Phytopathology the basics of virology.** Plant pathology studies phytopathology, reasons of their appearance features in development, symptomatology pathologies, species composition, morphology and bioecology of agents plant against pathogens, methods and systems of immunity, protection. On the basis of knowledges of phytopathology methods should be able determine of symptoms disease to carry out identify of pathogens and diagnose of diseases. On explicit data its need to conduct phytopathology monitoring as a results which it is differentiated to realize the prophylactic and therapeutic measures of control plant disease.

**Farm equipment and instruments.** The general issue of mechanization processes in crop, destination, general structure and workflow of machines for growing and harvesting crops and general issues mashynovykorystannya in crop. Study ways of regulating the working process and setting up machines and methods to control performance of the machines in a production environment. Consolidation of theoretical knowledge occurs during training practice.

**Basics of scientific research.** Lectures on discipline covers the theoretical foundations of research and their application in practice, planning and research in horticulture, the use of statistical methods and scheduling of research using computer programs. Laboratory and practical course dedicated to the study of methods and algorithms statistical analysis of experimental data, variation, variance, correlation and regression analysis and so on.

**Agriculture and herbology.** . Discipline is one of the basic training of professionals in this specialty. As a result of the discipline the student should know the role of agriculture for horticulture and viticulture industry, possess the scientific principles and laws of Agriculture in accordance with this specialty. The problem weeds of orchards and berry fields will be relevant in horticulture and viticulture, so this discipline is one of the basic training to professionals of this branch. In the lecture course covers the scientific basis herbology, characteristics and place of segetal plants in modern orchards and berry fields

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and measures and systems to control the presence of weeds in perennial plantations for various technologies of cultivation. Laboratory course devoted to the study of weeds and practical skills for monitoring and assessment of weeds and their impact on growth and development perennial plantations. Future specialists can implement acquired knowledge by developing biologically and economically effective and environmentally acceptable system control weeds in orchards and vineyards, features gardening and viticulture conditions for organic farming. The student must know the indicators of soil fertility, providing high efficiency of fruit and berry crops, vines, vegetables and melons, etc., regulation and ways of reproduction of soil fertility. Know the role and tasks of cultivation in the laying of gardens and vineyards, mechanical caring for orchards, vineyards and berry. Possess measures mechanical protection of fruit, berry and vegetable crops from pests. To know the scientific basis of special crop rotation; place vegetables, melons and berries in rotation; agronomic requirements for planting vegetables and melons and measures for their care; the features of horticultural erosion in hazardous areas and soils contaminated with radionuclides and heavy metals; features gardening and viticulture conditions for organic farming.

**Agrochemical service for vegetable growing, horticulture and viticulture.** The goal of the studding of the theoretical materials and laboratory classes are mastering for bachelor in horticulture and viniculture in theoretical knowledge and practical skills into basic of the agrochemical supply and agrochemical service agribusiness, monitoring and application of the chemicals in technologies processes of the vegetable, horticulture and viniculture, save and increasing of soil fertility according to environmental conditions, agrochemicals market, production systems specificity, supplying of the producers in the field of vegetable, horticulture and viniculture by resources and service of the chemicals.

**Plant growing.** The course forms the future specialists for growing grain, potato, sugar beet, sunflower seeds and other plant products. The course is based on knowledge of the field crops, especially their growth and development, requirements for environmental factors, the modern high yields technologies for growing the quality products at the lowest cost of labour and capital. As a result of the discipline studying the student should to know: state and prospects of plant growing, morphological and biological characteristics of field crops, modern technologies of cultivation, including intensive ways and means quality improving of agricultural products, reducing of means and labour costs for crops growing.

**Viticulture.** The objective of the study subjects are: formation of students' comprehensive knowledge (competencies) culture of grapes, including historical and botanical classification, biology and ecology of grape plants, technologies of industrial crops (forming and trimming bushes, cultivation, fertilization, irrigation, plant protection from diseases and pests) and the production of planting material and ways to improve the assortment. The issue of table viticulture and the production of dried products and features in non-traditional grape growing areas of viticulture (Forest-steppe, Polesie).

**Agrochemical chemistry (agrochemistry).** The goal of the studding of the theoretical materials and laboratory classes are mastering for bachelor in horticulture and viniculture in theoretical knowledge and practical skills into identify and resolve tasks chemization such as basic of the vegetable, horticulture and viniculture, estimation of the mineral and organic fertilizers, chemical ameliorants and special agrochemical peels, their effect on environment and quality of the products. And students take practical skills in fertilization of the vegetable and fruit crops and berries, schemes for fertilizers application of the minarel and organic fertilizers, etc.

**Fruit growing.** The main objective of discipline is to equip future professionals with the skills and knowledge of production technologies of fruits and berries, which are the basis of nutrition and raw materials to processing. In the process of teaching highlights the status and prospects of fruit; value anatomical and morphological and biological features

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of fruit and berry crops. We consider the physiology of stability garden plants to environmental factors and patterns of fruiting. Detailed analysis of modern cultivation technology yields high eco-friendly fruits and berries in different soil and climatic zones. Much attention is given to ways and means of improving the quality of products and measures for its maintenance, as well as ways to reduce labor costs and capital goods during cultivation.

**Vegetable growing.** This discipline is devoted to the study of biological foundations of vegetables, the features of the preparation and fertilization of soil, plant propagation, the seedlings' planting into the open ground, the common measures for plants' caring, the harvest and cultivation technology of the vegetable growing technologies in the open soil. Each theme highlights the economic importance; the cultivation technology of high-quality commodity of vegetable crops and melons; the management system of plant protection from weeds, pests and diseases in order to implement the latest technologies for the receiving the high-quality commodity, environmentally acceptable vegetable production; harvesting and post harvest handling. The morphological characteristics of vegetables and melons, their biological characteristics, the requirements for the growing conditions and the current state varietal diversity are studied in the laboratory practical classes. A study of the species composition of the seeds and their germination. The ways of propagation, the calculations in seedlings' needs of different vegetable crops are also considered. The methods of control and the regulation of temperature, lighting regime, carbon dioxide, humidity and nutrient regime are in this theme. The estimation in seeds' needs of various vegetables, the scheme of sowing and feeding area are considered. The organization of vegetable crop rotation.

**Selection of vegetable, fruit and berry crops.** Discipline examines the theoretical and methodological issues of creation of varieties, methods of breeding and selection, types of crosses, methods for source material selection major areas of vegetable crops in view of the structure and characteristics of the flower blooming and pollination. The basis of the study course is breeding advancements in breeding cabbage, carrots, cucumbers, tomatoes and other crops. The purpose of discipline is to develop the students' knowledge of the history of genetics and breeding of horticultural crops and features in the selection process of pome, stone fruit and berry species. The main objectives are: to study the theoretical foundations and methods to create new and improve existing varieties; search of donors and sources of valuable economic and biological features of the existing gene pool of plant resources; involvement in the selection process wild forms and varieties of folk selection that are adapted to adverse environmental conditions change areas of cultivation. As a result of the program, students should know: history, methods of selection, , organization of selection process and variety studies and also be able to: make breeding program plans to carry out the selection of parental pairs for crossing, hybridization, evaluation of breeding material and so on.

**Technology of storage and processing of of fruits and vegetables.** The discipline studies the scientific principles of storage of fruits and vegetables, individuality them as objects of storage and processing, the influence of factors of cultivation and post-harvest handling on their quality and keeping capacity, forecasting the suitability for storage and different ways of processing. The technological characteristics of different types of depositories, the peculiarities of accommodation fruits and vegetables in them for short or long-term storage are studied. Effective regimes and ways of storage of different kind of fruit and vegetable products, possibility of providing and maintaining optimal regime parameters of their storage, features of storage of fruits, vegetables and berries in conditions of regulated and modified atmosphere are considered. A separate module provides for the study of modern technologies of processing fruits and vegetables. Microbiological, physical, chemical methods of preservation, peculiarities of making fermented, dried and frozen products from fruits and vegetables, natural vegetable

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preserves, fruit and berry compotes, juices, mashed potatoes and jam are considered. Basics of potato tubers processing. Quality assessment of canned vegetables, accounting, quality control and storage features of finished products.

**Standardization and commodity science of fruit and vegetable and viticulture.**

The course includes the study of the following questions: the goals and objectives of standardization, essence of standardization as a science, methodical basics of standardization, the questions of quality of horticultural products, standardization of the indexes quality of products and the methods of their control, international standards. In the discipline presented general information about domestic and foreign experience of management of the quality horticultural products, certification and metrology supply. Students will master current requirements to the fruits and vegetables with aim to obtain competitive products. To develop effective measures of management of product quality for produce quality, safe, organic and competitive products. The principles and procedure of certification of products for the domestic market and export will master. Peculiarities of creation and implementation on the manufacturing system of standard ISO 9000 with following accreditation of system of quality management are considered. The current laws of standardization, certification and safety of crop production are taken into account in teaching of the discipline. Discipline studies commodity characterization of various types of fruit and vegetable products and products of its processing, methods of preparation for realization of consignment of fruits and vegetables, rules of registration of accompanying documents and methods of evaluation of commodity quality.

**Economics, entrepreneurship and management in fruit and vegetable production.** A course foresees the study economics of the system of agrarian relations of productions in intercommunication with development of productive forces of agriculture. Criteria and indexes, which characterize development of agricultural production, ways and methods of the rational use of earth, financial and labours resources, are herein examined. The necessity of development and improvement of resource potential of agriculture opens up, the method of determination of economic efficiency of agricultural industries is given. The terms of forming of prime price and profitability of products of agriculture, development and functioning of market of food light up. The problems of intensive development of industries of agriculture are studied on the basis of the wide use of industrial technologies, rational placing and specialization of agricultural production on the base of agro industrial integration in the conditions of relations of markets.

**Mushroom's growing.** The biological capacities of cultivation's mushrooms, their requirements for the growing's terms are learnt. Especially for the medical capacities of hat's mushrooms. Constructions capacities of champignons and principles their equipments to the tools for the providing optimal micro climate's parameters are showed. The technology's details of receiving to the mycelium, making up of substrates and base to the mushrooms the main cultivation mushrooms (*Agaricus bisporus*, *Pleurotus ostreatus*, *Lentinula edodes* etc.) are introduced. As a technologies for the growing of few common mushrooms groups.

**Technologies of Protected Cultivated.** The technology of vegetable crops in different types of greenhouse's constructions are studied. As a variety's choice for the specific, microclimate's terms and its parameters in winter and plastic greenhouses. For example a nutrient solutions, plants forming and another agro technical methods in such terms. Especially important for the greenhouse's nutrient soilless, substrates to prepare to the nutrient solutions for the hydroponic methods dependent to the cultures and their growth's phases.

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## Optional components EPP

### *Optional components by specialty*

**Agricultural microbiology.** The subject give knowledge about morphology, structure, classification, genetic, physiology and ecology of basis groups of microorganisms, their role in utilization of complex plant and animal remains, breaking them down into simpler chemical forms which are returned to the soil. The importance of microorganisms in human practice activity, microorganisms interaction between themselves and high plants, give knowledge about microbiological means of protection against diseases and pests of plant, perspective means of plant protection for graving harvest agricultural crops.

**Seeds of vegetable crops.** The course examines issues of organization and system of seed production of vegetable crops in Ukraine, the theoretical foundations of seed and seed-quality control features growing major vegetable seeds.

**Land reclamation.** This course is designed as an application tool for the use of advanced reclamation technologies in horticulture vegetable growing and viticulture. Special focus is on hydro reclamation (irrigation, fertigation, drainage) - an effective factor in improving the quality and quantity of fruit and vegetable products. The course is organized into a series of lectures, technical classes with calculations of the irrigation schedule of fruit and vegetable crops in accordance with the specific soil and climatic conditions and series of some field trips, discussions, meetings with experts.

**Ornamental horticulture.** Discipline creates competence of the students in biology woody and herbaceous ornamentals various uses. Introduces the range and their methods of reproduction (seeds, rhizomes, bulbs, jigging, cuttings, root shoots, vaccinations, etc.). Program course "Ornamental Horticulture" supposed to study the history of ornamental horticulture, development of its main styles, classification ornamental plants. Attention is focused on the basic elements (lawns, flower beds, ridges, arabesque, alleys, linear plantations boksety, hedges, borders, pergolas, tapeworm, curtains, etc.). Main types of systems and greenery. We consider the technology of the decorative planting and care.

**Biotechnology.** Discipline focuses on cultivation of isolated cells and tissues, callus and suspension cultures, microclonal propagation of plants and their recovery from viral infections, morphogenesis and regeneration of plants in vitro (organogenesis, embryogenesis, rhizogenesis), culture of isolated protoplasts as a basic of cell engineering, selection of plants in vitro, cell and genetic engineering, methods for transgenic plants obtaining.

**Pomology.** The course studies the economic and biological features of fruit and berry crops and their variability depending on natural and agro-climatic conditions, varieties origin and requirements to their farming. Consider the question of maintaining existing varieties and their further improvement through clonal selection, introduction, zoning varieties from industrial and biological study of a particular region. Learning the basics of pomology will help future gardeners intelligently navigate the vast diversity of varieties of fruit and berry plants correctly chosen the best for mass propagation in nurseries and cultivation of industrial and amateur stands in a particular sector or climatic region. It teaches the basics of determining potential varieties for use in breeding as donors or sources of signs.

**Olegrafia.** In it's given origin, history of cultivating and inner species categorizations of (subspecies', varieties, and varieties type, varieties) vegetable and melons-field crops for group. The variety is the main object on which is directed cultivation technology. It was showed the analysis of the varieties resources' condition in Ukraine and their role in the production of agricultural output. Deeply motivated selection varieties and hybrids for

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determined of growing technology of vegetable crops and different directions of vegetable growing. On practically-laboratory lessons are studied certain varieties and hybrids of the vegetable and melons-field crops' of their different types of sort. They are study systems of approbations and identification sign, particularities of the expert operation of varieties on VOS - a test of vegetable and melons varieties.

**Potato.** Subject program involves the study of technology growing stable yields of potatoes in different soil-climatic zones with high lezhkozdatnistyu, product quality, technological and culinary properties. The issue of development and quality control of potatoes on the way from the field to the consumer, the requirements of technical standards for the quality of potatoes for various purposes, resource assortment of potatoes.

**Greenhouses.** The scientific and innovations aspects of developing of modern greenhouses, their modernizations and reconstructions methods of climate's variations and connecting of micro climate's capacity's are learnt. This discipline introduces the cycle of technical engineering greenhouse's systems and principles of greenhouses equipment's jobs.

**Nursery.** The program provides introduction to the history, current state and prospects nursery in Ukraine and abroad, studying biological basis propagation of fruit and berry plants by growing basic planting material. The program includes fruit nursery structure and organization of its territory, requirements for soil and climatic conditions, basic principles of calculation area offices. The basis of the program is the study of rootstocks of fruit, berry and nut crops, the main technologies of the grafted and rooted planting material, knowledge of modern standards and rootstock seedlings, planting material storage technologies.

**Beekeeping.** The discipline studies required to get the students knowledge on plants honey and pollination of crops by bees. Expected learning products plants collected bees for their power and provide a marketable product. Served as melliferous plants characteristic of plants, their classification, use to create tricks in different periods of the season. Reveals the role of bees as pollinators of plants, equipment and organization pollination of various crops, effectiveness in increasing yields of fruit and seeds.

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### **2.3. FACULTY OF PLANT PROTECTION, BIOTECHNOLOGY AND ECOLOGY**

**Dean** - doctor in agricultural sciences, Associate professor **Julia Kolomiets**

Tel.: (044) 527-86-99 E-mail: plantprotect\_dean@nubip.edu.ua

Location: Building № 4, Room 42

The faculty organizes and coordinates Bachelor training in the following specialties:

#### ***202 Plant Protection and Plant Quarantine***

Educational-professional Program «**Plant protection and plant quarantine**»

Graduating departments:

Department of Entomology named after Prof. M.P. Diadechko

Tel.: (044) 527-89-78, E-mail: entomologia@ukr.net

Head of the department – PhD in Agricultural Sciences, Associate professor, Y.O. Likar

Department of Phytopathology named after Academician V.F. Peresyphkin

Tel.: (044) 527-82-11, E-mail: dgentosh@ukr.net

Head of the department – PhD in Agricultural Sciences, Associate professor, D.T. Gentosh

Department of Integrated Protection and Plant Quarantine

Tel.: 527-82-12, E-mail: kaf.izkr@gmail.com

Head of the department – PhD in Biological Sciences, Associate professor, A. G. Babych

#### ***162 Biotechnology and Bioengineering***

Educational-professional Program «**Biotechnology and Bioengineering**»

Graduating department:

Department of Ecobiotechnologies and Biodiversity

Tel.: (044) 527-85-17, E-mail: eko\_bio@nubip.edu.ua

Head of the Department – Doctor of Agricultural Sciences M. V. Patyka

#### ***101 Ecology***

Educational-professional Program «**Ecology**»

Graduating department:

Department of Agricultural Sphere Ecology and Ecological Control

Tel.: (044) 527-81-95, E-mail: vchaika28@gmail.com

Head of the department – Doctor of Agricultural Sciences, Professor V. M. Chaika

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**Bachelor**  
**field of knowledge " Agricultural science and food"**  
**In specialty "PLANT PROTECTION AND PLANT QUARANTINE"**  
**Educational-professional program "Plant Protection and Plant Quarantine"**

Form of Training:	Licensed number of persons:
– Full-time	75
– Part-time	50
Duration of Training	4 years
Credits	240 ECTS
Language of Teaching	Ukrainian, English
Qualification	Bachelor of plant protection and plant quarantine

### Concept of training

Experts in Plant Protection develop systems of protective measures against harmful organisms. They have to know the methods of diseases diagnostics, identification of pathogens, determination the species composition of phytophagous, entomophagous and weeds, know their biology and ecology, explore the economic threshold of harmfulness and develop forecasts and the occurrence of pests and diseases.

### Practical training

Teaching and research farms of NULES of Ukraine: PC of NULES "Agronomic Research Station", "Velykosnytynske Education and Research Farm named after O. Muzychenko", Education and Research Farm of NULES of Ukraine "Fruit and Vegetable Garden".

### Proposed Topics for Bachelor theses

1. Biological features and harmful herbivorous insect of agricultural crops.
2. Phenology of entomopathogenic nematodes – parasitic pests – in growing ornamental plants.
3. Development features of root rot of crops.
4. Integrated action of after stair herbicides on agricultural crops.
5. Species composition and hazard of similar to mouse rodents on agricultural crops and their products.

**Academic rights of Graduates:** graduates can apply for Master's Degree Specialties and Specializations specified in Table 1.2 Section 1.3 this Catalog

### Employment of Graduates

The Classifier of occupations in Ukraine DK 003-95 (2006) for graduate level "Bachelor" set qualification "Inspector Plant Protection" (code 3212 CE). Graduates may find employment specialists in pest control services, research institutions, control and laboratory toxicological and biological plant protection in farms of different ownership or to continue studies in master.

**Bachelor`s Program and Curriculum in Specialty  
«Plant Protection and Plant Quarantine»  
Educational-professional Program "Plant protection and plant quarantine"**

Code n/a	Components of the educational-professional program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits ECTS	The final control
1	2	3	4
<b>1. GENERAL TRAINING CYCLE</b>			
<b>Compulsory components</b>			
CC 1	Higher mathematics (professional orientation)	3	exam
CC 2	Fundamentals of computer science	3	exam
CC 3	Biophysics	3	exam
CC 4	Chemistry (Inorganic and analytical, organic, physical and colloidal chemistry)	20	exam
<b>Compulsory components by the decision of the academic council of the university</b>			
CC 5	History of Ukrainian Statehood	4	exam
CC 6	Ethnocultural	3	exam
CC 7	Philosophy	3	exam
CC 8	Ukrainian for professional purposes	3	exam
CC 9	Foreign language (English, German, French, Spanish)	6	exam
CC 10	Physical training	6	exam
CC 11	Labour and life safety	3	exam
CC 12	Legal culture of personality	3	test
<b>2. SPECIAL (PROFESSIONAL) TRAINING CYCLE</b>			
<b>Compulsory components</b>			
CC 13	Botany	4	exam
CC 14	Genetics	4	exam
CC 15	Farming	4	exam
CC 16	Agricultural chemistry	4	exam
CC 17	Crop production with basics of fodder production	4	exam
CC 18	Fundamentals of scientific research in plant protection	6	exam
CC 19	Mechanization of crop production	4	exam
CC 20	Technology of storage and processing of crop production products	4	exam
CC 21	General entomology	8	exam
CC 22	General plant pathology	8	exam
CC 23	General mycology	6	exam
CC 24	Quarantine of plants	5	exam
CC 25	Agricultural entomology	8	exam
CC 26	Agricultural plant pathology	8	exam
CC 27	Plant disease prognosis	4	exam
CC 28	Weed control	8	exam
CC 29	Pest monitoring	4	exam
CC 30	Plant immunity.	4	exam
CC 31	Chemical protection with the bases of toxicology	8	exam
CC 32	Economics and business management	4	exam
<b>The volume of compulsory components</b>		<b>159</b>	
<b>Optional components</b>			
<b>Optional Block</b>			
OB 2.1.	Fundamentals of biotechnology in plant protection	4	exam
OB 2.2	Biological protecting of plants from wreckers	4	exam
OB 2.3	Agricultural zoology	4	test
OB 2.4	Mites and Nematodes	4	exam
OB 2.5	Rodentology	4	exam
OB 2.6	General microbiology and virology	4	test
OB 2.7	Plants Physiology with the bases of chemistry	4	exam
OB 2.8	Soil science with the bases of geology	4	exam
OB 2.9	Fruit and Vegetable growing	4	exam

OB 2.10	Protection of flowering and ornamental plants from pests and diseases	6	test
OB 2.11	Protection of medicinal plants from pests and diseases	6	test
OB 2.12	Protecting edible mushrooms from pests and diseases	6	test
<i>Optional Block by students choice</i>			
OB 2.13	Optional components 1	3	exam
OB 2.14	Optional components 2	3	exam
<b>The volume optional components</b>		<b>60</b>	
<b>3. OTHER TYPES OF TRAINING</b>			
CC 3.1	Military training course	29	
CC 3.2	Academic Practice	12	
CC 3.3	Production Practice	5	
CC 3.4	Bachelor Thesis writing (Graduate thesis or Project)	2	
CC 3.5	State Attestation	2	
CC 3.6	Total for Specialty (without Military training course)	17	
<b>THE TOTAL AMOUNT OF EPP</b>		<b>240</b>	

## Annotations of Components in the curriculum

### 1. GENERAL TRAINING CYCLE

#### Compulsory components

**Higher mathematics (professional orientation).** Elements of analytical geometry. Linear algebra. Math analysis. Differential calculation of the one of current values. Investigations of functions by methods of differential changes. Indefinite and definite integral. Differential equations. Rows.

**Fundamentals of Computer Science.** Calculation technique and information in Forestry. Program micro calculators (MC). Work in the automatic regime and program on MC. Structure, database and software of electronic machines. Personal computers. Packs of programs and their practical using. Program languages. Program of tasks. Tasks solving by personal computer.

**Biophysics.** Mechanics, kinematics and dynamic of point and hard body. Molecular physics and thermodynamic. Electrostatics. Electric current and electromagnetism. Waves. Optics. Elements of quantum mechanics. Structure of nuclear. Radiation. Radiation influence on biological objects.

**Chemistry (Inorganic and analytical chemistry, organic chemistry, physical and colloidal chemistry)** is the study of the synthesis and behavior of inorganic and organometallic compounds. Subject includes the theoretical foundations of modern analytical chemistry. In Analytic Chemistry it is shown the foundations of Qualitative and Quantitative Analyses of above mentioned compounds of bio-elements and their practical use in agricultural production; Structure, method of extraction, physical and chemical properties, as well as practical use of the main classes of organic substances such as carbohydrates, spirits, aldehydes, ketones, amines, acids, heterocyclic substances. Studying of properties of amino acids, carbohydrates, lipids, nuclear acids and proteins; physical and chemical properties of compounds and solutions. Structure, functions and metabolism of proteins, carbohydrates, amino acids, nuclear acids, vitamins, ferments, macro and microelements, which form the basis of tissue composition. Biochemical processes which form the basis of functional activity of certain organism organs and systems.

## Compulsory components by decision of the Academic Council of the University

Annotations of components: "History of Ukrainian Statehood", "Ethnocultural", "Philosophy", "Ukrainian for Professional Purposes", "Foreign Language (English, German, French, Spanish)", "Physical Training", "Labour and Life Safety", "Legal Personal Culture" see Section 2.1.

## 2. SPECIAL (PROFESSIONAL) TRAINING CYCLE

### Compulsory components

**Botany.** Structure of cell, tissue, vegetative and generative organs. Difference of plant's world. Features of different groups of lowest and high plants. Genesis of plants, its role in forestry. Morphology. Productivity of wood biogenesis and actual questions of its rational use and protection.

**Plants Physiology with the bases of chemistry.** Physiology of plant cell. Water cycle in plants. Photosynthesis. Breath. Mineral nutrition. Synthesis and transformation of organic matters. Growth of plants. Fruit and seeds ripening. Adaptability and suitability of plants.

**Genetics with the basics of breeding.** Studies key laws of heredity and variability of organisms, explains principles of storage, transfer and implementation of genetic information including cytological and molecular fundamentals of heredity, regularities of inheritance of sex, properties (drawbacks, diseases) linked inheritance, basics of genetic engineering, populations and pure lines, basics of immunogenetics.

**Selection and Seed Farming.** Discipline is devoted to studying of modern situation in selection and to the last advances in this sphere, agricultural demands to production of species and their hybrids, tasks and focus area of selective work, technologies of selection process, modern methods of creation of new kinds and hybrids of field crops.

**Farming.** Soil; fertility and its verifications, soil reproduction, scientifically basis of agriculture and its practical usage, general concepts of agriculture and its practical usage, theoretical principles of crop rotation and its practical usage in the different soil-climatic zones of Ukraine and the land and its protection of soil erosion, agricultural system and its local peculiarities.

**Agricultural chemistry** includes theoretical and practical problems of crops nutrition and fertilization. They are considered studies on chemical melioration, organic and mineral fertilizers characteristics, and features of their application for different crops. The issues of nutrients balance, fertilization system, joint application of fertilizers and plant protectors are discussed. The attention paid to agrieological aspect of fertilization.

**Crop production with basics of fodder production** studied modern intensive technologies of food, industrial and fodder crops cultivation. Course based on knowledge about field crops, features of their growth and development, requirements to the environmental factors, up to date tools and technologies of agricultural crops cultivation which provides obtaining of high yields with appropriate quality with minimal labor and finance expenses. Course forms appropriate professional ideology, provides with system of theoretical and applied knowledge's and skills to implement it in practice.

**Fundamentals of scientific research in plant protection.** The lecture course on the subject covers the theoretical foundations of scientific research and their application in practice, planning and research in agronomy, the application of statistical methods in

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agronomic research and planning of scientific research using computer applications. Laboratory - practical course focuses on the study of methods and algorithms for statistical analysis of experimental data: variation, variance, correlation, regression, Pearson analysis, probit analysis.

**Mechanization of crop production.** The purpose of studying discipline is to provide students with theoretical knowledge and practical skills in the field of mechanization, electrification and automation of technological processes of agricultural production. Academic discipline is complex and consists of coherent and technologically related sections: tractors and automobiles, agricultural vehicles; electrification and automation of technological processes of agricultural production.

**Technology of storage and processing of crop production products.** It is a special discipline that studies technology of postharvest handling of cereals, legumes, grouts crop, oilseeds, fruit and vegetable crops, sugar beets, hop, tobacco, methods of short and long-term storage, bases of processing. This is final discipline after learning technologies of growing cereals, legumes, grouts crop, industrial crops, vegetables, fruits and berries.

**General entomology**, as a Theoretical and a professional discipline enables the future specialists to get acquainted with the peculiar features of external structure of insect, the functioning of living organs and their systems, life cycles, multiformity of species and intraspecific forma and their interaction among themselves and the environment surrounding.

**General plant pathology.** Program foresees acquaintance of students with science on plant diseases and factors, which cause diseases, influence of ecological conditions on its development. Considerable attention is paid to disease diagnosis, pathogen ecology, its classification, morphological and biological peculiarities and methods of plant protection from diseases.

**General Mycology.** Course of "General Mycology" makes students to get acquainted with morphological and biological peculiarities and spreading of fungi, its role and meaning in human life and agriculture.

**Quarantine of plants.** Modern knowledge of fito-sanitary legislation, order and methods of fito-sanitary examination, biology of quarantine and other harmful organisms, absent, on territory of the country.

**Agricultural entomology.** The course deals with Introduction to entomology and insect-pest management, including morphology, life processes, ecology and biology of key agricultural pests. Students are provides with knowledge of tactics of population suppression, and ecological backlash and level of entomophagous efficacy.

**Agricultural Plant Pathology** studies the crop diseases and works out the system of protection measures from one or group of diseases sting crops, biological peculiarities and technologies of small fruit crops growing.

**Plant disease prognosis** (Prognosis of crop disease development is a part of integrated plant protection system and basis for planning and timely usage of all protection measures).

**Weed control.** Is one of the basic disciplines of training specialist in plant protection. The lecture course covers scientific basic herbology, characteristics and location of sagittal vegetation in modern agrophytocoenoses and its negative impact on crops. The course measures with weed-infested control systems in modern farming systems. Laboratory course is devoted to weed studying and acquisition of practical skills development systems of weed control in field crops.

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**Pest monitoring** course is focused at methods and methodologies of pests sampling and collection in agricultural fields at modern crop rotation and technologies of production. The apart of the courses is phenology and mapping of insect communities structure in agricultural biocoenosis.

**Plant immunity.** Plant immunity studies crop resistance to principal factors, which define its immunity to harmful organisms and includes some working steps of selection of new plant varieties and hybrids resistant to diseases and pests.

**Chemical protection with the bases of toxicology.** The educational discipline studies main methods of experiment organization, main principles and level of its planning, demands to researches in Plant Protection, statistical analysis of results obtained.

**Economics and business management.** Formation of knowledge about economic relations and social form of production, efficient use of scarce productive resources and ways to ensure public needs in different socio-economic formations.

### Optional components

#### *Optional Block*

**Fundamentals of biotechnology in plant protection.** The course provides an opportunity to learn basic skills and techniques of plant culture in vitro, to obtain transgenic plants and plant resistant to herbicides, diseases, adverse environmental conditions.

**Biological protecting of plants from wreckers** study questions of application of different biological facilities are studied in protecting of plants from harmful organisms, including microbiological preparations, mass breedings of insects and pliers in biolaboratories, use BAS, and also combination of biological method, with other methods of defence of plants.

**Agricultural zoology.** Studying of this course allows to get familiar with biological laws of development of living organisms, principles of animal systematic and evolution of. Attention is paid to modern taxonomy, species biodiversity, morphology of different animal types as well as life process and cycles, effect of environment and the role that pests and beneficial species play in ecosystems.

**Mites and Nematodes** The content of the subject includes the study of the species composition, morphological and biological features of modern monitoring, hazard and environmentally safe measures to control the size of the main species of nematodes and mites.

**Rodentology. (Harmful rodents and lagomorphs)** includes the study of a large number of pests, their systematic position, anatomical, morphological, physiological, and biological and ecological characteristics related to the two groups of animals

**General Microbiology and Virology.** Microorganisms. Exchange of nutrition's. Microbial and soil fertilizing substances. Microbiology of water, air, forage. Morphology and chemical composition of virus. Virus diseases and their control.

**General Microbiology and Virology.** The course provides knowledge and current understanding of the morphology, ultrastructure, systematics, genetics, physiology and ecology of microorganisms and viruses, metabolism and the role of microorganisms in the transformation of organic and inorganic substances in the processes of soil formation and soil fertility. The latest data on the relationship of microorganisms and viruses with higher plants, the prospects of creating microbiological plant protection products, bacterial fertilizers, biological products to increase crop yields. The role of microorganisms in the purification of contaminated soils by toxic compounds and pesticides is considered. The chemical composition, morphological structure and nature of genomes of different viruses,

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mechanisms of their interaction with cells are presented. The modern systematics of viruses are given. Attention is paid to aspects of emerging and re-emergent infections that are dangerous to plants.

**Plant physiology with the basics of biochemistry.** It involves studying the functions of the plant organism and the laws of its life.

**Soil Science with the Bases of Geology.** Soil science is science, which studies genesis, development, structure, composition, properties and laws of geographical distribution of soils, ways of their rational use and restoration of fertility

**Fruit and Vegetable growing.** The lecture course of the discipline highlights issues of biological bases of vegetables crops, peculiarities of soil preparation and fertilization, plant propagation, seedlings growing, general measures of plant protection, harvesting and the principles of vegetables crops rotation. When considering vegetable growing in the open, technology of growing cabbage, carrot, table beet, onion, tomato, eggplant, cucumber, lettuce, dill, sorrel, horseradish is shown. At the laboratory-practical classes morphological characteristic of vegetable crops and their classification are studied. Study of species composition of seeds, their germination is carried out. Methods of propagation, accounting of seedlings quantity for different crops both field and greenhouse have been studied. The program provides studying fruit and berries, their importance, morphological and biological peculiarities, methods of propagation, rootstocks, the structure of the nursery, technologies of growing plantings, establishment of orchards, systems of soil management and treatment in the orchards, fertilization and irrigation of plantings, fruit trees forming and pruning and other operations in orchards, preparation and technologies of harve

**Protection of flowering and ornamental plants from pests and diseases.** It envisages studying the principles of formation of phytodesign compositions with ornamental and flowering plants in natural, anthro-po-natural, landscape and cultural phytocenoses of open and closed soil, substantiation of their role in natural regulating mechanisms and purification of the environment from adverse factors.

Introduces students to the species composition of pests and pathogens of flowering and ornamental plants; visual signs of settlement, symptoms of disease; bioecological features of pathogens; the influence of environmental conditions on the processes of disease development of flowering and ornamental plants; modern methods and methods of protection of flowering and ornamental plants from pests and diseases.

**Protection of medicinal plants from pests and diseases.** Discipline studies diseases of medicinal plants, pathological process, the main pathogens, its development conditions, and protection methods from them.

**Protecting edible mushrooms from pests and diseases.** Discipline studies diseases of cultivated mushrooms, peculiarities of its infection and pathological process, characterizes the main disease agents of edible mushrooms, conditions of its development and protection measures from them.

**Protection edible mushrooms from pests.** The discipline deals with biology of edible mushroom pests and methods of their control.

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**Bachelor**  
**field of knowledge "Chemical and Bioengineering"**  
**in specialty "BIOTECHNOLOGY AND BIOENGINEERING"**  
**Educational-professional Program "Biotechnology and Bioengineering"**

Form of Training:	Licensed number of persons:
- full-time study	100
- part-time	50
training period	3 years 10 months
Credits	240 ECTS
Language of training	Ukrainian, English
Qualifications of graduates	Bachelor of biotechnology and bioengineering

### **The concept of training**

The aim of studying is mastering the theoretical basis and formation of appropriate practical skills by researching biological objects considering classical and modern scientific approaches, which harmonically combine student's perception and understanding of biotechnological and ecological directions. Special part allows to master main methods of work with genetic material, which is necessary for preparing high-qualified specialists of branch subdivisions.

### **Proposed Topics for Bachelor theses**

1. Getting crymophylactic lines rapeseed (*Brassica napus* L) in culture in vitro.
2. Biotechnological production bases and the use of entomophagous on maize crops.
3. Granulation of hop cones in the technology of industrial production of beer.
4. Obtaining virus-free material manor verbena hybrid by biotechnological method.
5. Phylogenetic features of Ukrainian isolate of potato virus X-based analysis of the CP gene fragment.

**Academic rights of Graduates:** graduates can apply for Master's Degree Specialties and Specializations specified in Table 1.2 Section 1.3 this Catalog

### **Employment of Graduates**

Graduates work in the food, chemical and biotechnology industries, institutions and environmental health surveillance in control and analytical laboratories, centers of certification, commercial firms, research and design institutes and institutions of Ministry of Education, Academy of Sciences of Ukraine, core public administration, higher and secondary schools.

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**Bachelor`s Program and Curriculum  
in Specialty «Biotechnology and Bioengineering»  
Educational-professional Program "Biotechnology and Bioengineering"**

Code n/a	Components of the educational-professional program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits ECTS	The final control
1	2	3	4
<b>1. GENERAL TRAINING CYCLE</b>			
<b>Compulsory components</b>			
CC 1	Political Science	3	exam
CC 2	Higher Mathematics	7	exam
CC 3	Physics	7	exam
CC 4	General and Inorganic Chemistry	6	exam
CC 5	Organic Chemistry	6	exam
CC 6	Analytical Chemistry	6	exam
CC 7	Physical and Colloid Chemistry	7	exam
CC 8	Engineering and Computer Graphics	3	exam
CC 9	Computational Mathematics and Programming	3	exam
CC 10	Economics and Organization biotech industries	4	exam
<b>Compulsory components by the decision of the academic council of the university</b>			
CC 11	History of Ukrainian Statehood	3	exam
CC 12	Ethnocultural	3	exam
CC 13	Philosophy	4	exam
CC 14	Ukrainian for professional purposes	4	exam
CC 15	Foreign language (English, German, French, Spanish)	5	exam
CC 16	Physical training	6	exam
CC 17	Labour and life safety	3	exam
CC 18	Legal culture of personality	3	test
<b>2. SPECIAL (PROFESSIONAL) TRAINING CYCLE</b>			
<b>Compulsory components</b>			
CC 19	Biochemistry	6	exam
CC 20	Ecology	3	exam
CC 21	Cell biology	5	exam
CC 22	General Microbiology and Virology	7	exam
CC 23	General Biotechnology	7	exam
CC 24	Genetics	7	exam
CC 25	Biotechnological processes and equipment manufacturing	7	exam
CC 26	Automation biotech industries	4	exam
CC 27	Regulatory support biotech industries	5	exam
CC 28	Fundamentals of designing	5	exam
CC 29	Biosafety (the use of biotechnology)	3	exam
CC 30	Plant physiology	4	exam
CC 31	Industrial biotechnology	4	exam
CC 32	Bioengineering	3	exam
CC 33	Molecular biotechnology	4	exam
CC 34	Ecological biotechnology	4	exam
<b>The volume of compulsory components</b>		<b>163</b>	
<b>Optional components</b>			
<b>Optional Block «Environmental biotechnology»</b>			
OB 1.1	Radiobiology and radioecology	3	exam
OB 1.2	Basics of biodiversity	3	exam
OB 1.3	Proteomics and genomics viruses	3	exam
OB 1.4	Applied ecology	3	exam
OB 1.5	Introduction to the profession	3	exam
OB 1.6	Immunogenetics	2	exam
OB 1.7	Biotechnology of microbial synthesis of drugs	3	exam
OB 1.8	Biotechnology of production of microbial products for agriculture	3	exam

**CURRICULA AND PROGRAMS OF BACHELOR DEGREE**

OB 1.9	Objects of biotechnological production	3	exam
OB 1.10	Instrumental methods of analysis	3	exam
OB 1.11	Computer technology and programming fundamentals	3	exam
OB 1.12	Grounds of biological system functioning	3	exam
OB 1.13	Climatology	3	test
OB 1.14	Bioenergy systems in agrarian production	4	test
OB 1.15	Technologies of bioproduction	4	test
OB 1.16	Fundamentals of plant biotechnology	4	test
OB 1.17	Bioconversion of waste	4	exam
<b>Optional Block «Agricultural biotechnolog</b>			
OB 2.1	Radiobiology and radioecology	3	exam
OB 2.2	Basics of biodiversity	3	exam
OB 2.3	Proteomics and genomics viruses	3	exam
OB 2.4	Applied ecology	3	exam
OB 2.5	Introduction to the profession	3	exam
OB 2.6	Immunogenetics	2	exam
OB 2.7	Biotechnology of microbial synthesis of drugs	3	exam
OB 2.8	Biotechnology of production of microbial products for agriculture	3	exam
OB 2.9	Objects of biotechnological production	3	exam
OB 2.10	Instrumental methods of analysis	3	exam
OB 2.11	Computer technology and programming fundamentals	3	exam
OB 2.12	Grounds of biological system functioning	3	exam
OB 2.13	Climatology		test
OB 2.14	Environmental security in agriculture	4	exam
OB 2.15	Agricultural biotechnology	4	exam
OB 2.16	Biomethods of plant protection	4	exam
OB 2.17	Biotechnological processes of agritechnologies	4	exam
<b>Optional Block by students choice</b>			
OB 2.18	Optional components 1	3	exam
OB 2.19	Optional components 2	3	exam
<b>The volume of optional components</b>		<b>60</b>	
<b>3. OTHER TYPES OF TRAINING</b>			
CC 3.1	Military training course	29	
CC 3.2	Academic Practice	10	
CC 3.3	Production Practice	4	
CC 3.4	Bachelor Thesis writing (Graduate thesis or Project)	2	
CC 3.5	State Attestation	1	
CC 3.6	Total for Specialty (without Military training course)	17	
<b>THE TOTAL AMOUNT OF EPP</b>		<b>240</b>	

## Annotations of Components in the curriculum

### GENERAL TRAINING CYCLE

#### Compulsory components

**Politics.** Contents of discipline involves the examination of distinct political sphere of society. Understanding the purpose, structure and functions of politics and power that allows you to objective knowledge and practical skills of political activity.

**Higher mathematics.** The examples of basic concepts and methods of discipline to demonstrate the laws of nature, the essence of the scientific approach, the specificity of the subject and its role in science and technology.

**Physics.** Purpose of the discipline formation in physical science students thinking, in particular, a proper understanding of the limits of the use of different physical concepts, laws, theories and skills to assess the likelihood of outcomes.

**General and inorganic chemistry.** The aim of the course of General and Inorganic Chemistry is to provide knowledge about the properties, methods of preparation and application of chemical elements and their compounds, skills performance chemical experiment.

**Organic Chemistry.** Mastering the basic concepts of organic chemistry, the study of the synthesis and analysis of organic substances, processes of purification, separation and identification of mixtures tification, strengthening skills in the chemical laboratory

**Analytical chemistry.** Discipline examines the theoretical and practical issues of qualitative and quantitative chemical analysis. Specifically discusses the basic requirements for chemicals, reagents and analytical reactions, the concept of separation methods and concentration of cations, anions substances. Methods acid-base titration.

**Physical and colloid chemistry.** Properties and structure of substances based on their chemical composition, structure and living conditions, the study of chemical reactions and other forms of interaction between particles or chemicals depending on their composition, structure and terms of the processes, study, interpret and determine ways to apply the basic laws of physical chemistry , knowledge of the laws of phenomena that occur at the boundaries of the phases and their use for electrochemical and catalytic processes.

**Engineering and Computer Graphics.** General engineering training course, the subject of which is the construction and reading of drawings, sketches, technical drawings and diagrams. Study courses allow students to read blueprints, design partsof drawings for various purposes, to know and to use state standards in project documents, maintain project documentation.

**Computational Mathematics and Programming.** Studying the structure of computer hardware, software for calculation methods on a personal computer, the rules of working with text blocks to design computational algorithms of calculations using spreadsheet and mathematical processors, basic algorithms, programming, elements of Computational Mathematics and Informatics.

**Economics and Organization biotech industries.** Study on the economic substance and business enterprises, their place and role in the market economy mechanism of creation, operation and management of agricultural businesses using biotechnology. Consider the criteria and indicators of the development of biotechnological production, ways and means of rational use of land, material and labor resources. Method of determining the economic efficiency industries are served. The conditions of the costs and profitability of agricultural and biotechnology industries as well as financial services, operation of business enterprises are highlighted.

### **Compulsory components by the decision of the academic council of the university**

Annotations of components: "History of Ukrainian Statehood", "Ethnocultural", "Philosophy", "Ukrainian for Professional Purposes", "Foreign Language (English, German, French, Spanish)", "Physical Training", "Labour and Life Safety", "Legal Personal Culture" see Section 2.1.

## **SPECIAL (PROFESSIONAL) TRAINING CYCLE**

### **Compulsory components**

**Biochemistry.** The study of the chemical composition, structure, transformation of matter and energy that occur in living organisms, particularly plants. Obtaining knowledge on the subject will allow students to determine the flow patterns and the relationship

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between different metabolic pathways, the principles of regulation and topography, as in the cells, the body as a whole. Establishing patterns of metabolic major classes of organic compounds – carbohydrates, proteins, fats, vitamins, etc., allows you to create appropriate conditions for crops that provide a maximum number of the substance.

**Ecology.** Examines patterns of interaction between society and nature, the main environmental issues that arise in today's industrial production, the impact of the changed environment on humans, environmental protection, restoration and sustainable use of natural resources, environmental quality management based on modern advances in science, engineering and technology to protect environment.

**Cell biology.** The structural organization of the cells of living organisms, evolution of living organisms on the planet, research methods, and concepts of cellular signals apoptosis are studied.

**General microbiology and virology.** The course provides knowledge and current understanding of the morphology, ultrastructure, taxonomy, genetics, physiology and ecology of microorganisms, their metabolism and role in the transformation of organic and inorganic substances in the processes of soil and improve soil fertility. The acquisition of theoretical bases and student's practical skills in the study of viruses and how to limit their spread. Special part involves mastering techniques that are necessary to work with viruses of plants and animals, and in particular the methods of diagnosis and viruses identification.

**General biotechnology.** Biotechnology culturing isolated cells and tissue culture of isolated protoplasts, as a basis for cell engineering, the use of in vitro methods in plant breeding, genomics basis, the methodology of genetic engineering, transgenic plants, agricultural DNA technology, teaching the basics of production and use of transgenic animals genetic therapy, biotechnology components of food, enzyme technology, engineering enzymology, industrial biotechnology, environmental issues safety of biotechnology are studied in the discipline.

**Genetics.** We study heredity and variability of living organisms. The laws of heredity and variation are valid for all organisms and determine the development of life, because genetics is the theoretical basis for all disciplines, which have as their object living organisms. Heredity and variation is studied on the molecular, cellular and population levels.

**Biotechnological processes and equipment manufacturing.** The purpose of discipline is mastering the principles of biotechnological processes, technologies and facilities that provide them, and how to determine the basic parameters of raw materials and product biotechnological process.

**Automation biotech industries.** The purpose of teaching the preparation of biotechnologists is mastering the theory and practice in the application of methods of complex systems of biotechnology by new technology and finding the best option performance.

**Regulatory support biotech industries.** The principles and methods of technical regulation and its components: standardization, conformity assessment, metrology, requirements for EN, TR, GATS and their place in the world of modern regulations, the requirements of the Directives mandatory for the European market requirements for safety and quality certified quality system of manufacturers, quality indicators to measure them using all methods of measurement metrology studies, the definition of products in low concentrations GMO, ways and problems of harmonization of Ukrainian system of standardization and certification in the field of biotechnology with international rules and regulations are studied in the discipline.

**Fundamentals of designing.** The development of students' design methods biotech equipment, mastering the necessary techniques development and introduction of new bioprocess. The basis of biotechnological processes, equipment and tools to perform basic

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process operations, the theoretical basis for calculation of parameters of machines and their working groups are covered in the discipline.

**Biosafety (the use of biotechnology).** We study the heredity and variation of organisms with artificially created new features, as well as their distribution and possible consequences for ekobiocenoses.

**Plant physiology.** We study basic physiological processes in plants, physiology and biochemistry of plant cell, plant water exchange, photosynthesis, respiration, mineral plant nutrition, growth and development of plants and plant resistance to adverse conditions.

**Industrial Biotechnology.** Study the physiological characteristics of industrial strains, culture media preparation technology for various industrial strains of microorganisms, methods of cultivation, management of industrial strains growing and getting their products from microbial synthesis templates and key stage biotech industries, methods of cultivation producers, operating principles and design bioreactors, directions of substances of primary and secondary metabolism, control methods for the biosynthesis of products based on microorganisms.

**Bioengineering.** Cell culture of higher plants, the main types of bioprocess, biotechnology receiving primary, secondary metabolites, the basic principles of industrial implementation of biotechnological processes, circuits fermentation processes, bioreactors, immobilized enzymes and proteins, enzymes technology, technology, monoclonal antibodies, enzyme immunoassay, biosensors the basic directions and objectives of modern bioengineering, molecular basis of bioengineering, molecular organization of genomes, obtaining individual gene vectors for genetic engineering, expression of cloned genes, genetic engineering of plants, animals, gene therapy, biotechnology and biosafety are studied in the discipline.

**Molecular biotechnology.** The structure of nucleic acids, DNA replication, replicon in eukaryotes, local amplification of DNA, replication errors, transcription in prokaryotes, promoters in eukaryotes, chromatin, the processing of RNA, reverse transcription, DNA repair, recombination, gene conversion, recombination specific, mobile elements of the genome, the general scheme of protein synthesis, the discovery of RNA transport, ribosomal proteins, translation initiation, elongation, regulation of translation in prokaryotes, regulation of translation in eukaryotes are studied in the discipline

**Ecological biotechnology.** The course deals with the discipline of modern methods of biotechnology to solve environmental problems that uses biological systems, living organisms and their metabolic products. Methods of cleaning the environment from man-made pollution, restore soil fertility, replacing chemicals, receive and environmentally optimized polymer modification and prevention biocorrosion, biodeterioration and biofouling, study methodological approaches to major destinations provide effective cleaner processes production, switching to closed loop water, anti-corrosion and microbiological biodeterioration of materials, plant biosecurity and the creation of new effective biocides are discussed in the course of discipline "Ecobiotechnology".

### **Optional components**

#### ***Optional Block «Environmental biotechnology»***

**Radiobiology and radiocology.** The course considers the principles of agricultural radiobiology and radioecology; it introduces into the problems of biological impacts of ionizing irradiation, radionuclide migration in the environment and in the agricultural objects, the basic concepts of the radio ecological and dissymmetric monitoring; it presents the structure of the radiation control system, the methods of assessment and normalization of the doses and permissible levels of the radioactive contamination in accordance with the norms of radiation safety of Ukraine; it analyzes in details the

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countermeasures for reduction of the radio nuclides transfer into agricultural production and foodstuffs, as well as the ways for the ionizing irradiation application in the agricultural practice.

**Basic of biodiversity.** We consider the current methodology for the analysis of sustainable development and ecosystem functioning. The main goal of the course is mastering the methodology of quantitative and qualitative assessment of biodiversity, master techniques of modern analysis of ecosystems, which are basic in the study of population and interpopulation relationships, the main provisions of modern ecology and biology, the evolution of living organisms in the biosphere, environmental problems of today and how their solution.

**Proteomics and genomics.** The acquisition of theoretical foundations and formation of appropriate skills in the study of viruses and their spread in agrocenoses. Special of the discipline makes it possible to learn basic techniques in working with virological material, identify the virus by biological testing, electron microscopy, immunoassay methods and obtain virus-free planting material by microclonal reproduction is necessary for the formation of highly skilled agriculture.

**Applied Ecology.** Students acquire skills to: environmental assessment landscape, identifying environmentally safe ways of objects of the economy, including biotechnology industries; forecasting of emergency situations and making appropriate decisions for the stability of the functioning of the economy, and protection of personnel from possible consequences of accidents, natural disasters, modern destruction and during liquidation of consequences.

**Introduction to profession.** As a discipline taught the basic principles and theoretical foundations of biotechnological approaches for culturing cells and tissues under in vitro in plant, medicine, pharmacology and other sectors of the economy, the theoretical and practical aspects of industrial biotechnology ecobiotechnology, genetically engineered immune biotechnology, biotechnology fuels, which contributes to better perception of current biotechnological developments, targeting areas in modern biotechnology.

**Immunogenetics.** We study the basic concepts and theoretical foundations of current regulations and laws immunogenetics, the formation of humeral and cellular immunity and its role in the development of several pathological processes, teaching methods, approaches and application development used in modern practice based on the use of components of the immune response and given the specificity of the interaction of antibodies with different substances that have antigenic determinants.

**Biotechnology microbial synthesis of drugs.** The course provides a system of knowledge about technology and the use of antibiotics, enzymes, vitamins and genetically engineered protein drugs. Shows the current understanding of the biological role of antibiotics, especially the biosynthesis of antibiotics by different groups of producers, biological bases of fermentation to produce antibiotics and general principles of technology of production, mechanisms of action and practical use. Explored technological features culturing microorganisms to produce enzymes, methods of isolation and purification of enzymes, production technology proteolytic, amylolytic, lipolytic and other enzymes, modern methods of immobilization of enzymes and their practical use. Students will become familiar with modern technology getting some vitamins microbial synthesis, recombinant proteins, methods of isolation and purification.

**Biotechnology of production of microbial products for agriculture.** The course provides knowledge of the system to prevent the negative effects of chemicals by using elements of biological agriculture-based mineral plant-microbe interactions, in particular - the technology of microbial preparations from phosphatemobilizing and nitrogen-fixing bacteria, germs, pathogens antagonists that regulate the power on crops, raise their productivity and resistance to diseases. Microbial preparations to improve their production technology - is an important element of modern ecologically safe technologies for growing

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high-quality agricultural products does not lead to a deterioration of the environment and saves material resources sector. These students' knowledge on the use of new technologies microbial products for agriculture will be one of the solutions to environmental problems of agriculture in Ukraine.

**Objects of biotechnological production.** Attention during the course of teaching is focused on the biochemical transformation of substrates into products for which the purpose of the biotechnology is sought. The course consists of two content modules. The first module is devoted to acquainting with the diversity of producers of target substances and peculiarities of their use, as well as to the value of each group of these organisms. The tasks of the second content module are the study of the lawfulness of the occurrence of elementary chemical and biological processes used in biotechnological research, as well as familiarization with the methods of rational provision and the use of assimilation and distillation processes for the receipt of target substances.

**Instrumental methods of analysis.** We study the basic theoretical principles underlying physical, chemical and visual instrumental systematic study of biological objects in vitro and in vivo learns the basic techniques of electrophoresis, chromatography, colorimetry and spectrophotometry, the technique works on light, fluorescent, confocal and electron microscopes that is necessary for the formation of highly qualified specialists in the field of biotechnology and ecology.

**Computer technology and programming fundamentals.** We study the basic concepts and definitions database rules for their design, development methods tables, forms, reports, queries, templates, dynamic forms for data entry. Students are introduced to modern methods of data analysis, computational algorithms data, create a program for the implementation of computational algorithms.

**Grounds of biological system functioning** is a training course, which aims to familiarize students of the specialty "Biotechnology and bioengineering" with various groups of organisms used in biotechnological industries, as well as with the features of organization and functioning of different organized biological systems – from molecular to biogeocenotic. The course consists of two content modules. The first module is devoted to the study of the functioning peculiarities of various systematic groups of lower organisms, such as mushrooms, algae and lichens, as well as acquaintance with the methods of their use in biotechnology. The objectives of the second content module are to study the higher plant biosystems – spores of vascular and non-vascular, gymnosperms and angiosperms and methods of their biotechnological use.

**Climatology.** Generates knowledge about basic meteorological factors, structure, properties and physical processes, meteorological phenomena and mechanisms, ensures the acquisition of skills to assess synoptic weather, meteorological factors influencing agrosphere, using meteorological observations for integrated environmental analysis of the environment condition and making weighted environmental solutions.

**Bioenergy systems in agrarian production.** The course " is considered to be all possible sources of energy derived from fossil as well as alternative sources. Considers energy, environmental and economic performance of energy is considered. The course may be controversy about the applicability of the considered fuels as energy sources for the purposes of Ukraine.

**Technology of bioproduction.** Purpose of the discipline is to consider using technology Bioproduction agricultural and industrial production, given the urgent needs of agricultural production and new promising developments of agrobiotechnology, the formation of students' theoretical and practical knowledge to ensure the implementation and operation of Bioproduction technology in real working conditions of agricultural enterprises and regional bio-laboratories.

**Fundamentals of plant biotechnology.** The purpose of this course is mastering the theoretical foundations and the formation of appropriate skills. Special of the discipline

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makes it possible to learn the basic techniques and skills with the culture of plants in vitro, a transgenic plant or plant resistant to herbicides, diseases, adverse environmental conditions, it is necessary for the formation of highly skilled agriculture.

**Bioconversion of waste.** The subject examines the transformation of organic material such as plant or animal waste, into usable products or energy sources by biological processes or agents, such as microorganisms. The program includes theoretical concepts ecobiotechnology (physic-chemical and biological recycling processes) and biotechnological methods for processing agricultural waste (biomass composition, wastewater treatment and solid waste, energy production, etc.)

### ***Optional Block «Agricultural biotechnology»***

**Radiobiology and radiocology.** The course considers the principles of agricultural radiobiology and radioecology; it introduces into the problems of biological impacts of ionizing irradiation, radionuclide migration in the environment and in the agricultural objects, the basic concepts of the radio ecological and dissymmetric monitoring; it presents the structure of the radiation control system, the methods of assessment and normalization of the doses and permissible levels of the radioactive contamination in accordance with the norms of radiation safety of Ukraine; it analyzes in details the countermeasures for reduction of the radio nuclides transfer into agricultural production and foodstuffs, as well as the ways for the ionizing irradiation application in the agricultural practice.

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plant biosystems – spores of vascular and non-vascular, gymnosperms and angiosperms and methods of their biotechnological use.

**Climatology.** Generates knowledge about basic meteorological factors, structure, properties and physical processes, meteorological phenomena and mechanisms, ensures the acquisition of skills to assess synoptic weather, meteorological factors influencing agrosphere, using meteorological observations for integrated environmental analysis of the environment condition and making weighted environmental solutions.

**Environmental safety in agriculture.** Discipline course examines issues of food security through the introduction of sustainable agricultural practices, improved quality of products and raw materials, ways to improve the processes of industrial processing of raw materials, promote the implementation of sustainable methods of afforestation, reforestation and decontamination of hazardous waste, how to preserve biological (in t.ch . genetic) resources to ensure sustainable development of the biosphere, the development of environmental emergencies and implement appropriate solutions to ensure the stability of the functioning of the economy, and protection of personnel against possible consequences of accidents, natural disasters, modern means of destruction and during liquidation of consequences.

**Agricultural biotechnology.** The purpose of discipline is to familiarize students with the principles of the use of biological knowledge in agricultural production and use agrobiotechnological methods in various fields of agriculture.

**Biometods of protection of products.** Familiarizing students with the issues of biological protection of crops from pests and based on this knowledge alone implement bio security, integrated systems of protection of crops and fruit trees in production under different forms of management based on species composition of harmful and useful fauna and flora, agro-climatic conditions area, and so on.

**Biotechnological processes agricultural technologies.** Exploring one of the priority areas of biotechnology, what covers both basic research and applied studies of the use of living organisms or other biological agents for sustainability and quality of agroecosystems. Development of new technologies, plant growth regulators, microbial plant protection from diseases and pests, bacterial fertilizers.

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**Bachelor  
field of knowledge “Natural Sciences”  
in specialty “ECOLOGY”  
Educational-professional Program "«Ecology”**

Form of Training:	Licensed number of persons:
- full-time	75
- part-time	75
Term of studying	4 years
Credits	240 ECTS
Language of tuition	Ukrainian, English
Qualification after graduation	Bachelor of Ecology

### **The concept of training**

Preparation concept is to develop future ecologists' professional knowledge, hand-on experience, skills, proficiency and ecological competence, environment protection (according to types of economic activity) and balanced nature management (by types of land, water, forest use also usage of flora and fauna), which are ready for practical, professional-oriented and environment protection activity in Education, Science and Culture.

### **Practical training**

Specialists handling competence takes place at Institute of Agroecology and Nature Management of National Academy of Agrarian Sciences of Ukraine, Institute of Plant Protection of National Academy of Agrarian Sciences of Ukraine, “Bionorma” LLC, etc

### **Proposed Topics for Bachelor theses**

Environmental rationing of the impact of crop production technologies on the state of agroecosystems.

Environmental assessment of the biodiversity of entomofauna of agricultural landscapes of Ukraine.

Ecotoxicological evaluation of nanoagrochemicals for the reaction of biological tests.

**Academic rights of Graduates:** graduates can apply for Master's Degree Specialties and Educational (Educational-professional or Educational-scientific) programs specified in Table 1.2 Section 1.3 this Catalog.

### **Employment of Graduates**

Work placements are branch enterprises (agricultural, recycling, nature protection oriented organizations, ecological and naturalist centers, scientific laboratories of ecological monitoring, inspections, certification) at different professional environments.

**Bachelors Program and Curriculum  
in Specialty "Ecology"  
Educational-professional Program "«Ecology»"**

Code n/a	Components of the educational-professional program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits ECTS	The final control
<b>1. GENERAL TRAINING CYCLE</b>			
<b>Compulsory components</b>			
CC 1	Mathematical and physics	8	exam
CC 2	General and Inorganic Chemistry	6	exam
CC 3	Organic and bioorganic, physical and colloidal Chemistry	6	exam
CC 4	Analytical Chemistry	6	exam
CC 5	Wildness protection	4	exam
CC 6	Biology (General, Botany)	8	exam
CC 7	General Ecology	6	exam
CC 8	Environmental monitoring	4	exam
CC 9	Environmental monitoring II (Geoinformation monitoring)	2	exam
CC 10	Ecological safety	4	exam
<b>Compulsory components by the decision of the academic council of the university</b>			
CC 11	History of Ukrainian Statehood	3	exam
CC 12	Ethnocultural	3	exam
CC 13	Philosophy	3	exam
CC 14	Ukrainian for professional purposes	3	exam
CC 15	Foreign language (English, German, French, Spanish)	7	exam
CC 16	Physical training	4	test
CC 17	Labour and life safety	4	exam
CC 18	Environmental legislation and environmental law	3	exam
<b>2. SPECIAL (PROFESSIONAL) TRAINING CYCLE</b>			
<b>Compulsory components</b>			
CC 19	Informatics and systemology	3	exam
CC 20	Geology with geomorphology basics	3	exam
CC 21	Hydrology	5	exam
CC 22	Introduction to speciality	7	exam
CC 23	Landscape Ecology	7	exam
CC 24	Technoecology	7	exam
CC 25	Human Ecology	7	exam
CC 26	Regulatory Actions Anthropogenic Load upon Environment	4	exam
CC 27	Ecology of Urban Systems	5	exam
CC 28	Modeling and Environment State Forecasting	5	exam
CC 29	Environmental Impact Assessment	3	exam
CC 30	Chemistry with the basics of biogeochemistry	5	test
CC 31	International environmental policy	4	test
CC 32	Organization and management of environmental activities	3	exam
CC 33	Scientific Activities Fundamentals	4	test
CC 34	Environmental Toxicology	4	test
CC 35	Agrochemistry	3	exam
<b>The volume of compulsory components</b>		<b>163</b>	
<b>Optional components</b>			
<b>Optional Block «Ecological Agricultural sphere»</b>			
OB 1.1	Economics of Nature Management	3	exam
OB 1.2	Fundamentals of environmental education and culture	3	exam
OB 1.3	Meteorology and climatology	3	exam
OB 1.4	Ecology of biological systems (microbiology, microbial ecology, virology, plant ecology, animal ecology)	3	exam
OB 1.5	Environmental protection	3	exam
OB 1.6	Agroecology	4	exam
OB 1.7	Fundamentals of GIS technologies	4	test
OB 1.8	Agricultural product quality management	4	exam

**CURRICULA AND PROGRAMS OF BACHELOR DEGREE**

OB 1.9	Radiobiology and Radioecology	5	exam
OB 1.10	Topographies with Cartography Fundamentals	3	exam
OB 1.11	Environmental standardization and certification	3	exam
OB 1.12	Psychology and pedagogy	3	exam
OB 1.13	Ecological safety of residential and industrial areas	3	exam
OB 1.14	Ecological certification of territories	3	exam
OB 1.15	Environmental protection of agroecosystems (organic farming)	3	test
OB 1.16	Recreational potential of agrolandscapes of Ukraine	4	test
<b>Optional Block «Ecological problems of rural agglomerations»</b>			
OB 2.1	Economics of Nature Management	3	exam
OB 2.2	Fundamentals of environmental education and culture	3	exam
OB 2.3	Meteorology and climatology	3	exam
OB 2.4	Ecology of biological systems (microbiology, microbial ecology, virology, plant ecology, animal ecology)	3	exam
OB 2.5	Environmental protection	3	exam
OB 2.6	Agroecology	4	exam
OB 2.7	Fundamentals of GIS technologies	4	test
OB 2.8	Agricultural product quality management	4	exam
OB 2.9	Radiobiology and Radioecology	5	exam
OB 2.10	Topographies with Cartography Fundamentals	3	exam
OB 2.11	Environmental standardization and certification	3	exam
OB 2.12	Psychology and pedagogy	3	exam
OB 2.13	Nuclear safety	3	test
OB 2.14	NRB and CAP	3	test
OB 2.15	SG production in radioactively contaminated territories	3	exam
OB 2.16	Dosimetry and radiation control	4	exam
<b>Optional Block by students choice</b>			
OB 2.17	Optional components 1	3	exam
OB 2.18	Optional components 2	3	exam
<b>The volume of optional components</b>		<b>60</b>	
<b>3. OTHER TYPES OF TRAINING</b>			
<b>CC 3.1</b>	Military training course	29	
CC 3.2	Academic Practice	10	
CC 3.3	Production Practice	4	
<b>CC 3.4</b>	Bachelor Thesis writing (Graduate thesis or Project)	2	
<b>CC 3.5</b>	State Attestation	1	
<b>CC 3.6</b>	Total for Specialty (without Military training course)	17	
<b>THE TOTAL AMOUNT OF EPP</b>		<b>240</b>	

**Annotations of Components in the curriculum**

**1. GENERAL TRAINING CYCLE**

**Compulsory components**

**Mathematical and physics.** Provides forming of knowledge from fundamental sections of Higher Mathematics that corresponds students' professional preparation program: definitions, theorems, rules, forming of initial skills, self directed learning of math's literature and other informational sources, solution to equation of simple algebraic equations, applying of integral calculus; solution of differential and difference equations and their systems; investigating of nearly poised series upon the sum total and using of nearly poised series for approximation computation, and analysis of different environmental processes. Forms knowledge about processes that take place at biological systems and are life foundation and activities of wild-life, fundamental principles of physics which underlie life and activities of agricultural plants, synergies between plants and environment, physical factors influence over seed grains, plants and environment for increasing crop-producing.

**General and inorganic chemistry.** The aim of the course of General and Inorganic Chemistry is to provide knowledge about the properties, methods of preparation and application of chemical elements and their compounds, skills performance chemical experiment.

**Organic and bioorganic, physical and colloidal Chemistry.** During the study of organic chemistry, the nomenclature, finding in nature, the role in the living organism, structure, laboratory and industrial methods of obtaining, chemical properties of the basic classes of organic compounds: alkanes, alkenes, alkadienes, alkenes, cycloalkanes, aromatic compounds, terpenes, and also halogen derivatives are considered. , alcohols, phenols, aldehydes and ketones, carboxylic acids and their esters, anhydrides and halogens, amines and amides, carbohydrates, amino acids and proteins, nucleic acids. During the study of physical and colloidal chemistry, issues of thermodynamics, thermochemistry, solution theory, chemical kinetics and catalysis are considered, the main provisions related to the highly dispersed state of matter, surface phenomena and adsorption

**Analytical chemistry.** Discipline examines the theoretical and practical issues of qualitative and quantitative chemical analysis. Specifically discusses the basic requirements for chemicals, reagents and analytical reactions, the concept of separation methods and concentration of cations, anions substances. Methods acid-base titration.

**Wildness protection.** Provides formation of knowledge and skills of complex of organizational, legal, scientific, economic, and educational activities designed to preserve the unique and typical landscapes or specific natural objects of scientific, environmental purposes.

**Biology.** As a result of studying the course students gain knowledge of the impact of economic activities on natural habitats, the most common species of higher plants, plant communities and flora regions, methods and floral phytocenology research, abilities and skills of geobotany description of meadow, forest and anthropogenic plant communities, identifying plants of various types and indicators habitat and to identify reservations virus infections in agrocenoses.

**General Ecology.** After taking over the course students are gaining knowledge about fundamental ideas of Ecological Science: doctrine about biosphere and ecosystems, sources and flaws of energy issues in ecosystems, influence pattern of ecological factors, biotic relation between bionts, species and populations; skills to define natural-resources potential of ecosystem and socioeconomic analyses of their macroeconomic activity.

**Environmental Monitoring.** Generates knowledge about the system of state environmental monitoring, monitoring of air, groundwater of agrosphere, soil and environmental monitoring, monitoring of phytosanitary pests in agrocenoses, skills and abilities of environmental-monitoring reclamation of irrigated and drained lands, to determine the extent of disease assessment.

**Environmental monitoring II (Geoinformation monitoring)** forms the knowledge of modern methods of monitoring tasks by using geoinformation systems and remote sensing tools; about the functionality of modern geoinformation systems for the tasks of monitoring environmental changes; ability and practical skills of environmental monitoring using modern information technologies.

**Ecological safety** forms knowledge on fundamental and applied aspects of environmental safety, the ability and skills to use methods and techniques of environmental impact assessment, identification of risks of emergencies, processing, analysis, systematization and synthesis of information on environmental safety.

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**Compulsory components by the decision of the academic council of the university**

Annotations of components: "History of Ukrainian Statehood", "Ethnocultural", "Philosophy", "Ukrainian for Professional Purposes", "Foreign Language (English, German, French, Spanish)", "Physical Training", "Labour and Life Safety" see Section 2.1.

**Environmental Legislation and Environmental Law.** Provides a study of current environmental legislation and environmental and legal issues facing the science of environmental law, the study of current natural resource legislation, the main problems related to land use, water use, mineral resources, forest management, using air, flora and fauna, the study of current natural resource legislation, the main problems related to the protection of land, water, minerals, forests, air, protection of flora and fauna

**2. SPECIAL (PROFESSIONAL) TRAINING CYCLE****Compulsory components**

**Informatics and Systematology.** Forms knowledge about methods, typical target settings and formalization for processing and databases maintenance, principles of their solvation by computerized tools, conceptual frameworks structural principle electronic document flow system; proficiency to choose technological schema appliance of system-wide and specialized packages of application programs and using them for handling of applied ecological, environment protection problems and sustainable nature management.

**Geology with geomorphology basics.** Generates knowledge about the structure of typing and classification of landforms and geomorphological zoning areas, interconnections and the relationship between geological structures and morphology of the terrain, the ability to establish relationships of soil factors, to determine the erosion processes in different soil-climatic and geomorphological conditions, assess erosion control measures and their role in improving the environment.

**Hydrology.** Generates knowledge of the hydrological regime of water bodies, environmental problems of water resources, ecological and methodological foundations of hydromorphological analysis of aquatic ecosystems, skills and abilities to determine the conditions of biota effects on aquatic ecosystems of natural and anthropogenic factors, impacts on water ecosystems.

**Introduction to speciality.** Discipline ensures the formation of students' knowledge of the requirements for specialist training in accordance with the construction of higher education and scientific research, the formation of primary knowledge on the basics of ecology and perceptions of future employment, acquirement of the basic concepts and terminology of ecology and understanding of the economic aspects of the environment, understanding of ways of environmental development of society

**Landscape Ecology.** The discipline ensures the acquisition of knowledge from learning the basic landscape types, namely the overall structure and the basic principles of their formation, their properties, studying the influence of different activities on landscape and the specifics of transformations as a result of anthropogenic factors. During training, students acquire skills to provide general characteristics of condition of landscapes to determine their environmental sustainability, and develop activities to prevent and stop the degradation phenomena, using the latest technologies and approaches.

**Technoecology.** The discipline provides the formation of knowledge and skills to assess the possibility and effectiveness of using alternative energy sources on the basis of ecological and economic analysis of manufacturing processes, to evaluate the features of technogenic pollution of geosphere.

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**Human Ecology.** Provides knowledge about patterns of human interaction with the environment, its impact on the preservation of health, adaptation of the human body to technological changes in the environment, the ability to use mapping, mathematical, statistical, social and hygienic methods of monitoring and control in the field of human ecology, to apply methodology for determining environmental Chronobiology aspects for the study of biological rhythms and their adaptive role in anthropogenic ecosystems.

**Regulatory Actions Anthropogenic Load upon Environmental.** Provides acquisition of knowledge about general characteristics of the problem of anthropogenic impact and the rationale for its regulation, the main types of anthropogenic pressures and those human activities that can cause them, the theoretical aspects of scientific substantiation standards of influence of factors of physical, chemical and biological nature, charts of rationale of regulations and the possibility of their use in practice.

**Ecology of urban systems.** Specifies knowledge about the basics of spatial modeling of urban systems, principles and approaches to the classification of natural and anthropogenic landscapes, the characteristics of living organisms, their populations and groups in the urban environment, creates acquiring of skills concerned about urban environment, the city as a specific human environment and biota, urbangeosociosystem, landscape regarding the explanation of the environmental, socio-cultural and technological problems of cities.

**Modeling and Environment State Forecasting.** Provides knowledge of mathematical modeling of the environment condition and the basic laws of distribution of pollutants from the source of emission, the food chain to humans, the basic laws of distribution of pollutants in the environment, their impact on the ecosystem components, the ability to estimate radiation doses on humans, as well as patterns of dynamics of populations of living organisms and their impact on the environment.

**Environmental Impact Assessment** Provides knowledge about the normative and legislative basis of ecological-expert activity, general requirements for carrying out ecological examination, peculiarities of conducting geocological expertise as a new scientific and practical type of activity for estimating the mechanism of co-adaptation of natural and economic subsystems, procedures and methods of geocological expertise; students acquire the skills: to conduct an ecological examination of technologies, raw materials and products.

**Chemistry of the basics of biogeochemistry.** Provides formation of knowledge of biogeochemical aspects of the biosphere and principles of operation, types of migration, biological cycle and biogeochemical cycles of living matter; abilities to apply methods of biological indication for environmental biogeochemical zoning predict measures to obtain high-quality environmentally friendly agricultural products, analyze situation of biogeochemical endemic regions, to develop recommendations for optimization of anthropogenic landscapes in order to minimize the negative impact of human activity and maintaining a balance between ecosystem components.

**International environmental policy** Studying the system of international ecological prology, ecological concepts, principles, approaches, priorities and directions of activity, documented and officially declared (approved), and which determines the relationship between society, the state and the environment, forms the knowledge and skills of future managers in the development of environmental policy , systems of production, management of enterprises, corporations taking into account international experience, through which demonstrates the tendency of management to environmental priorities .

**Organization and management in environmental activities** The subject of studying the discipline is the system of economic, economic, legal, financial relations in the field of provision of environmental protection activities at enterprises of Ukraine, substantiation of the mechanism of planning, control and efficient management of modern environmental projects. The purpose of the discipline is the formation of future specialists

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in contemporary system thinking and a set of special skills and abilities of the use of a universal tool for environmental project management. The main tasks of studying the discipline are to provide a scientific and methodological basis for students to master the specialty 101 "Ecology" of the main instruments of management of environmental projects of the organization: familiarization with the stages and procedures of the formation of environmental projects, organizational, personnel, resource, financial and information and legal provision of environmental projects, definition economic, financial and social expediency of their implementation at macro and macro levels

**Scientific Activities Fundamentals.** Provides learning of search method, storage and processing of scientific information, methodology and methods of theoretical research, the structure and technology of the experiment, using modern sources of scientific information; skills using simulation and mathematical analysis of the object of research, plan and analyze the results of the experiment

**Ecotoxicology.** The discipline is focused on the theoretical concepts and knowledge about the impact of exogenous toxicants on living organisms, their reaction to the performance of hazardous chemicals, the mechanisms of adaptation of organisms to the action of xenobiotics and counteract them, skills to master the scientific principles of hazard assessment of chemicals on living organisms and prediction of adverse effects this effect

**Agrochemistry.** Involves the formation of knowledge about the basic tasks of chemicals as a basis of agriculture, agro-ecological assessment of mineral fertilizers and their impact on the environment and quality of crop production and technology, charts of and machines for application of organic and mineral fertilizers, agro-ecological potential changes in the environment during their violations.

### **Optional components**

#### ***Optional Block «Ecological Agricultural sphere»***

**Economics of Nature Managment.** Provides the formation of students' environmental and economic outlook and provide them with relevant knowledge which will allow future professionals not only determine the level of environmental pollution, the value of damage caused by him, but also conduct effective targeted work on its protection and restoration

**Fundamentals of environmental education and culture** Form knowledge on the main directions of human resource development, stages of environmental development and the consequences of this development, human-induced ecological disasters and ways of their solution, optimal and perspective methods of ecological education and culture in the current conditions of state development, main dimensions of ecological culture, main approaches development of ecological culture and consciousness of the general population, legislative and legal maintenance of rational nature use. Be able to: use the acquired knowledge in practice, distinguish between environmental problems of anthropogenic and natural origin, develop a concept for the development of environmental education at an enterprise or in an educational institution, in the region.

**Meteorology and Climatology.** Generates knowledge about basic meteorological factors, structure, properties and physical processes, meteorological phenomena and mechanisms, ensures the acquisition of skills to assess synoptic weather, meteorological factors influencing agrosphere, using meteorological observations for integrated environmental analysis of the environment condition and making weighted environmental solutions.

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**Ecology of biological systems.** Provides knowledge of the morphology and physiology of the major groups of microorganisms, their role in the transformation of organic matter in soil processes and increase soil fertility, the role of microorganisms in the synthesis of humus and formation of soil structure, the impact of farming on microbiological processes. Students acquire skills to determine the status of populations of organisms, identify species, measure the number and status of populations, to develop ways to prevent and suppress viral infections.

**Environmental protection.** Generates knowledge of the socio-economic, environmental and safety, institutional balance of nature by type of land, water, forest management and use of flora and fauna, the concept of ecological safety of agricultural domain. Students acquire the abilities and skills of a systematic approach to identifying and managing the quality of natural resources, development and implementation, assessment of resource and energy-saving agricultural technologies.

**Agroecology.** Provides acquisition of knowledge about the impact of environmental factors on productivity of crops, the structure and dynamics of communities of organisms that live in agrocenoses, the basic laws of agroecology, agroecosystems performance and ways to improve it. Acquire abilities and skills to determine the types of agro-ecosystems and their functioning, ways of greening the various agricultural facilities, and make use of agri-environmental maps and models.

**Fundamentals of GIS technologies** provides the possibility of using in the production of software and hardware for automated accounting, storage, display, analysis, simulation of spatially coordinated information and the creation of databases. The task of studying the discipline is the formation of a specialist in theoretical knowledge and practical skills of work with relational databases, the ability to organize the collection and extraction of necessary data, the use of GIS for land management, including for the introduction and use of data of the state land cadastre (in particular, for land- registration data).

**Agricultural Products Quality Management.** Provides acquirement of learning the basics of technological methods that form the parameters of quality of crop production, formation of skills for monitoring and use of chemicals in manufacturing processes get crop production, conservation and improvement of soil fertility, including natural conditions, market production, the use of agrochemicals in order to optimize feed crops , increased productivity and a high quality crop production.

**Radiobiology and Radioecology.** Examines the concept and migration of radioactive substances in the agricultural production and the effect of ionizing radiation on phytocoenosis and zoocenosis within agrocenosis. Forms skills and abilities to develop ways of contamination of the environment, ways and means of decontamination of food raw materials, the study of the biological effects of ionizing radiation on plants and animals.

**Topography with the basics of cartography.** Provides formation of knowledge on significant spatial model, the mathematical basis for maps, coordinate system topography and cartography, modern methods of targeting areas methods of acceptance and use of topographic maps and plans for environmental monitoring. Students acquire skills to conduct topographically-geodetic measurements, mapping modeling and forecasting.

**Psychology and pedagogy** Forms students knowledge of research methods of psychology and pedagogy, patterns of the course of individual psychic phenomena and their interrelations, typology and style of individual management activities; skills and abilities to find the right ways to get out of conflict situations, identify and select the right leadership style of the team.

**Ecological safety of residential and industrial areas.** Forms of knowledge of the natural reserve fund with the involvement of territorial communities of villages, settlements and businesses, control and responsibility for the discharge of domestic waste, organizing

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spontaneous dumps, polluted water into surface water bodies in rural areas. Skills to create the conditions for integrated rural development in the public interest that provides competitive rational formation of diversified and versatile agriculture, diversified rural economy enabling environment based on the growth of human and social capital and development partnership between the state and business.

**Ecological certification of territories.** Generates knowledge of the characteristics of the current state of rural areas and the dynamics of rural settlements priorities of their revival, the basic principles of institutional support for development of rural areas of the country with the European practice. Skills in the field of rural development, reproduction and quality of human resources, improve the efficiency of the rural economy, rational use and restoration of natural resources.

**Environmental protection of agroecosystems (organic farming).** Generates knowledge of the characteristics of social ecology as a science, the concept of eco-oriented social development, ecological goals-oriented activities, the main aspects that determine the ecological imperative in the overall management of socio-economic development, basic laws and patterns of interaction between society and the environment. Skills to research the development of modern social and technological processes, their relationships and characteristics and program development of ecologically safe development.

**Recreational potential of agrolandscapes of Ukraine.** Generates knowledge about the functioning of agro-ecosystems, the role of natural biodiversity in agricultural landscapes stability, structure of agricultural landscapes and ecological sustainability; ability to identify natural resource potential of agricultural landscapes to build statistical models and mapping agro-ecosystems, explore their development by means of modern information systems.

### ***Optional Block «Ecological problems of rural agglomerations»***

**Economics of Nature Management.** Provides the formation of students' environmental and economic outlook and provide them with relevant knowledge which will allow future professionals not only determine the level of environmental pollution, the value of damage caused by him, but also conduct effective targeted work on its protection and restoration.

**Fundamentals of environmental education and culture** Form knowledge on the main directions of human resource development, stages of environmental development and the consequences of this development, human-induced ecological disasters and ways of their solution, optimal and perspective methods of ecological education and culture in the current conditions of state development, main dimensions of ecological culture, main approaches development of ecological culture and consciousness of the general population, legislative and legal maintenance of rational nature use. Be able to: use the acquired knowledge in practice, distinguish between environmental problems of anthropogenic and natural origin, develop a concept for the development of environmental education at an enterprise or in an educational institution, in the region.

**Meteorology and Climatology.** Generates knowledge about basic meteorological factors, structure, properties and physical processes, meteorological phenomena and mechanisms, ensures the acquisition of skills to assess synoptic weather, meteorological factors influencing agrosphere, using meteorological observations for integrated environmental analysis of the environment condition and making weighted environmental solutions.

**Ecology of biological systems.** Provides knowledge of the morphology and physiology of the major groups of microorganisms, their role in the transformation of organic matter in soil processes and increase soil fertility, the role of microorganisms in the

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synthesis of humus and formation of soil structure, the impact of farming on microbiological processes. Students acquire skills to determine the status of populations of organisms, identify species, measure the number and status of populations, to develop ways to prevent and suppress viral infections.

**Environmental protection.** Generates knowledge of the socio-economic, environmental and safety, institutional balance of nature by type of land, water, forest management and use of flora and fauna, the concept of ecological safety of agricultural domain. Students acquire the abilities and skills of a systematic approach to identifying and managing the quality of natural resources, development and implementation, assessment of resource and energy-saving agricultural technologies.

**Agroecology.** Provides acquisition of knowledge about the impact of environmental factors on productivity of crops, the structure and dynamics of communities of organisms that live in agrocenoses, the basic laws of agroecology, agroecosystems performance and ways to improve it. Acquire abilities and skills to determine the types of agro-ecosystems and their functioning, ways of greening the various agricultural facilities, and make use of agri-environmental maps and models.

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**Topography with the basics of cartography.** Provides formation of knowledge on significant spatial model, the mathematical basis for maps, coordinate system topography and cartography, modern methods of targeting areas methods of acceptance and use of topographic maps and plans for environmental monitoring. Students acquire skills to conduct topographically-geodetic measurements, mapping modeling and forecasting.

**Psychology and pedagogy** Forms students knowledge of research methods of psychology and pedagogy, patterns of the course of individual psychic phenomena and their interrelations, typology and style of individual management activities; skills and abilities to find the right ways to get out of conflict situations, identify and select the right leadership style of the team.

**Nuclear safety.** The course program provides students with knowledge about the main factors of radiation hazard during production activities and the accidents at the enterprises which use the ionizing radiation sources. The scenarios of radiation hazard occurrence are considered as well as the basic rules of the government agencies behavior that make decisions on elimination of dangerous radiation situations.

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**NRB and CAP.** The course program provides students with knowledge on the establishment of regulatory requirements by the State for the working with ionizing radiation sources and the organization of production at the radiation accidents. The norms of radiation safety of Ukraine promote for the assimilation of information about radiation safety organization against various sources of radiation exposure and protection against the radionuclide intake into the human body. Standards that limit additional (except natural irradiation) doses of external and internal radiation are provided as well as modern ideas about classification of radiation accidents and the behavior of the population at radiation danger.

**SG production in radioactively contaminated territories.** The course program provides students with knowledge and practical skills on the requirements of agricultural production on radionuclide contaminated territories such as regulatory requirements, classification of territories by the level of radioactive contamination. Particular attention is paid to the study of the possibilities of various branches of the agrarian production, taking into account the levels of radioactive contamination, soil conditions, and properties of different types of plants and animals, and also to carry out the anti-radiation measures in order to obtain quality plant products from the point of radiation hazard view. The students acquire of the practical skills in the problems of radiation situation estimating and predicting of the quality of agricultural products produced in the radionuclide contaminated territories.

**Dosimetry and radiation control.** The course program provides students with knowledge about the evaluation of radiation situation, the environmental impact of the nuclear fuel cycle enterprises, the allowable levels of radioactive substances emissions. Modern equipment and instruments allow doing radiometric and spectrometric measurements of radionuclide activity in environmental objects, food and drinking water, and also to calculate and predict the doses of external and internal human irradiation.

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## 2.4. FACULTY LIVESTOCK SCIENCE AND WATER BIORESOURCES

**Dean – Vadim Kondratiuk**, Associated Professor, Candidate of Agricultural Science  
Tel.: (044) 527-85-56 E-mail: vadkondratyk@ukr.net  
Location: Building № 1, Room. 34

The faculty organizes and coordinates the educational process of bachelors in the following specialties:

### ***207 Water Bioresources and Aquiculture***

Educational-professional Program “**Water Bioresources and Aquiculture**”

Graduating departments:

Department of Aquaculture

Tel.: (044) 527-89-65 E-mail: aqua\_chair@twin.nauu.kiev.ua

Head of Department – Nadiya Vovk, Professor, Doctor of Agricultural Science,

Department of ichthyology and Hydrobiology

Tel.: (044) 527-86-83 E-mail: gidrobio@ukr.net

Head of Department – Petro Shevchenko, Associated Professor, Candidate of Biological Science.

### ***204 Technology of production and processing of livestock products***

Educational-professional Program “**Technology of production and processing of livestock products**”

Graduating departments:

Department of Breeding and Biotechnology of animals

Tel.: (044) 527-82-30 E-mail: rubansy@gmail.com

Head of Department – Sergey Ruban. Professor, Doctor of Agricultural Sciences, Corresponding Member of the National Academy of Agrarian Sciences

Department of Milk and Beef Production Technology

Tel.: (044) 527-83-93, (044) 527-82-32 E-mail: ugnivenko@i.ua

Head of Department – Anatoly Ugnivenko, Professor, Doctor of Agricultural Science

Professor P.D. Pshenichniy Department of Animal Nutrition and Feed Technology

Tel.: (044) 527-85-55 E-mail: feeding\_animals@ukr.net

Head of Department – Mikhail Sychev, Professor, Doctor of Agricultural Science

Department of Horse Breeding and Beekeeping

Tel.: (044) 527-82-68 E-mail: horse\_chair@twin.nauu.kiev.ua

Head of Department – Nicholay Povochnikov, Professor, Doctor of Agricultural Science

Department of Technology in poultry, pig and sheep farming

Tel.: (044) 527-87-60, 527-84-78, 527-88-49 E-mail: natpp@meta.ua

Head of Department - Nataliia Prokopenko, Professor, Doctor of Agricultural Science.

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**Bachelor**  
**field of knowledge "Agricultural science and food"**  
**in specialty "WATER BIORESOURCES AND AQUACULTURE"**  
**Educational-professional Program "Water Bioresources and Aquaculture"**

Form of Training:	Licensed number of persons:
– Full-time	75
– Part-time	75
Duration of Training	4 years
Credits ECTS	240
Language of Teaching	Ukrainian, English
Qualification	Technologist of Aquaculture Production

### Concept of training

Modern fish farming requires new technologies that professionals cannot implement without deep theoretical knowledge of such issues as water quality, ecological status of water bodies, value of hydrocole in functioning of aquatic ecosystems, knowledge of water bio-source potential and its sustainable use.

Development of new and improved fish breeding technologies in natural conditions and in industrial farms also require theoretical knowledge about potency of the species, their physiological and biochemical characteristics, processes of acclimatization and adaptation hydrocole undergo under impact of changing, aquatic environment, intensification of fish farming through the use of bio-active substances with the purpose of enhancing bio- and fish productivity of various ponds, preserving in them biodiversity and harvesting high-quality fish products.

In the course of this program, the students will be taught hydro-ecological disciplines: fish physiology, fish genetics, fish anatomy, aquatic chemistry, hydrochemistry, fish breeding and selection; professionally oriented disciplines: biological basis of fisheries, research methods in fish farming, aquarium basics, bioresources of hydrosphere and their use; fish processing technology and preparation technology: design of fish-breeding enterprises, aquaculture of natural ponds, aquaculture of artificial reservoirs, fisheries hydraulic engineering with the basics of geodesy, fishing farming and others.

By the end of their studies the experts on aquatic biological resources and aquaculture in process of their training acquire the strong fundamental and practical training in cold and warm water fish farming.

### Practical training

While studying at the University, the students receive a thorough theoretical and practical training in modern laboratories equipped with new equipment, in computer classes as well as at leading fishery enterprises such as PJSC "Kyivrybhosp", SE "Irkliiv Fishpond", SE "Ukrryba", DG "Great Lubin", PJSC "Hmelnytskrybhosp", PE "Aquarium Technologies", PJSC "Sumyrybhosp", PJSC "Hersonrybhosp", JSC "Vilshanka", ARC "Kherson Fishermen", PJSC "Poltavarybhosp", Fishing Farm "Nyvka", IRG NAAS of Ukraine, JSC "Chernihivrybhosp", Astrakhan State Technical University (Astrakhan, Russia) and the Louis Pasteur National Lyceum (France) and others.

**Academic rights of Graduates:** graduates can apply for Master's Degree Specialties and Educational (Educational-professional or Educational-scientific) programs specified in Table 1.2 Section 1.3 this Catalog.

### **Employment of Graduates**

Upon successful completion of bachelor's degree course the specialist can perform professional work specified under the Classification of Occupations DK 003-2005, approved and put into effect by Resolution № 257 dated 27.07.1995 of State Committee of Ukraine for Standardization under the following classification groups and professional work titles: laboratory technician (biological research), laboratory technician assistant (biological research), fish culturist-technician, aquaculture technician, fish culturist-engineer, aquaculture process engineer, state fisheries inspector and may hold primary positions of a fish culturist, ichthyologist, hydrobiologist and state inspector.

**Bachelor`s Program and Curriculum  
in Specialty «Water Bioresources and Aquaculture»  
Educational-professional program «Water Bioresources and Aquaculture»**

Code n/a	Components of the educational-professional program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits ECTS	The final control
1	2	3	4
<b>1. GENERAL TRAINING CYCLE</b>			
<b>Compulsory components EPP</b>			
CC 1	Ontogeny of fish	3	exam
CC 2	Zoology	7	test, exam
CC 3	Hydrochemistry	6	exam
CC 4	Mathematical Methods in Biology	4	exam
CC 5	Hydroecology	7	exam
<b>Total</b>		<b>27</b>	
<b>Compulsory components EPP by decision of the Academic council of the University</b>			
CCU 1.1	Ukrainian language for professionals	4	exam
CCU 1.2	The history of Ukrainian statehood	3	exam
CCU 1.3	Ethnoculturology	3	exam
CCU 1.4	Foreign language	12	test, exam
CCU 1.5	Physical education	4	test
CCU 1.6	Philosophy	3	exam
CCU 1.7	Life and work safety	4	exam
CCU 1.8	Personality's legal awareness	3	test
<b>Total</b>		<b>36</b>	
<b>2. SPECIAL (PROFESSIONAL) TRAINING CYCLE</b>			
<b>Compulsory components</b>			
CC 1	Introduction to core professional course	3	exam
CC 2	Hydrobiology	9	test, exam
CC 3	Ichthyology	7	test, exam
CC 4	Fish genetics	3	exam
CC 5	Aquatic toxicology	4	exam
CC 6	Fishing	7	test, exam
CC 7	Ichthyopathology	7	test, exam
CC 8	Cultivation and breeding of fish	8	test, exam
CC 9	Hydroengineering and technical equipment in fish farming	8	test, exam
CC 10	Feeding of fish	6	exam
CC 11	Biological basis of fish farming	5	exam
CC 12	Aquaculture of natural reservoirs	10	test, exam
CC 13	Aquaculture of artificial reservoirs	10	test, exam
CC 14	Economics of fishery enterprises	6	exam
<b>Total</b>		<b>93</b>	
<b>The total amount of Compulsory components</b>		<b>156</b>	
<b>Optional components</b>			
<b>Optional subjects by specialty (block 1)</b>			
OB 1.1	Latin	3	exam
OB 1.2	Biophysics aquatic	5	exam
OB 1.3	Aquatic microbiology	4	exam
OB 1.4	Fish anatomy	3	exam
OB 1.5	Physiology and Biochemistry of fish	7	exam
OB 1.6	Bioresources of hydrosphere and their protection	7	exam
OB 1.7	Fish processing technology	4	exam
OB 1.8	Research methodology in fish farming	4	exam
OB 1.9	Aquarium study	5	exam
OB 1.10	Leadership and administering	3	test
OB 1.11	Principals of livestock farming	5	test
OB 1.12	Fishery laws	4	test
<b>Total</b>		<b>54</b>	

<i>Optional subjects by specialty (block 2)</i>			
OB 2.1	Latin	3	exam
OB 2.2	Hydrobotanics	5	exam
OB 2.3	Hydrology and meteorology	4	exam
OB 2.4	Fundamentals of ecology	3	exam
OB 2.5	Physiology of fish	7	exam
OB 2.6	Fundamentals of fishery protection and fishery laws	7	exam
OB 2.7	Standardization of aquaculture products	4	exam
OB 2.8	Research methodology in fish farming	4	exam
OB 2.9	Industrial fishing	5	exam
OB 2.10	Political science	3	test
OB 2.11	Acclimatization of hydrobionts	5	test
OB 2.12	Raw material of fishery	4	test
<b>Total</b>		<b>54</b>	
<b>3. OTHER TYPES OF TRAINING</b>			
CC 1	<i>Military training course</i>	29	
CC 2	Academic Practice	16	
CC 3	Production Practice	8	
CC 4	<i>State Attestation</i>	1	
<b>THE TOTAL AMOUNT OFF EPP (without military training)</b>		<b>240</b>	

## Annotations of Components in the curriculum

### 1. GENERAL TRAINING CYCLE

#### Compulsory components

**Ontogeny of fish.** There is a discipline of biology individual fish from the conception of a new body (fertilization of eggs) to its natural aging and death. Studies features spermatogenesis and oogenesis, fertilization, and embryonic postembryonic periods of fish of different species and taxonomic groups and theoretical basis of modern technologies in fish farming. The discipline covers the biology of a fish development starting from beginning of pregnancy (fertilization of eggs) to its natural aging and death. It studies the peculiarities of spermatogenesis and oogenesis, fertilization, embryonic postembryonic periods of fish of different species and systematic groups and theoretical basis of modern technologies in farm farming.

**Zoology.** The discipline focuses on morphology and anatomy of animals, their physiology and ecology, taxonomy and geographic distribution, location and role animals play in ecosystems and agrocenoses. It contains a fundamental base of knowledge about animals and is an applied discipline for ichthyologists, livestock experts and environment protection engineers.

**Hydrochemistry.** The discipline examines the chemical composition of natural waters and artificial water bodies; the cycle of chemical elements in water ponds; patterns of temporal and spatial changes in chemical composition of water under the influence of biotic and anthropogenic factors and chemical processes shaping the quality of water.

**Mathematical methods in biology.** The discipline introduces the students to the personal computer and teaches them to use it for solving problems associated with major disciplines. The discipline considers the structure of personal computers and operating systems; the basics of text and spreadsheet documents and statistical data analysis applications used to optimize them.

**Hydrochemistry.** The discipline examines the chemical composition of natural waters and artificial water bodies; the cycle of chemical elements in water ponds; patterns of temporal and spatial changes in chemical composition of water under the influence of biotic and anthropogenic factors and chemical processes shaping the quality of water.

### **Compulsory components by decision of the Academic council of the University**

Annotations of components: "History of Ukrainian Statehood", "Ethnocultural", "Philosophy", "Ukrainian for Professional Purposes", "Foreign Language (English, German, French, Spanish)", "Physical Training", "Labour and Life Safety", "Legal Personal Culture" see Section 2.1.

## **2. SPECIAL (PROFESSIONAL) TRAINING CYCLE**

### **Compulsory components**

**Introduction to core professional course.** The discipline introduces students to the content of future professional work; prepares them to completely and thoroughly master the disciplines of science, professional and practical training cycles, as well as acquire knowledge and skills during their practical hands-on training. The discipline is harmoniously combined with other disciplines that make up the basis of theoretical and practical training, especially with hydrochemical, hydrobiological, ichthyological disciplines and their technological components.

**Hydrobiology.** The discipline examines population of various reservoirs, environmental factors and general patterns of their effect on living organisms; the general laws applicable to life of populations and biomes; formation of water quality and biological productivity in aquatic ecosystems.

**Ichthyology.** This is a basic discipline for ichthyologists, fish breeders who study the structure of ichthyoid and fish, their origin and place among chordate animals; some components of fish living environment and their propagation in continental waters and oceans.

**Fish genetics.** The discipline lays down basics of the science of heredity and variation. It plays a leading role in the study of many problems related to the essence of life and evolution. The discipline is a scientific basis for selection and breeding of plants, animals, fish, and microorganisms.

Genetics is necessary to understand the nature of fish immunity against pathogens and develop methods of genetic protection against them. The study of physical and chemical mutagens and their mechanisms is important for breeding work and genetic pollution of environment, protection of heredity in humans, animals and fish against harmful mutagenic action. Knowledge of the genetic information, ways of its implementation in ontogeny and the role of environment will help selecting conditions fostering most useful properties and higher productivity in fish.

**Aquatic toxicology.** The discipline examines the sources and ways of toxic substances' entry into the water, their migration, transformation and accumulation in aquatic ecosystems; the impact of toxicants on aquatic activity at level of individual organisms, populations and ecosystems.

**Fishing.** The discipline is aimed at educating skilled professionals whose work is related the protection, cultivation and use of aquatic facilities.

During the program, students will gain knowledge about the most common fishing gear, materials necessary for their production, catching gear, main types and design features of industrial ships.

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**Ichthyopathology.** The discipline studies fish diseases of different nature; factors contributing to their occurrence; general pathology; epizootiology, parasitology and host defense mechanisms in fish; modern diagnostic techniques; basic veterinary and sanitary measures that are used in fish farming. Objective of the course is to teach students a creative, integrated approach by using acquired knowledge and taking into account the environmental situation when solving fish health problems in natural and artificial fish communities.

**Breeding and selection of fish.** The discipline is a combination of theoretical and practical knowledge about fish farming and breeding based on studies of contemporary breeding and selection; fish breeding; fish gene pool characteristics; study of the basic methods used to breed and rear replacement youngsters and make up breeding fish shoals; practical introduction to main fish breeding processes and methods.

**Hydroengineering and technical equipment in fish farming.** In the course of professional training of qualified specialists the best practices of modern domestic fishery enterprises is used; the students get familiarized themselves with the structure of fish farms, production facilities, design and construction of hydraulic structures providing water for process purposes. The discipline helps students acquire a theoretical base and practical skills in using qualified technological equipment of reproductive aquaculture systems; provides a general description of fish farming equipment; modes of operation; methods to calculate the amount of equipment required for specific production problems.

The objective of the discipline is to provide students with necessary knowledge about the design of hydraulic structures in fishery farms; designing, building and operating hydraulic structures; technical feasibility of fishery construction; current and capital repairs.

**Feeding of fish.** The discipline provides future professionals with the basic knowledge about energy conservation, science-based technologies, storage and use of fish feed for achieving high efficient fisheries under conditions of economic activity.

**Biological basis of fish farming.** The discipline is part of fish breeders' training and is meant to foster in students theoretical framework underlying the fish breeding processes considering environmental and biological characteristics of fish facilities, biological acclimatization, artificial reproduction of fish and intensification of fish-breeding.

**Aquaculture of natural reservoirs.** The discipline provides knowledge about technological requirements that apply to mixed-use reservoirs for fishery purposes, to methods of building ichthyofauna and fish breeding biotechnology in these reservoirs. Future aquaculture production technologists require knowledge of this discipline to be able to intensify fish farming in rivers, lakes and reservoirs; improve technologies of artificial reproduction of valuable, rare and endangered species, facilitate the processes of fish species' natural reproduction and preservation of biodiversity in aquatic ecosystems.

**Aquaculture of artificial reservoirs.** The discipline examines the organizational structure of pond and industrial fish farms, biological basis of comprehensive intensification in aquaculture designed to increase biological productivity and fish productivity of reservoirs; technologies of cultivation facilities; production of planting material and marketable fish in warm-water and cold-water ponds and industrial aquaculture, taking into account systems, forms and cycles of fisheries management.

**Economics of fishery enterprises.** The object of the study is the accounting system of Ukrainian fisheries. The discipline includes analysis of trends and issues in fish farms accounting. Particular attention is paid to methodological aspects and methods of fisheries recordkeeping, accounting regulations (standards), accounting policies, primary documents, registers, charts of accounts, conducting accounts in conjunction with industry characteristics, account classes, accounting of biological assets, cost accounting and calculation of aquaculture product prime costs, classification of production costs, accounting of fixed assets, accounting of leases, depreciation, inventories, accounting of current assets, accounting of cash funds, accounting of cash payments, long-term

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liabilities, accounting of labor costs and labor remuneration in fish farming industry, accounting of income and financial results in fish farms, off-balance sheet accounts, balance sheet items (assets, equity, liabilities), basic forms of financial statements (balance sheets, income statements).

### Optional components

#### *Optional components by specialty (block 1)*

**Latin.** The main objective of the course "Latin" is to teach students Latin terminology used in botany and zoology, open access to a free and conscious perception of biological nomenclature, which is an essential element in education of a full-fledged professional.

**Biophysics aquatic.** The discipline underlies general education and theoretical training of students. The course provides students with a wide knowledge of physics and biophysics fundamentals, studies the physical and physicochemical phenomena in biological objects, as well as fundamental processes forming the basis of wildlife.

The specifics of this course is determined by the need of studying the laws of physics that underlie any processes: physical characteristics and properties of the animal body (mechanical, thermal, electrical, magnetic, optical); effects produced on animals by a variety of external physical factors (light, sound, ultrasound, infrasound temperature, electric and magnetic fields, etc.), the ability of animals to perceive and respond to these factors.

**Aquatic microbiology.** The discipline examines the role microorganisms play in enhancing water quality of ponds and integrated industrial fish farms; aquatic feed and microbial bio indicators used in aquatic ecosystems to reduce pathogenic microflora pollution and assess their health status.

**Fish anatomy.** This is a morphological discipline that studies the structure of the fish body and is essential for training of ichthyologist/ fish breeder. The study of anatomy lays down foundations of knowledge about the body structure of fish in terms of species and age factors; the main objective of the discipline is to provide students with knowledge about structure and patterns of ichthyoid and fish body in the light of causality and species specificity.

**Physiology and Biochemistry of fish.** The discipline studies specifics of functional activity of all body systems in different fish species at cellular, sub-cellular, tissue, member and body levels, which allows assessing the physiological status of fish under normal conditions and exposed to natural and anthropogenic factors. Physiology of fish introduces students to mechanisms regulating physiological functions of all systems that provide interaction between fish body and the environment. This is a basic discipline that helps students to get acquainted with basic concepts on proteins, lipids, carbohydrates, minerals, vitamins, enzymes, hormones, their biological roles in the body; the discipline is of considerable practical importance. The discipline is an objective foundation for modern fish farming and related industries. Mastering knowledge of aquatic biochemistry allows specialists to understand different biotechnological processes in aquaculture products' production and processing.

**Bioresources of hydrosphere and their protection.** The discipline studies the amount, structure and localization of biological resources in hydrosphere; the laws of their formation; the possibility and extent of their use and reproduction as well as possible ways of using aquatic resources for food, feed, medical, industrial and other purposes.

**Fish processing technology.** The discipline learns a set of theoretical and practical knowledge about standardization of pond and ocean fish production and processing. The students acquire this knowledge by studying the current state of breeding, selection, pond fish farming and fish processing; properties of basic technological techniques: storing,

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freezing, drying, curing, smoking, canning and achieving qualitative indicators of semi-finished and finished fish products; methods for determining quality indicators.

**Research methodology in fish farming.** The discipline examines methodology of planning, organizing and conducting various types of research to obtain new theoretical knowledge and put it to practice in fish farming. The discipline helps students grasp basic principles of selection and recruitment in aquaculture facilities; basic methods of staging scientific experiments in pond fish farms as well as processing, systematization and generalization methods of research results and their patenting; procedures of drafting research reports.

**Aquarium study.** It promotes the study of water as a living habitat of biological objects. Directions of use is research of biology, ecology, animals and plants, their reproduction, nutrition and behavior. Many species of aquatic organisms are objects of study of the impact of toxic chemical and biological substances from the environment.

**Leadership and administering.** The aim of the discipline "Leadership and administering" is to provide students with knowledge about the essentiality of leadership origins theory, its types, styles of leader behavior, means of person's leadership qualities realization, secrets of getting success, examples of success in business, agroindustrial complex, scientific life, art, sport, IT-sphere. Discipline includes a subject-specific component which allows students: to get knowledge of the leadership qualities self-improvement, means of the influence on the person's behavior and consciousness, skills of group managing, usage of constructive manipulation and how to disable destructive manipulative ways of influence, how to build up well-balanced interpersonal relationship in the group of people.

**Fundamentals of animal husbandry.** The discipline helps students master the basics of anatomy, physiology, breeding, feeding and housing of farm animals; basic production processes in cattle, horse, pig, rabbit breeding, beekeeping and fish farming.

**Fishery laws.** The discipline studies biological resources of World ocean; the possibility and extent of their use and reproduction as well as possible ways of using aquatic resources for food, feed, medical, industrial and other purposes.

### ***Optional components by specialty (block 2)***

**Latin.** The main objective of the course "Latin" is to teach students Latin terminology used in botany and zoology, open access to a free and conscious perception of biological nomenclature, which is an essential element in education of a full-fledged professional.

**Hydrobotanics.** The discipline allows students to get acquainted with patterns of plants and vegetation as an essential bioenergy component of biosphere. By the end of their botanics classes the students will learn methods of independent work with a microscope, individual production of medicines as well as cellular, tissue, member and body level analysis, which has a considerable cognitive and practical importance. The aim of the botanics course is to teach students to work independently, not only in the laboratory but also in nature.

**Hydrology and meteorology.** The discipline studies the physical and chemical properties of water within the hydrosphere of the Earth and phenomena and processes that occur in it; explores circulation of water in nature and the impact of human activities; the value of the hydrological regime in aquatic organisms' vital activity; develops methods of groundwater management regime and water regime; meteorology is the composition and structure of atmosphere; its heat treatment; electric fields; optical and acoustic phenomena; circulation patterns of air masses; water exchange in the atmosphere and between the atmosphere and hydrosphere.

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**Fundamentals of Ecology.** The objective of teaching this discipline is to deepen the students' knowledge about the environment, generate in future specialists ecological thinking and perspective.

**Physiology of fish.** The discipline studies specifics of functional activity of all body systems in different fish species at cellular, sub-cellular, tissue, member and body levels, which allows assessing the physiological status of fish under normal conditions and exposed to natural and anthropogenic factors. Physiology of fish introduces students to mechanisms regulating physiological functions of all systems that provide interaction between fish body and the environment.

**Fundamentals of fishery protection and fishery laws.** The discipline studies protection of aquatic resources, including fish and their habitats, legislative and regulatory framework and the use of fish resources; methods for determining violations in this area and ways to address the issues associated with the use of fish resources.

**Standardization of aquaculture products.** The discipline studies international and national standardization of aquaculture products and production processes; feeds, monitoring and quality control of agricultural products; liability borne by companies and officials for violations of existing standards.

**Research methodology in fish farming.** The discipline examines methodology of planning, organizing and conducting various types of research to obtain new theoretical knowledge and put it to practice in fish farming. The discipline helps students grasp basic principles of selection and recruitment in aquaculture facilities; basic methods of staging scientific experiments in pond fish farms as well as processing, systematization and generalization methods of research results and their patenting; procedures of drafting research reports.

**Industrial fishing.** The discipline is aimed at educating skilled professionals whose work is related the protection, cultivation and use of aquatic facilities.

During the program, students will gain knowledge about the most common fishing gear, materials necessary for their production, catching gear, main types and design features of industrial ships.

**Political science.** The discipline, which helps students build a system of logically completed basic knowledge about policies and adequate skills as the basis for development of political consciousness and political culture; the discipline acquaints students with the essence and genesis of political science as a discipline, its main issues and the current state of their solution.

**Acclimatization of hydrobionts.** Important discipline for professional training Masters in «Water Bioresources» and personnel for scientific work to restore biological productivity of waters. The challenge of course is to train future professionals clearly identify the need for acclimatization work on certain types of aquatic organisms; consider all possible risks associated with the relocation of new species in the pond for them, correctly choose items for acclimatization, given their economic value and environmental safety; avoid concomitant entering dangerous to native fauna of biological material; evaluate the effectiveness of the operations and their profitability.

**Raw material of fishery.** It studies the resources of the World ocean and adjacent freshwater bodies that are or can potentially be used by mankind for food, food,, technical, medical and other purposes.

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**Bachelor**  
**Field of knowledge "Agricultural science and food"**  
**in specialty**  
**"TECHNOLOGY OF PRODUCTION AND PROCESSING OF LIVESTOCK PRODUCTS"**  
**Educational-professional Program**  
**«Technology of production and processing of livestock products»**

Form of Training:	Licensed number of persons:
– Full-time	125
– Part-time	60
Duration of Training	4 years
Tests ECTS	240
Language of Teaching	Ukrainian, English
Qualification	Livestock products production and processing technologist

### **Concept of training**

Animal production is an important sector of agriculture. Its level of development defines how well the market demand in high-calorie food such as meat, dairy products, eggs etc, is met. Animal production provides raw materials for the food and light industries (meat, milk, leather, wool, wax, feathers, etc.) as well as for production of some drugs and medicines. It is closely linked with crop farming, for which it supplies organic fertilizers. The structure of animal production includes cattle, pigs, poultry and sheep husbandry. Equally important are horse-, bee breeding, pond fish farming, sericulture, etc.

### **Practical training**

In training of future professionals the department closely interacts and cooperates with educational and research facilities of the University VP NUBiP of Ukraine "Agronomic Research Station", "O. Muzychenko Velykosnitynske NDH", "NDH Vorzel" and the number of Ukrainian front-edge agricultural enterprises.

**Academic rights of Graduates:** graduates can apply for Master's Degree Specialties and Educational (Educational-professional or Educational-scientific) programs specified in Table 1.2 Section 1.3 this Catalog.

### **Employment of Graduates**

Upon successful completion of the Bachelor level studies the specialists can choose to work either in University's educational and research farms or at agricultural enterprises of different ownership.

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**Bachelor`s Program and Curriculum in Specialty  
«Technology of production and processing of livestock products»  
Educational-professional Program «Technology of production and processing of  
livestock products»**

Code n/a	Components of the educational-professional program (education disciplines, course projects (paper), practice, qualification work)	Amount of tests ECTS	The final control
1	2	3	4
<b>1. GENERAL TRAINING CYCLE</b>			
<b>Compulsory components EPP</b>			
CC 1	Zoology	4	exam
CC 2	Chemistry	4	exam
CC 3	Morphology of agricultural animals	7	test, exam
CC 4	Biochemistry in animal husbandry	6	test, exam
CC 5	Mechanization of production processes in animal husbandry	4	exam
<b>Total</b>		<b>25</b>	
<b>Compulsory components EPP by decision of the Academic council of the University</b>			
CCU 1.1	Ukrainian language for professionals	3	exam
CCU 1.2	The history of Ukrainian statehood	3	exam
CCU 1.3	Foreign language	12	test, exam
CCU 1.4	Physical education	4	test
CCU 1.5	Ethnoculturology	4	exam
CCU 1.6	Philosophy	5	exam
CCU 1.7	Life and work safety	5	exam
<b>Total</b>		<b>36</b>	
<b>2. SPECIAL (PROFESSIONAL) TRAINING CYCLE</b>			
<b>Compulsory components</b>			
CC 1	Introduction to core professional course	3	exam
CC 2	Physiology of agricultural animals	7	test, exam
CC 3	Genetics of animals	4	exam
CC 4	Animal nutrition and feed technology	11	test, exam
CC 5	Ecology in animal husbandry	3	exam
CC 6	Animal hygiene	8	test, exam
CC 7	Animal breeding	8	test, exam
CC 8	Technology of rabbit breeding and animal farming	4	exam
CC 9	Technology of poultry production	5	exam
CC 10	Technology of beekeeping	5	exam
CC 11	Technology of goats production	5	exam
CC 12	Technology of milk and beef production	8	exam
CC 13	Technology of pig production	8	exam
CC 14	Technology of sheep production	5	exam
CC 15	Horse husbandry	5	exam
CC 16	Technology of processing livestock products	5	exam
<b>Total</b>		<b>95</b>	
<b>The total amount of Compulsory components</b>		<b>156</b>	
<b>Optional components</b>			
<b>Optional subjects by specialty (block 1)</b>			
OB 1.1	Mathematical Methods in Biology	3	exam
OB 1.2	Biophysics in animal husbandry	3	exam
OB 1.3	Microbiology in animal husbandry	4	exam
OB 1.4	Forage production	3	exam
OB 1.5	Research methodology	3	exam
OB 1.6	Fishing	4	exam
OB 1.7	Biotechnology in animal husbandry	8	test, exam
OB 1.8	Principles of veterinary medicine	3	exam
OB 1.9	Meat stockbreeding	4	exam
OB 1.10	Legal regulation in livestock	3	exam

**CURRICULA AND PROGRAMS OF BACHELOR DEGREE**

OB 1.11	Economics of animal	4	exam
OB 1.12	Technology of slaughter products	4	test
OB 1.13	Leadership and administering	4	test
OB 1.14	EU Directives and Standards in Animal Husbandry	4	test
<b>Total</b>		<b>54</b>	
<b>Optional subjects by specialty (block 2)</b>			
OB 2.1	Applied mathematics.	3	exam
OB 2.2	Radiobiology	3	exam
OB 2.3	Biometric data processing	4	exam
OB 2.4	Botanics	3	exam
OB 2.5	Research methodology	3	exam
OB 2.6	Fishing	4	exam
OB 2.7	Biotechnology	8	test, exam
OB 2.8	Principles of veterinary medicine	3	exam
OB 2.9	Meat stockbreeding	4	exam
OB 2.10	Legal regulation in livestock	3	exam
OB 2.11	Economics of animal	4	exam
OB 2.12	Technology of livestock by-products	4	test
OB 2.13	Political science	4	test
OB 2.14	Standardization of animal products	4	test
<b>Total</b>		<b>54</b>	
<b>3. OTHER TYPES OF TRAINING</b>			
CC 1	<i>Military training course</i>	18	
CC 2	Academic Practice	16	
CC 3	Production Practice	8	
CC 4	<i>State Attestation</i>	1	
<b>THE TOTAL AMOUNT OFF EPP (without military training)</b>		<b>240</b>	

## Annotations of Components in the curriculum

### 1. GENERAL TRAINING CYCLE

#### Compulsory components

**Zoology.** It is a fundamental base of knowledge about animals and considers the animal world from the simplest to the chordate animals. It studies morphology and anatomy of animals, their physiology and ecology, taxonomy and geographic distribution, the place and role of animals in ecosystems and agrocenoses. Special attention given to groups and species of animals which are the most important in practical terms for agriculture, representatives of the local fauna.

**Chemistry.** The discipline studies the basic laws of chemistry and chemical properties of nutrients and their most important compounds, characteristics of chemical processes that accompany the production and processing of animal products. Future specialists learn modern concepts of organic chemistry that allow them to understand the structure of the tissues of animals and chemical processes in living systems. The discipline biochemical processes in living organisms, and biochemical methods which are used to determine the biochemical parameters that characterize the physiological state of the body and the pathology.

**Morphology of agricultural animals.** This is a general biological discipline that studies the domestic animal and poultry anatomy, and is basic in preparation of the animal product production and processing technologists. After having studied the morphology of farm animals the students acquire the foundations of knowledge about domestic animal anatomy from perspective of their species, breed and age.

**Biochemistry in animal husbandry.** There is a basic discipline that provides the basic concepts on proteins, lipids, carbohydrates, minerals, vitamins, enzymes, hormones, their biological roles in the body and has important practical value. It is an objective basis for modern animal husbandry and other related industries. Mastering of knowledge of biochemistry allows the specialist to consciously understand different biotechnological processes for production and processing of livestock products.

**Mechanization of production processes in animal husbandry.** The objective of this discipline is to help students acquire knowledge and skills enabling them to substantiate mechanized processes in animal product production enterprises. The discipline highlights the main provisions of zootechnical requirements for the performance of mechanization processes in animal husbandry; operating principles and process control over animal production machinery and equipment; economic evaluation of machinery and assemblies.

### **Compulsory components by decision of the Academic council of the University**

Annotations of disciplines “History of Ukrainian Statehood”, “Ethnocultural”, “Philosophy”, “Ukrainian for Professional Purposes”, “Foreign Language (English, German, French, Spanish)”, “Physical Training”, “Labour and Life Safety” see Section 2.1.

## **2. SPECIAL (PROFESSIONAL) TRAINING CYCLE**

### **Compulsory components**

**Introduction to core professional course.** The objective of this discipline is to provide future professionals with necessary knowledge about structure of educational institutions and educational system in the country; teach them the concepts of development on which the leading universities in Europe and across the world base their activity; modern technologies of milk, beef, pork, sheep and goat production, beekeeping, horse breeding, poultry, rabbits and fur farming.

**Physiology of agricultural animals.** The discipline provides students with theoretical knowledge about basic physiological processes in the farm animals' body: circulation, digestion, respiration, metabolism and energy exchange, reproduction, excretion, lactation. It introduces the future professionals to neurohumoral regulatory mechanisms of animals. Special attention is paid to physiology of muscles and nerves in the central nervous system, higher nervous activity and analyzers (senses).

**Genetics in animal husbandry.** The discipline studies cytological and molecular basis of heredity and variation; structure and function of genes; genetics of ontogeny and populations. Genetics is necessary for planning of domestic animals' breeding and enables the professionals to understand the nature of biodiversity; prevention of hereditary diseases and abnormalities in farm animals. Application of genetic techniques makes it possible to predict manifestations of breeding traits in animal phenotype.

**Animal nutrition and feed technology.** The discipline is aimed at fostering in students the knowledge, abilities and skills in scientifically substantiated animal feeding, storage and rational use of feeds. The students study biology of individual species and sex-age groups of animals, the role played by nutrients in the functions of living organism; organization of full-value animal feeding based on detailed rules, rational methods,

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preparation of forages with regard to environmental and economic conditions and animal welfare.

**Ecology in livestock.** It studies the relationships of organisms (individuals, animals populations and other biomes.) with each other and with the environment, the general laws of functioning of ecosystems, including those under the influence of anthropogenic factors and is the basis for safe livestock production.

**Animal hygiene.** The discipline helps students to get better knowledge about the science of protecting and preserving animal health; it studies sanitary and veterinary-sanitary requirements for environmental factors and livestock buildings; considers the influence of microclimate and quality of feed, water and soil on animal health and productivity; effective ways of preventing the negative impact of harmful substances on animals; regulations and sanitary requirements for housing, feeding and maintenance of various farm animal types and sex-age groups, livestock buildings and equipment for animals.

**Animal breeding.** The objective of this discipline is to teach students the origins and evolution of agricultural animals; main features of breeds; patterns of individual agricultural animal breeds and species; exterior, interior, agricultural productivity of animals and factors causing them; selection of agricultural animals; evaluation and selection of animals by phenotype, progeny, origins; organizational aspects of agricultural animal selection; methods and forms of agricultural animal selection.

**Technology of rabbit breeding and animal farming.** The objective of this discipline is to provide students with a system of theoretical knowledge and practical skills in breeding, feeding, maintenance of rabbits and production of rabbit products: meat, pelts, down.

**Technology of poultry production.** The discipline studies breeds and cross breeds of various poultry species; specifics of breeding and incubation of chicken, duck, geese, turkey, quail, guinea fowl and ostrich eggs; modern production and processing of poultry and eggs, and fatty liver of ducks and geese.

**Technology of beekeeping.** The discipline reveals for students the basic provisions of bee colonies' productivity through introduction of technological keeping and breeding methods based on a high genetic potential; creating optimal conditions for the growth and development of bees; compliance with sanitary and hygienic norms and rules; advanced technologies of producing honey, wax, pollen (bee pollen), propolis (bee-glue), royal jelly and bee venom; biology and chemistry of honey, wax and other biologically active products' making process. The discipline allows students to study properties of biologically active products, their effect on quality of different factors and methods of determining fraud; organization of production at the apiaries of different ownership.

**Technology of goats production.** The discipline is part of a special technology and is taught to provide students with a system of theoretical knowledge and practical skills in breeding, biotechnology reproduction, feeding, maintenance of goats and production of goats products.

**Technology of milk and beef production.** The discipline introduces students to biological characteristics, growth parameters, reproduction and breeding of cattle. Students are taught the basics of modeling processes in cattle breeding; technologies of breeding replacement calves and milk production at conventional and specialized farms with extensive use of energy saving technologies.

**Technology of pig production.** The discipline emphasizes the economic importance and prospects of pig breeding; biological and nutritional value of pork; swine origins; biological characteristics of wild and domestic pigs; breeding factors; stages of creating modern breeds; different breeds of pigs; breeding work in farms of different categories; maintenance and feeding of pregnant and lactating females; biological features

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and critical periods in raising pig lings; substantiation of piglet weaning schedule; technology of pig farming; raising replacement calves; fattening pigs.

**Technology of sheep production.** The discipline is part of a special technology and is taught to provide students with a system of theoretical knowledge and practical skills in breeding, biotechnology reproduction, feeding, maintenance of sheep and production of sheep products.

**Horse husbandry.** The discipline considers the study of the basic ways of horse husbandry development in Ukraine, biological characteristics of horses which are connected with their maintenance, feeding, reproduction, behavior, adaptation to the conditions of existence and utilizes; origin of horses and their wild relatives, study of common origin and characteristics of species differentiation; creating the conditions and methods of improvement and improvement of breeds of horses for various purposes; the main areas of productivity and development of the industry in the short and long term (state or private horse breeding).

**Technology of processing livestock products.** The discipline provides knowledge about processes of manufacturing a wide range of high-quality animal products; regulatory requirements for quality of raw materials and manufactured products made from it based on existing technologies and manuals at processing plants; assessment of their quality according to requirements set forth in normative documentation.

### Optional components

#### *Optional components by specialty (block 1)*

**Mathematical methods in Biology.** The discipline introduces the students to the personal computer and teaches them to use it for solving problems associated with major disciplines. The discipline considers the structure of personal computers and operating systems; the basics of text and spreadsheet documents and statistical data analysis applications used to optimize them.

**Biophysics in animal husbandry.** The discipline provides students with a deep knowledge of physics and biophysics fundamentals; it studies the physical and physicochemical phenomena in biological objects; the fundamental processes in wildlife. The specifics of the course are determined by the need to study the laws of physics that underlie any process, physical characteristics and properties (mechanical, thermal, electrical, magnetic, optical) of animals, effects produced on animals by a variety of external physical factors (light, sound, ultrasound, infrasound temperature, electric and magnetic fields, etc.), the ability of animals to perceive and respond to these factors.

**Microbiology in animal husbandry.** The objective of this discipline is introduce students to classification, nomenclature, morphology, physiology and genetics of microorganisms and determine their role in the cycling of matter in nature; study the effect produced on microorganisms by environmental factors; analyze microflora of air, water, soil, food, foodstuff, agricultural and industrial raw materials of plant and animal origin.

**Forage production.** The discipline covers a science-based system of organizational, economic, biological, technological and economic activities of production, harvesting and forage preserving.

**Research methodology.** The discipline studies basic principles of research methodology in animal production; modern classification and methods of zootechnical experiments; selection methods; systematization and analysis of scientific information and research; rules applicable to writing scientific work and protection of intellectual property rights.

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**Fishing.** The discipline studies the organizational structure of pond fisheries; their arrangement; biology of major cultivation facilities in pond fishery aquaculture; the impact of environmental factors on aquatic activity; the basics of selection and breeding in fish farming; methods and measures applied to intensify pond fishery; fish reproduction techniques; basic technological processes in warm- and cold-water aquaculture; fish diseases and basic health care and prevention activities in fish farming.

**Biotechnology in animal husbandry.** The discipline studies the possible practical applications of basic biology achievements and methods of receiving biologically active substances to improve reproductive function in animals. The discipline also teaches future professionals how to intensify the selection process by receiving and transferring embryos from the best breeding animals.

**Principles of veterinary medicine.** Provides mastering the basics of the anatomical structure of farm animals, classification and specifics of the diseases spread, methods and ways of prevention and treatment of farm animals diseases.

**Meat stockbreeding.** It provides for students forming of modern deep knowledge by Meat stockbreeding questions in market conditions. The program provides studying of cattle biology, livestock systems of sustentation, feeding of meat breeds cattle, stimulants of animal productivity, production of ecologically pure beef, slaughter and processing of cattle, meat productivity of cattle management.

**Legal regulation of livestock.** It studies general characteristics of legal regulation of livestock; breeding regulation; beekeeping regulation; regulation of dairy production and selling; regulation of fish farming and fishery; legal support of quality and safety of agricultural products; regulation of production and sale of fur and leather products; regulation of production, procurement, getting, preserving, transport and sale of poultry eggs; regulation of silk; tools of state regulation of the livestock industry in Ukraine.

**Economics of animal.** The discipline provides students with knowledge about the laws underlying development of social production, its mechanisms and the effective use of economic laws for better satisfaction of consumers' physical, social and economic needs. The discipline sets forth basic principles of economic development; basics of market economy; economic growth and socio-economic progress; the world economy and international economic relations.

**Technology of slaughter products.** The discipline studies the issues related to quality and technological characteristics of meat productivity of farm animals as raw materials for processing industry; delivery of slaughtered animals to meat processing factories under existing systems and normative documentation; technology and slaughter products' processing and storage; evaluation of meat quality indicators for its technological and culinary properties and methods of preserving meat and meat products.

**Leadership and administering.** The aim of the discipline "Leadership and administering" is to provide students with knowledge about the essentiality of leadership origins theory, its types, styles of leader behavior, means of person's leadership qualities realization, secrets of getting success, examples of success in business, agroindustrial complex, scientific life, art, sport, IT-sphere. Discipline includes a subject-specific component which allows students: to get knowledge of the leadership qualities self-improvement, means of the influence on the person's behavior and consciousness, skills of group managing, usage of constructive manipulation and how to disable destructive manipulative ways of influence, how to build up well-balanced interpersonal relationship in the group of people.

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**EU Directives and standards in animal husbandry.** The discipline envisages the study of EU Directives and state regulatory documents on livestock production technologies. A student must know the requirements of state normative documents (laws, regulations, standards, recommendations, instructions) and EU countries regarding the production of livestock products, be able to assess its compliance with these requirements in order to obtain quality products.

### ***Optional components by specialty (block 2)***

**Applied mathematics.** The aim of the discipline is to form skills of logic and algorithmic thinking. It is necessary to learn the foundations of mathematical tools to solve theoretical and practical economic problems; to develop the ability to seek, analyse and apply scientific literature and other information sources and resources on higher mathematics; to develop skills of mathematical research, to interpret specific economic problems in mathematical language with the following construction of a mathematical model; the ability to explore mathematical models of various economic processes; to master methods of processing and analyzing results which are obtained while researching mathematical models.

**Radiobiology.** The purpose of the discipline "Radiobiology" is to prepare a specialist who can highly assess the radiation situation and develop measures to ensure the safety of animal husbandry in contaminated areas with radioactive substances and obtaining "pure" from the radionuclides of livestock products.

**Biometric data processing.** The purpose of formation of future specialists of theoretical knowledge and practical skills on the use of mathematical and statistical methods in animal husbandry.

**Botanics.** The discipline allows students to get acquainted with patterns of plants and vegetation as an essential bioenergy component of biosphere. By the end of their botanics classes the students will learn methods of independent work with a microscope, individual production of medicines as well as cellular, tissue, member and body level analysis, which has a considerable cognitive and practical importance. The aim of the botanics course is to teach students to work independently, not only in the laboratory but also in nature.

**Research methodology.** The discipline studies basic principles of research methodology in animal production; modern classification and methods of zootechnical experiments; selection methods; systematization and analysis of scientific information and research; rules applicable to writing scientific work and protection of intellectual property rights.

**Fishing.** The discipline studies the organizational structure of pond fisheries; their arrangement; biology of major cultivation facilities in pond fishery aquaculture; the impact of environmental factors on aquatic activity; the basics of selection and breeding in fish farming; methods and measures applied to intensify pond fishery; fish reproduction techniques; basic technological processes in warm- and cold-water aquaculture; fish diseases and basic health care and prevention activities in fish farming.

**Biotechnology.** The discipline studies the possible practical applications of basic biology achievements and methods of receiving biologically active substances to improve reproductive function in animals. The discipline also teaches future professionals how to intensify the selection process by receiving and transferring embryos from the best breeding animals.

**Principles of veterinary medicine.** Provides mastering the basics of the anatomical structure of farm animals, classification and specifics of the diseases spread, methods and ways of prevention and treatment of farm animals diseases.

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**Meat stockbreeding.** It provides for students forming of modern deep knowledge by Meat stockbreeding questions in market conditions. The program provides studying of cattle biology, livestock systems of sustentation, feeding of meat breeds cattle, stimulants of animal productivity, production of ecologically pure beef, slaughter and processing of cattle, meat productivity of cattle management.

**Legal regulation of livestock.** It studies general characteristics of legal regulation of livestock; breeding regulation; beekeeping regulation; regulation of dairy production and selling; regulation of fish farming and fishery; legal support of quality and safety of agricultural products; regulation of production and sale of fur and leather products; regulation of production, procurement, getting, preserving, transport and sale of poultry eggs; regulation of silk; tools of state regulation of the livestock industry in Ukraine.

**Economics of animal.** The discipline provides students with knowledge about the laws underlying development of social production, its mechanisms and the effective use of economic laws for better satisfaction of consumers' physical, social and economic needs. The discipline sets forth basic principles of economic development; basics of market economy; economic growth and socio-economic progress; the world economy and international economic relations.

**Technology of livestock by-products.** Studying of discipline involves familiarization with the processing and development of agricultural by-products as raw materials for animal farms, evaluation of its quality indicators and methods of preserving and storing.

**Political science.** The discipline, which helps students build a system of logically completed basic knowledge about policies and adequate skills as the basis for development of political consciousness and political culture; the discipline acquaints students with the essence and genesis of political science as a discipline, its main issues and the current state of their solution.

**Standardization of animal products.** The discipline studies international and national standardization of animal products and production processes; feeds, monitoring and quality control of agricultural products; liability borne by companies and officials for violations of existing standards.

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## **2.5. EDUCATIONAL AND RESEARCH INSTITUTE OF FORESTRY AND LANDSCAPE-PARK MANAGEMENT**

**Director** - Doctor of Agricultural Sciences, Professor **Petro Lakyda**

Tel: (+38044) 527-85-28 E-mail: [lakyda@nubip.edu.ua](mailto:lakyda@nubip.edu.ua)

Location: educational building №1, room 119

The INSTITUTE organizes and coordinates the educational process of bachelors in the following specialties:

### ***205 Forestry***

Educational-professional Program “**Forestry**”

Guarantor of the program – PhD of Agricultural Sciences, assistant professor Nataliia Puzrina

Тел.: (044) 527-82-82 E-mail: [npuzrina@nubip.edu.ua](mailto:npuzrina@nubip.edu.ua)

Graduating departments:

Forest restoration and meliorations

Tel.: (044) 527-87-47 E-mail: [forest\\_crops@nubip.edu.ua](mailto:forest_crops@nubip.edu.ua)

Head of the Department – PhD of Agricultural Sciences, professor Viktor Maurer

Silviculture

Tel.: (044) 527-82-82 E-mail: [lisivnutstvo@gmail.com](mailto:lisivnutstvo@gmail.com)

Head of the Department – doctor of science, professor Anatolii Bondar

Forest Mensuration and Forest Management

Tel.: (044) 527-85-23 E-mail: [bilous@nubip.edu.ua](mailto:bilous@nubip.edu.ua)

Head of the Department – doctor of science, professor Andrii Bilous

### ***206 Park and Gardening Management***

Educational-professional Program «**Park and Gardening Management**»

Guarantor of the program – PhD of agricultural sciences, associated professor Olesia Pikhalo

Tel.: (+38044) 527-82-96 E-mail: [olesya-pikhalo@nubip.edu.ua](mailto:olesya-pikhalo@nubip.edu.ua)

Graduating departments:

Landscape Architecture and Phytodesign:

Tel.: (044) 527-85-47, E-mail: [okolesnichenko67@gmail.com](mailto:okolesnichenko67@gmail.com)

Head of the department - Doctor of biological sciences, professor Olena Kolesnichenko

Botany, Dendrology and Forest Tree Breeding:

Tel.: (+38044) 527-85-18 E-mail: [dendrology.nubip@gmail.com](mailto:dendrology.nubip@gmail.com)

Head of the department - Candidate of agricultural sciences, associated professor Yuri Marchyk

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Forest restoration and meliorations

Tel.:(044) 527-87-47 E-mail: [forest\\_crops@nubip.edu.ua](mailto:forest_crops@nubip.edu.ua)

Head of the Department – PhD of agricultural sciences, professor Viktor Maurer

***187 Woodworking and furniture technologies***

Educational-professional Program «**Woodworking and furniture technologies**»

Guarantor of the program – [Andrii Spirochkin, PhD](#)

Tel.: (044) 527-81-67 E-mail: [spirochkin@nubip.edu.ua](mailto:spirochkin@nubip.edu.ua)

Graduating department:

Wood products technologies and design

Tel.: (044) 527-81-67 E-mail: [opinchewska@gmail.com](mailto:opinchewska@gmail.com)

Head of the Department – doctor of science, professor Olena Pinchevska

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**Bachelor**  
**Field of Knowledge "Agricultural science and food"**  
**in specialty "FORESTRY"**  
**Educational-professional program "Forestry"**

Form of Training:	Licensed number of persons:
Full-time	125
Part-time	140
Duration of Training	4 years
Credits ECTS	240
Language of Teaching	Ukrainian
Qualification	Bachelor of Forestry

### **The concept of training**

Forestry is the sector of the economy that deals with research, account and reproduction of forests, protecting them from fires, pests and diseases, reforestation and afforestation, forest regulation, increasing of forest productivity, aesthetic, sanitary and hygienic conditions of plantings. It is a very important component of the economy of Ukraine.

Training of experts has following main objectives: improving environmental education, public awareness on forestry management and removal of social stress regarding the methods and means of forestry management by informing the public about close to nature forestry, multiple use of forest resources, public involvement in solving forestry problems and consultation with local communities about decisions that have significant ecological, recreational and economic importance and can cause significant social resonance, training in the organization of forest and landscape management on the principles of close to silviculture, providing multifunctional forestry and landscape management and efficient, continuous and sustainable, multi-use forest resources, taking into account landscape and watershed principles of forest management, conservation of natural biodiversity at all levels - from the genetic one to the species, ecosystem and landscape, providing continuous, high-efficient implementation of plantings environmental, economic and social functions at local, national and global levels.

### **Practical training**

The bases of practical training are educational, research, training and manufacturing laboratories of the Institute Departments and IP NUBiP Ukraine "Boyarka Forest Research Station," Trainig and Research Nursery of the Reforestation and Afforestation Department, Botanical Garden of NULES of Ukraine.

### **Proposed Topics for Bachelor theses**

1. Peculiarities of thinning and selection group cutting in pine stands of forestry enterprises.
2. Natural regeneration of Scotch pine.
3. Condition of forest fire protection in forestry enterprises and ways of its improvement.
4. The analysis of methods for determining the stock of mature spruce stands of forestry enterprise.

5. Harmful insects in the young pine forests in forestry enterprises and their forest values.
6. The analysis of the current condition of hunting fauna and ways to optimize the number of hunting lands in forestry enterprises.
7. The experience of plant growing material in a forest enterprise.
8. Current state and erosion control properties of protective forest plantation in the forestry enterprises.
9. Economic features of management activities in the forest enterprise involving private structures.
10. Peculiarities of reproduction of the German medlar tree using green cuttings.

**Academic rights of Graduates:** graduates can apply for Master's Degree Specialties and Educational (Educational-professional or Educational-scientific) programs specified in Table 1.2 Section 1.3 this Catalog.

### **Employment of Graduates**

After receiving a Bachelor degree graduates can be employed in forestry enterprises of the State Agency of forest resources, communal enterprises of gardening or landscaping, state and private game management farms and forestry research institutions.

**Bachelor`s Program and Curriculum  
in Specialty «Forestry»  
Educational-professional program “Forestry”**

Code n/a	Components of the educational-professional program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits ECTS	The final control
1	2	3	4
<b>1. GENERAL TRAINING CYCLE</b>			
<b>Compulsory components</b>			
CC 1	Higher mathematics	4	exam
CC 2	Chemistry	4	exam
CC 3	Botany	8	exam
CC 4	Fundamentals of Ecology and Nature Protection	4	exam
CC 5	Physics	4	exam
CC 6	Informatics	6	exam
CC 7	Geodesy	4	exam
CC 8	Biometry	4	exam
CC 9	Forest pedology	5	exam
CC 10	Earth remote sensing	4	exam
<b>Total</b>		<b>45</b>	
<b>Compulsory components EPP by decision of the Academic Council of the University</b>			
CCU 1	Foreign language (English, German, French, Spanish)	5	exam
CCU 2	Physical training	4	test
CCU 3	Ukrainian for professional purposes	3	exam
CCU 4	History of Ukrainian Statehood	3	exam
CCU 5	Labour and life safety	4	exam
CCU 6	Legal culture of personality	3	exam
CCU 7	Information Technology of forestry	3	exam
CCU 8	Forestry entrepreneurship	3	exam
CCU 9	Philosophy	3	exam
<b>Total</b>		<b>31</b>	
<b>2. SPECIAL (PROFESSIONAL) TRAINING CYCLE</b>			
<b>Compulsory components EPP</b>			
CC 11	Basics of professional training	3	exam
CC 12	Dendrology	7	exam
CC 13	Forest zoology	4	exam
CC 14	Mechanization of forestry work	6	exam
CC 15	Integrated forest fire management	4	exam
CC 16	Forest phytopathology	4	exam
CC 17	Silviculture	7	exam
CC 18	Forest mensuration	6	exam
CC 19	Forest entomology	4	exam
CC 20	Forest restoration	10	exam
CC 21	Economics of forestry	4	exam
CC 22	Forest melioration	5	exam
CC 23	Forest Management	7	exam
CC 24	Organization of Forestry Production	5	exam
<b>Total</b>		<b>76</b>	
<b>The total amount of Compulsory components</b>		<b>152</b>	
<b>Optional components EPP</b>			
<b>Optional subjects by specialty</b>			
OB 1.1	Forest selection and genetics	6	exam
OB 1.2	Plant physiology	6	exam
OB 1.3	Economic theory	6	exam
OB 1.4	Fundamentals of biotechnology	6	exam
OB 1.5	Non-timber forest resources	6	exam
OB 1.6	Basics of hydrotechnical reclamation	6	exam
OB 1.7	Landscape knowledge and geography Forestry	6	exam

**CURRICULA AND PROGRAMS OF BACHELOR DEGREE**

OB 1.8	Forest radioecology	5	exam
OB 1.9	Forestry commodity	5	exam
OB 1.10	Urban landscaping	5	exam
OB 1.11	Natural reserves	5	exam
OB 1.12	Biotechnics	5	exam
OB 1.13	Politology and sociology	5	exam
OB 1.14	Accounting in Forestry	5	exam
OB 1.15	Fundamentals of forest exploitation	5	exam
OB 1.16	Hunting science	5	exam
OB 1.17	Timber transportation	5	exam
<b>Total</b>		<b>54</b>	
<b>Optional subjects by Student's Choice</b>			
OS 1		<b>3</b>	exam
OS 2		<b>3</b>	exam
<b>Total</b>		<b>6</b>	
<b>The total amount of Optional components</b>		<b>60</b>	
<b>3. OTHER TYPES OF TRAINING</b>			
CC 25	Academic Practice	21	
CC 26	Production Practice	3	
CC 27	Preparation and defense of undergraduate final work	4	
<b>Total</b>		<b>28</b>	
<b>THE TOTAL AMOUNT OF EPP</b>		<b>240</b>	

**Annotations of components in the curriculum**

**GENERAL TRAINING CYCLE**

**Compulsory components**

**Higher mathematics.** Elements of analytic geometry. Linear Algebra. Calculus. Differential calculus of functions of one variable. Integration. Functions of several variables. Differential equations and series.

**Chemistry.** Theoretical foundations of Chemistry. Organic Chemistry. Stoichiometric laws. Structure of atoms, kinetics of chemical reactions. Solutions. Oxidation-reduction reactions. Electrolysis. Corrosion of metals, features of main chemistry elements. Classification of organic compounds. Classification of cations and anions. Action of group reagents, features of the division into groups. Reactions. The analysis of unknown substances. Methods for determining the concentration of solutions. Fundamentals of neutralization, permanganometry. Determination of related substances in solution.

**Botany.** Structure, activity and plant diversity. The lower and higher plants, their origin, phylogenetic relationships, the value for the national and forest management. Morphology and productivity of forest biocenosis, their sustainable use and conservation.

**Fundamentals of Ecology and Nature Protection.** Ecology is irrelevant: autecology, demecology, synecology, ecosystemology, biospherology. Applied ecology. The protection of nature is an environmental problem of humanity. Red books. Geosozology - the theoretical basis for the protection of nature. Protection of fox ecosystems. The defense of the abiotic medium. Mainly protect nature. Legal ambush to protect the fiscal of Ukraine.

**Physics.** Mechanics, kinematics and dynamics of point and solid. Molecular physics and thermodynamics. Electrostatics. An electric current and electromagnetism. Oscillations and waves. Optics. Elements of quantum mechanics. The structure of the nucleus. Radioactivity. Effect of radiation on biological objects.

**Informatics.** Hardware and software of computers. Personal computers. The system software. Programming languages. Algorithmic and programming tasks. Solving problems on PC.

**Geodesy.** The general concept of geodesy, orientation of lines on the ground; coordinates in geodesy, making measurements with theodolite, ways to determine the area of land; geometric leveling, engineering design for profile, leveling the surface, terrain, topographic map, range maps, solving a topographic map; basics of aerial photography and interpretation of aerial photographs, topographic and geodesy works in forest inventory.

**Biometrics.** Fundamentals of the theory of probability. Numerical characteristics and patterns of distribution of a random variable. Statistics. The simplest model analysis of variance. Correlation analysis. Selective methods as a basis for obtaining the forest information.

**Forest pedology.** Soil formation processes. Mineral and organic parts of the soil. The pattern of distribution of soils in Ukraine. Soil properties according to vegetation.

**Earth remote sensing.** Methods of remote sensing based on registration and further interpretation of the reflected solar radiation from the surface of the soil, vegetation, water and other facilities. Transporting (waftage) of recording device, into the air-Earth space allows you to get a much wider coverage area than ground-based research methods. The quality and applicability of the data (during remote sensing) are influenced by spectral range of shooting, spatial accuracy, radiometric accuracy, spatial coverage, efficiency and repeatability of shooting, and the cost of data.

### **Compulsory components by decision of the Academic Council of the University**

Annotations of components: "History of Ukrainian Statehood", "Philosophy", "Ukrainian for Professional Purposes", "Foreign Language (English, German, French, Spanish)", "Physical Training", "Labour and Life Safety", "Legal Personal Culture", "Information technology in the industry" see Section 2.1.

**Forestry entrepreneurship.** Study of Forest Management related Ukrainian Legislation. Business plan: compilation and execution. Organization activity of a forestry enterprise.

## **2. SPECIAL (PROFESSIONAL) TRAINING CYCLE**

### **Compulsory components**

**Basics of professional training.** Discipline acquaints students, especially freshmen, with the rights and duties of university students, history of Education and Research Institute of Forestry and Landscape-Park Management of the National University of Life and Environmental Sciences of Ukraine, internal rules of the institution, organization of educational process, forms of training according to the curriculum. Students are informed about mental health hygiene and general rules of working in the library and working with the book. Emphasis is placed on the study of traditional features of separate discipline groups, the need to study general, biological and special disciplines which are taught at the Education and Research Institute of Forestry and Landscape-Park Management.

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**Dendrology.** Ecology of plants. Type, intraspecific systematic unity. Types of habitats. Life forms and cycles. Phylogenetic system. Dendroflora of Ukraine. Introduction of plants. Phytocenology. Forest formations and associations.

**Forest zoology.** Species composition and peculiarities of forest fauna spreading, results of people's impact on forest fauna, examples of positive and negative effects of mammals and birds on forest environment, understanding the causes of animals extinction and methods for their preservation, the foundation of legislation to protect wildlife.

**Mechanization of forestry work.** System of machines, material and technical base of complex mechanization of forestry works. General structure of forestry tractors. Machines for collecting and processing seeds. Structure and principle of tillage, sowing and planting machines. Machines for forest protection and protection. Technology of mechanized forestry works. Acquisition of machine-tractor units.

**Integrated forest fire management.** The course concentrated on integrated fire management at the context of climate change. Its includes fire hazard theory and fire weather assessment, classification of forest fires by type and intensity and development. The subject is study both the world and Ukraine experiences in preventive forest-fire measures, the operating procedures of forest fire-fighting services, the role of modern technologies such as GIS and ERS in monitoring, detection, and rapid extinction of fires, techniques, strategy, and tactics of large forest fire suppression. The personal safety of firefighters during forest fire operations. Communication. Interagency cooperation on forest-fire suppression.

**Forest Phytopathology.** Pathogens of seedlings, plants, seeds, pine needles, leaves and symptoms of their manifestation. Root and stem rot. Eatable and poisonous mushrooms. Methods and ways of forest protection. Technology of the forest protection.

**Silviculture.** Silvics as a theory about the forest nature. Biology, morphology, typology and ecology of the forest. Reproduction, development and growth. Practical silviculture. Systems and methods of cuttings. Intermediate cuttings. Increase of forest productivity.

**Forest Mensuration.** Measurement of trees and wood products. Forest stands parameters and forest stands structure. Methods for determining stock and wood increment. Inventory forests. Basic approaches to non-timber forest resources inventory.

**Forest entomology.** Biology, taxonomy and classification of insects. Environmental factors and trophic relationships. Methods of plantations protection. Species composition of the main types of insects. Needles and leaf-eating, stem pests. Seeds, nurseries, young plantations and wood pests. Development of preventive and extermination methods and means of protection of plants, prediction of possible pathological changes in biocenoses.

**Forest restoration.** Forest seed processing. Organization and maintenance of a permanent forest-seed base. Methods of harvesting and processing of forest seed material, storage, and pre-sowing seed preparation. Types of planting material. Organization and management of forest nurseries. Fundamentals of agrotechnology for planting material production. Technological features of production of different types of planting material. Forest plantations zoning and zoning of the territory of Ukraine on the success of forest natural regeneration. Approaches, methods, techniques of forest restoration. Technology and agrotechnology of establishment and cultivation of forest plantations of the main forest-forming species. Plantation forest production. Forest reclamation.

**Economics of forestry.** The Law of demand, offers, cost and competition. Production and resource potential under conditions of a market economic system. Formation of the gross national product in the state regulation of the economy development.

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**Forest melioration.** Key eco-forestry and forest-meliorative principles that determine the technology of establishment and management of protective forest stands of various purpose (windbreaks, runoff regulative stands, ravine-gully forest stands, water-protective stands, garden-protective, forest stands along transport highways etc.. Soil erosion and soil erosion control. Agrotechnical peculiarities of establishment and management of protective forest stands on eroded lands. Sands, their stabilization and economic development.

**Forest management.** Forest management as a system of measures for forest inventory and forest management. Economic foundations of forest management in Ukraine. The division into categories of protection forests. The economic organization of forestry. Maturity of forest plantations. The organization of forest management. Inventory of forest resources. State registration of forests and state forest cadaster. Designing forest management during such types of work as the main timber harvesting, logging, reforestation and afforestation, etc. Designing forest management measures and their economic efficiency. Forest management techniques and their classification.

**Organization of Forestry Production.** Organization of production as an applied economic discipline. Forestry enterprises. Organization of work. Organization of the use of means of production. Organization of forest management, forest protection, reforestation, forestry activities. Effective planning of industrial activity. Financial support of production. Efficient analysis of industrial activity.

### **Optional components**

#### ***Optional components by specialty***

**Forest selection and genetics.** Methods of selection. Selective inventory of plants. Selection of main forest species. The basis of genetics.

**Plant physiology.** Physiology of plant cell. Water exchange of plants. Photosynthesis. Respiration. Mineral nutrition. Growth and development of plants. Ripening of fruits and seeds. Adaptation of plants and their resistance.

**Economic theory.** Examining the patterns of social production, mechanism of action and effective utilization of economic laws people to best meet their physical, social and economic needs. The general principles of economic development; The general principles of the market; of market economy; economic growth and social and economic progress; formation and development of socio-economic systems; world economy and international economic relations.

**Fundamentals of biotechnology.** It is one of the priority directions of modern forest biological science development, the main task of which is the use of biological processes, systems, cells, tissues and organs for the forests protection, creation of new forms of woody plants with specified characteristics, production of planting material, quality assessment of seed material, monitoring of phytosanitary condition of nurseries and forest plantations. The main task of discipline is to introduce with the basic technologies that allow to increase the efficiency of forestry through accelerated cultivation of trees, without viral and bacterial disease, searching for stable forms, creation of new ones, based on cell selection, as well as introduction and conservation of both species and certain varieties and individual trees.

**Non-timber forest resources.** Use of non-timber forest resources. Forest forage. Ways to improve fodder. Harvesting and storage of hay. Harvesting and processing of wild fruits and mushrooms. Preservation and increase of productivity of wild fruit and berry plants and mushrooms. Procurement and storage of medicinal raw materials. Measures for preserving the stocks of medicinal raw materials. The organization of apiaries in the forest. Fodder base of beekeeping in the forest.

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**Basics of hydrotechnical reclamation.** The theoretical bases of hydrotechnical reclamation of forest lands, irrigation of forest nurseries and plantations. Sources of irrigation, soil salinity and measures to control it. Drainage by open channels and horizontal drainage system. Use of drainage and irrigation systems and special methods of hydrotechnical reclamation of forest lands.

**Landscape knowledge and geography Forestry.** History of landscape knowledge and understanding about the landscape. Methodology landscape. Classification of natural landscapes and significance. The landscape district of Ukraine and the value of the territory. Geography of Ukraine and Ukraine. The role of natural resources in the structure of natural and piece landscapes. Recreational landscapes of Ukraine.

**Forest radioecology.** The program of the course provides students with knowledge about safe forestry management in conditions of radioactive contamination of territories due to the Chernobyl accident. Radionuclide migration in forest ecosystems. Decontamination of lands, reservoirs contaminated with radionuclides. Modern equipment and instruments for assessing the level of radioactive contamination of forest stands, timber and forest products. Methods and technologies for reducing radionuclide intake into the human body, forestry products.

**Urban landscaping.** The role of vegetation in creating the environment. Design of landscape. The technology of landscape construction. Landscaping villages and towns. List of woody plants for landscaping.

**Natural reserves.** History and the current camp of natural and natural resources help Natural reserves, international and national classifications of nature protection territories, procedure of establishing and reservation the territory and the object of the natural reserve fund. Management system for Natural reserves, official legislation on natural resources fund, structural and functional organization First, the measure of the natural reserve fund, the structure of the river bank, take care of the savings directly from the natural reserve fund.

**Forestry commodity.** The structure, composition, physical and mechanical properties of wood, how to modify them, defects of wood, methods of drying and storage timber. Properties production logging, sawmills, planing, production of special types: standard dimensions, tolerances, allowances, sorting, measurement, recording, marking.

**Biotechnics. in hunting.** The discipline determines the qualities and optimal ways of reproduction of hunting grounds, modern accounting methods, the development of effective ways of using resources and the practical implementation of this knowledge and skills in production, which is the basis for a highly efficient modern game management.

**Politology and sociology.** Laws, structure and functions of political science. Power and power relations. The political system of society, the role and place in her state. Political consciousness and political culture. Politics and national relations. National and state development of Ukraine. The social nature. Formation of human behavior in the workplace activity and his place in the motivation system and the means of social control. The role of staff members and a small group in achieving production.

**Accounting in Forestry.** Discipline studies directly accounting records as a management function. The main elements studied are: a system of accounts, forms of record keeping, rendering of accounts, and a rule of double entry accounting as a basic record rule. It also deals with the audit.

**Hunting science.** Methods of studying sustainable management and conservation of hunting resources. Global trends in the development and implementation of best practices in hunting. Theoretical provisions and practical skills in the methods of protection and rational use of hunting fauna, combating poaching. Legislative and other normative-legal acts on protection of hunting grounds and conservation of hunting fauna, basics of aviary breeding of hunting animals; organization of records of hunting animals; developing measures to improve the quality of hunting grounds.

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**Basics of forest exploitation.** Cutting Fund. The main phases of forest exploitation. Organization of logging operations. Basics of wood processing theory. Methods for moving wood. Performance of cutting and wood processing machines and mechanisms.

**Timber Transportation.** The program of the course provides familiarization with the principles of organization of export of timber products and operation of vehicles. The concepts of timber transport systems and cargo flows, technological and organizational structure of timber transport process, schemes and routes of transportation of timber products are considered. The methods of choosing and justifying the type of timber haulage trains and technological equipment, their basic parameters, dimensions, design schemes are studied.

**Bachelor**  
**field of knowledge "Agricultural science and food"**  
**in specialty "PARK AND GARDENING MANAGEMENT"**  
**Educational-professional program "Park and Gardening Management"**

Form of study	Limit of licensed number of students
Full-time	100
Part-time	60
Learning time	4 years
Credits	240 ECTS
Language of teaching	Ukrainian
Qualification of graduates	Bachelor of Forestry and Garden-Park Management

### The concept of training

landscape-park management – an innovative, environmental, high-tech industry of Ukraine's economy, whose task is to design, shape and preserve landscapes and green spaces of public and private space. During the educational process, students acquire fundamental knowledge and comprehensive practical skills in using modern technologies to create, restore (protect) and protect the objects of urban green infrastructure, the Natural Reserve Fund of Ukraine, plantations of general, special and limited use. The main tasks of the training are to provide professional knowledge on the planning, creation and audit of green spaces (gardens, parks, forest parks) in order to improve their aesthetic and sanitary-hygienic condition.

The training of landscape-park management specialists is based on the principles of conservation of natural biological diversity at all levels - from genetic to species, landscapes and ecosystems; ensuring the continuous, highly efficient implementation of plantations of environmental, economic and social functions at local, national and global levels.

### Practical training

The bases of practical training are educational, educational and scientific laboratories of the departments and departments of the University: Separated subdivision of NULES of Ukraine "Boyarka Forestry Research Station", Botanical garden of NULES, research nursery of Forestry restoration and melioration department, Grishka Botanical Garden, Fomin Botanical Garden, SE of "Kyiv Landscaping" and others.

### Proposed Topics for Bachelor theses

Project proposals for the reconstruction of the territory of landscape facilities.

Project of landscaping and landscaping of common (parks, meadows and parks, squares, boulevards, squares, etc.) and limited (medical, educational, small gardens, etc.) facilities.

Dendrological evaluation of the existing range of gymnosperms and the prospect of replenishing the collection of decorative forms in the Grishka National Botanical Garden.

Project of automatic irrigation system and landscape lighting in the territory of landscape facilities.

Features of reproduction of thuja western, boxwood evergreen, Japanese spirea and others.

Experience of growing planting material in a decorative nursery.

Development of ecological trails, functional zoning on created objects (parks-monuments of landscape art, nature monuments, arboretums, botanical gardens) of nature reserves of Ukraine.

Investigation of different types of flower beds, elements of topiary art in plantations of general and limited use of Ukraine.

Technological bases of creation of elements of topiary art.

Project proposals for landscape, planning, spatial organization of objects of various functional purpose.

**Academic rights of Graduates:** graduates can apply for Master's Degree Specialties and Educational (Educational-professional or Educational-scientific) programs specified in Table 1.2 Section 1.3 this Catalog.

### **Employment of Graduates**

After receiving a Bachelor degree graduates can be employed in communal enterprises of gardening or landscaping, state and private game management farms and forestry research institutions.

**Bachelor`s Program and Curriculum  
in Specialty «Park and Gardening Management»  
Educational-professional program «Park and Gardening Management»**

Code n/a	Components of the educational-professional program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits ECTS	The final control
1	2	3	4
<b>1. GENERAL TRAINING CYCLE</b>			
<b>Compulsory components</b>			
CC 1	Higher mathematics	4,0	Exam
CC 2	Chemistry	5,0	Exam
CC 3	Fine arts	6,0	Exam
CC 4	Botany	8,0	Exam
CC 5	Geodesy	5,0	Exam
CC 6	General ecology	4,0	Exam
CC 7	Plant physiology	4,0	Exam
CC 8	Biometry	4,0	Exam
CC 9	Decorative dendrology	11,0	Exam
CC 10	Forest pedology	6,0	Exam
CC 11	Economic theory	4,0	Exam
CC 12	IT Innovations	4,0	Exam
<b>Compulsory components EPP by decision of the Academic Council of the University</b>			
CCU 1.1	Foreign Language	5,0	Exam
CCU 1.2	Professionally-oriented Ukrainian language	4,0	Exam
CCU 1.3	Physical education Legal Personal Culture	4,0	Exam
CCU 1.4	History of Ukrainian Statehood, політологія і соціологія	4,0	Exam
CCU 1.5	Labour and Life Safety	4,0	Exam
CCU 1.6	Legal Personal Culture Labour and Life Safety	4,0	Exam
CCU 1.7	Philosoph	4,0	Exam
<b>2. SPECIAL (PROFESSIONAL) TRAINING CYCLE</b>			
<b>Compulsory components EPP</b>			
CC 13	Breeding and Genetics ornamental woody plants	6,0	Exam
CC 14	Floriculture	6,0	Exam
CC 15	Pests and pathogens of woody ornamentals	8,0	Exam
CC 16	Lawns	4,0	Exam
CC 17	Urban gardening	4,0	Exam
CC 18	Plant nurseries and seeds	4,0	Exam
CC 19	Landscape Architecture	8,0	Exam
CC 20	Economics of garden-park management	4,0	Exam
CC 21	Garden and park construction	7,0	Exam
CC 22	Basics of professional training	4,0	Exam
CC 23	Organization of garden-park management	4,0	Exam
CC 24	Mechanization of GPM	4,0	Exam
CC 25	Natural reserves	4,0	Exam
CC 26	Engineering equipment in GPM	4,0	Exam
<b>The total amount of Compulsory components</b>		<b>165</b>	
<b>Optional components EPP</b>			
<b>Optional components by specialty (block 1)</b>			
OB 1.1	landscape entrepreneurship	4,0	Exam
OB 1.2	Fundamentals of urban planning	4,0	Exam
OB 1.3	Introduction and adaptation of ornamental plants	4,0	Exam
OB 1.4	Recreational forestry	4,0	Exam

**CURRICULA AND PROGRAMS OF BACHELOR DEGREE**

OB 1.5	Basics of Arranging	4,0	Exam
OB 1.6	Computer design	4,0	Exam
OB 1.7	Topiary art	4,0	Exam
OB 1.8	Decorative plants in greenhouses	4,0	Exam
OB 1.9	Inventory of garden-park management	6,0	Exam
OB 1.10	Fundamentals of afforestation	4,0	Exam
OB 1.11	Urban ecology and phyto-melioration	4,0	Exam
OB 1.12	Basics of composition	4,0	Exam
OB 1.13	Accounting in Landscaping	4,0	Exam
<b>Optional components by specialty (block 2)</b>			
OB 2.1	History of architecture and town planning	4,0	Exam
OB 2.2	Naturalization and acclimatization of non-native tree species	4,0	Exam
OB 2.3	Dendro-recultivation for recreational facilities	4,0	Exam
OB 2.4	Landscape mensuration	6,0	Exam
OB 2.5	Forests of peri-urban areas	4,0	Exam
OB 2.6	Renovation of urban landscapes	4,0	Exam
OB 2.7	Floristics	4,0	Exam
OB 2.8	Greenhouse plants	4,0	Exam
OB 2.9	Arbosculpture and topiary gardens	4,0	Exam
OB 2.10	Computer graphic design	4,0	Exam
OB 2.11	Sketching in landscape design	4,0	Exam
OB 2.12	landscape entrepreneurship	4,0	Exam
OB 2.13	Accounting in Landscaping	4,0	Exam
<b>Optional components by Student's Choice</b>			
OS 3.1		3,0	Exam
OS 3.2		3,0	Exam
<b>The total amount of Optional components</b>		<b>105</b>	
<b>3. OTHER TYPES OF TRAINING</b>			
CC 22	Academic Practice	10,0	
CC 23	Production Practice	3,0	
CC 24	Preparation and defense of undergraduate final work	3,0	
SS 25	State attestation	1,0	
<b>THE TOTAL AMOUNT OF EPP</b>		<b>240</b>	

## Annotations of Components in the curriculum

### 1. GENERAL TRAINING CYCLE

#### Compulsory components

**Higher mathematics.** Elements of analytic geometry. Linear Algebra. Calculus. Differential calculus of functions of one variable. Integration. Functions of several variables. Differential equations and series.

**Chemistry.** Theoretical foundations of Chemistry. Organic Chemistry. Stoichiometric laws. Structure of atoms, kinetics of chemical reactions. Solutions. Oxidation-reduction reactions. Electrolysis. Corrosion of metals, features of main chemistry elements. Classification of organic compounds. Classification of cations and anions. Action of group reagents, features of the division into groups. Reactions. The analysis of unknown

substances. Methods for determining the concentration of solutions. Fundamentals of neutralization, permanganometry. Determination of related substances in solution.

**Fine Arts.** Types of images. Basic laws and means of harmonizing the composition. Orthogonal projection as a plane image. Drawing. The process of building an image. Simple volumes and form construction. Light and shadow. Color in art and landscaping. Watercolor techniques. Axonometry and Perspective for the Spatial Image of a Landscape. The task of studying the discipline is the development of creative thinking and spatial-graphic imagination.

**Botany.** Structure, activity and plant diversity. The lower and higher plants, their origin, phylogenetic relationships, the value for the national and forest management. Morphology and productivity of forest biocenosis, their sustainable use and conservation.

**Geodesy.** The general concept of geodesy, orientation of lines on the ground; coordinates in geodesy, making measurements with theodolite, ways to determine the area of land; geometric leveling, engineering design for profile, leveling the surface, terrain, topographic map, range maps, solving a topographic map; basics of aerial photography and interpretation of aerial photographs, topographic and geodesy works in forest inventory.

**General ecology.** General ecology: autecology, demecology, synecology, ecosystems, biosphereology. Applied ecology. Nature conservation is an environmental problem for humanity. Red books. Geozology is the theoretical basis of nature conservation. Conservation of forest ecosystems. Protection of the abiotic environment. Main directions of nature protection. Legal principles of forest protection of Ukraine.

**Plant physiology.** Physiology of plant cell. Water exchange of plants. Photosynthesis. Respiration. Mineral nutrition. Growth and development of plants. Ripening of fruits and seeds. Adaptation of plants and their resistance.

**Biometry.** Fundamentals of the theory of probability. Numerical characteristics and patterns of distribution of a random variable. Statistics. The simplest model analysis of variance. Correlation analysis. Selective methods as a basis for obtaining the forest information.

**Decorative dendrology.** Ecology of plants. Type, intraspecific systematic unity. Types of habitats. Life forms and cycles. Phylogenetic system. Dendroflora of Ukraine. Introduction of plants. Phytocenology. Forest formations and associations.

**Forest pedology.** Soil formation processes. Mineral and organic parts of the soil. The pattern of distribution of soils in Ukraine. Soil properties according to vegetation.

**Economic theory.** Examining the patterns of social production, mechanism of action and effective utilization of economic laws people to best meet their physical, social and economic needs. The general principles of economic development; The general principles of the market; of market economy; economic growth and social and economic progress; formation and development of socio-economic systems; world economy and international economic relations.

**IT Innovations.** Hardware and software of computers. Personal computers. The system software. Programming languages. Algorithmic and programming tasks. Solving problems on PC.

### **Compulsory components by decision of the Academic Council of the University**

Annotations of components: "History of Ukrainian Statehood", "Philosophy", "Professionally-oriented Ukrainian language", "Foreign Language (English, German, French, Spanish)", "Physical Training", "Labour and Life Safety", "Legal Personal Culture" see Section 2.1.

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**Basics of professional training.** Discipline acquaints students - especially freshmen studying at the university, with the rights and duties of university students, history of the Forestry faculty of the National University of Life and Environmental Sciences of Ukraine, internal rules of the institution, organization of educational process, forms of training according to the curriculum, the hygiene of mental work and general rules of the work with a book and in the library. Emphasis is placed on the study of traditional features of separate discipline groups, which are taught at the faculty.

## 2. SPECIAL (PROFESSIONAL) TRAINING CYCLE

### Compulsory components

**Breeding and Genetics ornamental woody plants.** Methods of selection. Selection inventory of plantings. Selection of the main forest species.

**Floriculture.** Discipline "Floriculture" involves the study of biological and ecological features of the development, propagation and cultivation of flower-ornamental crops unprotected soil, mastering theoretical knowledge of the growth and development of annual, biennial, perennial flowers and ornamental plants that are used to create different types of flower beds, gain practical skills with their propagation and planting in flower beds, flower beds drafting and passing them on objects SPB. The second part of the course provides the study of technology of growing crops in greenhouses under conditions of industrial production; study and application of the mastered technology of cultivation of crops in the protected soil in the conditions of industrial production.

**Pests and pathogens of woody ornamentals.** The causative agent of seedlings, planting seeds, needles, leaves and symptoms of their display. Root and stem rot. House, edible and poisonous mushrooms. Methods and means for ornamentals. Technology protection forest park plantings. Biology, taxonomy and classification of insects. Environmental factors and trophic relationships. Methods and means of protecting the forest park plantings. Needle- and leaf-eating, stem pests. Pests seeds, nurseries, young plantations and wood.

**Lawns.** The course deals with theoretical and practical aspects of the introduction of lawns, reveals in detail the classification of lawns, ecological and biological characteristics of lawn grass, methods of environmental assessment of lawn grasses and biological bases for selection of species for lawn. The discipline includes theoretical and practical principles of selection and seed production of basic types of lawn grasses in Ukraine and abroad, use of high-quality lawn grass seed.

**Urban gardening.** Settlement landscaping is an integral part of the overall set of measures for planning, construction and improvement of settlements, which greatly contributes to the optimization of urban areas. In the course of studying the discipline students are introduced to the importance of urban and suburban green space in the complex of measures to combat adverse natural phenomena and in the aesthetic design and ordering of settlements. The course also examines the theoretical provisions for the creation of gardens of various functional purpose. In addition, practical skills in designing landscape gardens are provided, in compliance with the applicable rules and regulations.

**Plant nurseries and seeds.** Planning activities for growing decorative plant material. Agrotechnical features of decorative woody plants cultivation as well as their propagating material. Organization of works in nurseries.

**Landscape Architecture.** Within the discipline, the historical, social and city building aspects of landscape objects formation are studied. We give a historical overview of the development of landscape gardening styles and their impact on modern trends in landscape architecture. The theoretical bases and practical techniques of landscape

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design, including architectural planning and space making system for formation of park space, natural and artificial components in the construction of garden compositions are considered.

**Economics of garden-park management.** The Law of demand, offers, cost and competition. Production and resource potential under conditions of a market economic system. Formation of the gross national product in the state regulation of the economy development.

**Park and gardening construction.** Landscape construction is an important part of the overall complex urban planning and urban development. Includes a variety of range in complexity issues associated with design, construction, maintenance garden and park facilities, creation, formation and maintenance of an important component - ornamental plants. Landscape construction is a complex of measures providing for solving various problems of legal, crop, aesthetic, organizational, operational and commercial, economic, aimed at creating a garden and park facilities for various purposes.

**Basics of professional training.** The discipline reveals to the first-year students the features of higher education, the rights and responsibilities of students of the university, the history of the Faculty of Forestry and history of the National University of Bioresources and Nature Management of Ukraine, the internal organization of the university, the organization of the educational process, forms of educational work according to the curriculum. and general rules for using the book and library. Emphasis is placed on the traditional features of the study of particular groups of disciplines, established at the faculty, the need to study general, general, biological, and special disciplines.

**Organization of garden-park management.** Management of Garden-Park business. Fundamentals of Garden-Park Management Planning. Organization of landscaping design in cities and towns. The organization of construction in GPM.. Methods of labor groups management.

**Mechanization of GPM.** Structure tillage, nasinnyezbyralnyh, sowing machines. Machines and tools for protection and protection from diseases, pests and fires some trees and forest park plantings.

**Natural reserves.** History and current state of nature conservation business as a branch, international and national classifications of nature protection territories, reservation mechanisms and procedure for creation of territories and objects of nature reserve fund, system of branch management, current legislation on nature reserve fund, structural and functional organization and modern network of nature reserve fund, structure of ecological network, conservation means and directions of use of nature reserve fund.

**Engineering equipment in GPM.** In the training course "Engineering equipment of garden-park facilities" the issue of artificial landscaping garden and park facilities have been studied in detail, which are based on projects of horizontal and vertical layout integration, so the structure of the landscape is resolved for solving architectural and artistic as well as engineering-technical challenges faced by professionals of Landscape Architecture. At the same time students will study methods and ways of placing pipelines, laying underground and utilities on the ground.

### **Optional components**

#### ***Optional components by specialty (block 1)***

**Landscape entrepreneurship.** Studying of the Legislation of Ukraine on gardening. Business plan: assembly and information. Organization of the enterprise with the use of landscape gardening..

**Basics of city planning.** Academic discipline has been developed to inform students about the basics of urban planning and place of landscape planning in its structure.

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**Introduction and adaptation of ornamental plants.** Introduction and adaptation of plants have great theoretical and practical importance. During the course students are introduced to the theoretical and practical aspects of the introduction of plants, acquire skills with techniques evaluate the success and prospects of introduction. Also considered bioecological features of woody plants in the conditions of introduction.

**Recreational forestry.** The discipline considers the theoretical and practical basis of farming in the forests of recreational use. Attention is paid to applying differentiated farming in forests of different categories with purpose of different methods and types of cuttings in order to create healthy, economically valuable, aesthetically attractive and comfortable recreational forest plantations while maintaining their resistance to recreational effects. We consider the classification of forest and park landscapes, their aesthetic and hygienic properties. We study the succession of forest biocenosis provided various stages of recreational digression.

**Basics of Arranging.** In the scope of the course "Basics of Arranging" students learn the skills to create flower arrangements using natural plant material, whether live, canned or artificial. They acquire theoretical and practical knowledge of plant selection, harvesting, conservation rules and modifications. Particular importance is attached to the cultivation of artistic and aesthetic taste, the ability to work freely in different styles and directions of arrangement. In the course of studying the discipline students master the layout of the material according to the basic rules of compositional decision in European floral design.

**Computer design.** The main task of the discipline is to master modern computer programs used in designing gardening objects in order to visualize and demonstrate design solutions. Obtaining basic practical skills in using computer programs in landscape design.

**Topiary art.** Discipline includes studying the history of topiary art, topiary art elements (hedges, borders, walls, bosquets, green cabinets, trellis with espalier, mazes, alleys, etc.). The study of growing technology and hedges laying. Features of reshaping plant forms and sculptural cutting. Study of making frames technology (for plants).

**Decorative plants in greenhouses.** The course "Decorative plants closed ground" involves studying the biological characteristics of plant growth and development of subtropical and tropical regions of growth and areas with dry climates.

**Fundamentals of afforestation.** The questions are related to the restoration of forests in urban landscapes. The principles of selection of forest stand types of different agricultural techniques and the purpose of their creation and growth are examined.

**Urban ecology and phyto-melioration.** Discipline provides studying of patterns of urban areas and theoretical bases of cities ecosystems optimization. Urban ecology compared to other ecological disciplines, reveals the impact of urbanization on the environment, changes in urban landscapes and promotes environmental knowledge. The most effective ways to protect urban areas from adverse natural events and anthropogenic impact.

**Inventory of garden-park management.** Regulatory and legislative base is aimed at the development of garden and park facilities. Scientific and theoretical foundations of organization of garden-park objects. Organization and procedure of inventory of forest park objects. Inventory of green spaces in cities and other settlements. Use of inventory information for gardening objects.

**Natural reserves.** Theoretical foundations of ecology. The doctrine of the biosphere. Ecosystem and biogeocoenosis. Trophic chains. Pollution. Forestry production and its environmental impact. Cost-effectiveness of environmental measures.

**Basics of composition.** In the scope of the discipline "Fundamentals of Arrangement" students learn skills in creating flower compositions using natural plant material of live, canned or artificial. Master the theoretical and practical knowledge on the

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selection of plants, their harvesting, rules of conservation and modification. Particular importance is given to the education of artistic and aesthetic taste, the ability to work freely in different styles and arrangements. In the process of studying the discipline, students master the layout of the material according to the basic rules of compositional decision in European flower design. Landscape inventory.

**Basics of accounting in gardening.** The discipline explores direct accounting as a management function. The main elements to be studied in the course are: the system of accounting accounts at enterprises of garden-park management of various forms of ownership, forms of accounting, reporting and the rule of double entry as the main rule of accounting. Audit issues are also considered.

### ***Optional components by specialty (block 2)***

**History of architecture and town planning.** The study of the complex of historical, planning and architectural features of the development of town-planning theories, normative and legal bases of modern city-planning, the principles of formation of urban landscape and architectural image of the city.

**Naturalization and acclimatization of non-native tree species.** Theoretical and practical aspects of naturalization and acclimatization of plants, skills of working with methods of estimation of success and prospects of introduction, bioecological features of woody plants in the conditions of introduction.

**Dendro-recultivation for recreational facilities.** Study of patterns of formation of biogeocenotic cover of urban areas and theoretical bases of optimization of urban ecosystems. The impact of urbanization.

**Landscape mensuration.** Methodological bases, methods and objects of landscape taxation. Basics of landscape and taxation measurements. Taxation of the volume of tree trunks. Wood product taxation. Basic landscape and taxation indicators of recreational plantations and methods for their determination. Taxation structure of recreational plantations. Determination of tree stock of a stand. Taxation of assortment and commodity structure, logging fund. Taxation of tree growth of individual trees. Determination of growth of the stand. Inventory of recreational forests. Features of use of aerial photography for landscape taxation.

**Forests of peri-urban areas.** The discipline reveals the bioecological features and sanitary hygienic properties of peri-urban forests. Establishment of permissible recreational loads in peri-urban forests and their recreational assessment are provided. Forestry and organizational activities conducted in peri-urban forests are studied.

**Renovation of urban landscapes.** Anthropogenic transformation of urban landscapes. Sources of urban landscapes pollution, effects and controls. Sustainability, conservation and restoration of urban landscapes for various uses of nature. Urban landscapes renovation methods.

**Floristics.** Skills for creating flower arrangements using natural plant material, whether live, preserved or artificial. Theoretical and practical knowledge of plant selection, harvesting, conservation and modification rules. They master the layout of the material according to the basic rules of the compositional decision in European floral design.

**Greenhouse plants.** Study of biological features of plant growth and development of subtropical and tropical growth regions, as well as arid climates; herbaceous and woody plants above marked areas with high decorative features.

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**Arbosculpture and topiary gardens.** Historical aspects of the development of arbosculpture; technologies of formation of woody plants as arbosculpture; study of foreign experience in the creation and formation of topiary gardens and their classification.

**Computer graphic design.** The main task of the discipline is mastering the modern computer programs used in the design of landscape gardens in order to identify and demonstrate design solutions. Gaining basic practical skills in using computer software in landscape design.

**Sketching in landscape design.** Mastering rapid environmental imaging techniques. Studying the drawing process as a method of knowing reality and displaying it in graphic images. Contributes to the development of artistic qualities: to capture the moment, to choose a good appearance or composition, care and creativity. Details of botanical illustration. Image of plant compositions, architectural elements. Application of sketching to identify object idea, object project.

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**Bachelor**  
**Field of Knowledge "Production and technologies"**  
**in Specialty " WOODWORKING AND FURNITURE TECHNOLOGIES "**  
**Educational-professional program «Woodworking and Furniture Technologies»**

Form of Training:	Licensed number of persons:
– Full-time	50
– Part-time	100
Duration of Training	4 years
Credits ECTS	240
Language of Teaching	Ukrainian
Qualification	Bachelor of Woodworking and Furniture Technologies

### **Concept of training**

The training of specialists involves the mastering of knowledge and skills in the development of constructions and technologies for the production of wood materials and products, the definition of their characteristics and the level of quality, mastering the methods of analysis of existing technological processes, planning and conducting research aimed at optimization and improvement of technological processes of woodworking industry. The basis of preparation is a systematic approach to the study of wood processing technologies and the formation of students' ability to use the equipment, wood and energy resources rationally.

### **Practical training**

The bases of practical training are educational, scientific and production laboratories of the university's departments and separate unit of NULES of Ukraine «Boyarka Forest Research Station». Leading forest enterprises of the State Forestry Agency of Ukraine and private woodworking and furniture enterprises.

### **Proposed Topics for Bachelor theses**

Analysis of furniture design programs for bedrooms  
Analysis of the square-edged lumber manufacturing process on the State enterprise  
Features of the sectional doors manufacturing technological process  
Justification of the design and technology of office furniture manufacturing  
Analysis of the parquet from low-value wood manufacturing process  
Proposals for improvement of door finishing process  
Estimation of the floor coverings assortment expanding possibility  
Features of the manufacture of parquet friezes  
Analysis of the methods of applying paint and varnish materials on furniture products  
Assessment of the possibilities of improving the technological process of decorating kitchen products

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**Academic rights of Graduates:** graduates can apply for Master's Degree Specialties and Educational (Educational-professional or Educational-scientific) programs specified in Table 1.2 Section 1.3 this Catalog.

### **Employment of Graduates**

After graduating from the bachelor's degree, graduates can be employed at forest enterprises of the State Agency for Forest Resources, state and commercial enterprises for the production and sale of construction materials, state and commercial woodworking and furniture enterprises

**Bachelor`s Program and Curriculum in Specialty  
«Woodworking and furniture technologies»  
Educational-professional program «Woodworking and furniture technologies»**

Code n/a	Components of the educational and professional program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits ECTS	The final control
1	2	3	4
<b>1. GENERAL TRAINING CYCLE</b>			
<b>Compulsory components EPP</b>			
CC 1	Descriptive Geometry and Engineering Graphics	5	Exam
CC 2	Physics	9	Exam
CC 3	Higher Mathematics	8	Exam
CC 4	Computational Mathematics and Programming	8	Exam
CC 5	Chemistry (general and organic)	6	Exam
CC 6	Applied Mechanics (strength of materials, engineering)	7	Exam
CC 7	Principles Heating Engineering	4	Exam
CC 8	Electro Technology And Electric Drive	4	Exam
<b>Total</b>		<b>51</b>	
<b>Compulsory components EPP by decision of the Academic Council of the University</b>			
CCU 1	Foreign Language	4	Exam
CCU 2	Physical education	4	Test
CCU 3	Ukrainian for professional purposes	4	Exam
CCU 4	Labour and Life Safety	4	Exam
CCU 5	Philosophy	4	Exam
CCU 6	Sociology	4	Exam
CCU 7	Economic theory	4	Exam
CCU 8	Legal Personal Culture	4	Exam
<b>Total</b>		<b>32</b>	
<b>2. SPECIAL (PROFESSIONAL) TRAINING CYCLE</b>			
<b>Compulsory components EPP</b>			
CC 9	Wood Science	4	Exam
CC 10	Equipment of The Woodworking	5	Exam
CC 11	Technology Of The Sawmills And Woodworking Industries	6	Exam
CC 12	Technology Of Wood Drying And Protection	8	Exam
CC 13	Ecology	4	Exam
CC 14	Principles Of Automation And AVP	4	Exam
CC 15	Computer Graphics	4	Exam
CC 16	Technology Of Wood Products	7	Exam
CC 17	Fundamentals of professional training	4	Exam
CC 18	Macromolecular Chemistry	4	Exam
CC 19	Designing Of The Woodworking Enterprises	4	Exam
CC 20	Technology of joiner's products	5	Exam
CC 21	Economy woodworking industry	5	Exam
CC 22	<b>Materials Science</b>	4	Exam
CC 23	Design of wood products	5	Exam
<b>Total</b>		<b>73</b>	
<b>The total amount of Compulsory components</b>		<b>156</b>	
<b>Optional components EPP</b>			
<b>Optional components by specialty (block 1)</b>			
OB 1.1	Wood composite materials technology	4	Exam
OB 1.2	Metrology, Standardization And Certification	4	Exam
OB 1.3	Technology of structural materials	4	Exam
OB 1.4	Marketing in the woodworking industry	4	Exam
OB 1.5	Technology Of Wooden House Building	4	Exam
OB 1.6	Protective Treatment Of Wooden Structures	4	Exam

**CURRICULA AND PROGRAMS OF BACHELOR DEGREE**

OB 1.7	Modifying of wood and wood-based materials	4	Exam
OB 1.8	Management in the wood-processing enterprises	4	Exam
OB 1.9	Furniture production of wood-composite materials	5	Exam
OB 1.10	Technology of Protective and Decorative Coatings	5	Exam
OB 1.11	Organization Of woodworking industry	4	Exam
OB 1.12	Technology of manufacturing structural wood elements	4	Exam
OB 1.13	Fundamentals of Accounting and Auditing on woodworking enterprises	4	Exam
<b>Total</b>		<b>54</b>	
<b><i>Optional components by specialty (block 2)</i></b>			
OB 2.1	Technology of glued materials	4	Exam
OB 2.2	Product quality management	4	Exam
OB 2.3	Wood panels technology	4	Exam
OB 2.4	Commercial activity of woodworking enterprises	4	Exam
OB 2.5	Technology and calculation of small architectural forms	4	Exam
OB 2.6	Wood protection technology and equipment	4	Exam
OB 2.7	Chemicals for wood modification	4	Exam
OB 2.8	Entrepreneurship and business culture	4	Exam
OB 2.9	Manufacture of solid wood furniture	5	Exam
OB 2.10	Chemical and technological foundations of polymer coatings	5	Exam
OB 2.11	Regulation of woodworking enterprise production activity	4	Exam
OB 2.12	soft furniture products technology	4	Exam
OB 2.13	Organization of accounting activities at woodworking enterprises	4	Exam
<b>Total</b>		<b>54</b>	
<b><i>Optional components by Student's Choice</i></b>			
OS 1	Discipline of wide choice 1	3	Exam
OS 2	Discipline of wide choice 2	3	Exam
<b>Total</b>		<b>6</b>	
<b>The total amount of Optional components</b>		<b>60</b>	
<b>3. OTHER TYPES OF TRAINING</b>			
CC 24	Academic Practice	16	Test
CC 25	Production Practice	3	Test
CC 26	Preparation of Bachelor's Work	4	
CC 27	State Attestation	1	
<b>THE TOTAL AMOUNT OF EPP (without military training)</b>		<b>240</b>	

**Annotations of Components in the curriculum**

**1. GENERAL TRAINING CYCLE**

**Compulsory components**

**Descriptive Geometry and Engineering Graphics.** The method of design. Central and parallel projection. The main properties. Surfaces. Classification. Determinant. Line. Fonts. Projection drawings. Sketches and drawings of parts. Straight line crossing above the surface area. Scan of surfaces. The single system of the design documentation. Drawings design. Scales. Formats. Lines. Fonts. Projection drawings. Sketches and drawings of parts.

**Physics.** Mechanics and Dynamics. Kinematics of a point mass. The coordinate system. Movement of solids, deformation of bodies. The oscillatory motion. Molecular physics and thermodynamics. Electricity and magnetism. Optics, the physical nature of light, interference, diffraction, polarization of light.

**Higher mathematics.** Principles of mathematical analysis. The numerical sequence. Derivatives and differentials. Extremum of functions. Differential Equations. Analytic geometry in the plane and in space. Systems of algebraic equations. Matrices and determinants. Fundamentals of probability theory. Multiple correlation.

**Computational Mathematics and Programming.** Introduction. Basic definitions. Hardware. Software. Classification by type of software license. Modern information systems. Document preparation system. Working with documents. Word Processor Word. Working with spreadsheets. The concept of database basics of database management system MS ACCESS. Databases. Data Warehousing. Language SQL. Basics of algorithms. Development of algorithms for solving this problem. The history of the origin and development of programming languages. Basic terms and definitions. Paradigms languages. Object-oriented programming. The programming language Visual Basic 6.

**Chemistry (general and organic).** Theoretical Foundations of Chemistry. Organic Chemistry. Stereometric laws. Structure of atoms, kinetics of chemical reactions. Solutions. Oxidation-reduction reactions. Electrolysis. Corrosion of metals, distinction of major elements chemistry. Classification of organic compounds. The laws and theories of organic chemistry. The main classes of organic compounds, their significance and distribution in nature. Organic constituents of wood, adhesives, resins and other binders.

**Applied Mechanics (strength of materials, engineering).** The objects studied in the discipline of materials strength, their calculation schemes, cross-sectional geometric properties, mechanical properties of materials and the laws of deformation, strength criteria, methods of calculation under static tension, compression, torsion, bending material, methods of calculations under dynamic load and elastic systems fluctuations.

**Principles of Heating Engineering.** The main positions of the technical thermodynamics. Laws of theories of heat and mass exchange, methodology of the heat processes calculation occurring in thermal power installations of the different purposes, principles of operation and design of thermal systems, which are used in woodworking industry, means of the secondary and renewable energy sources use Principles of Automation and AVP. Principles of basic elements of automatic devices work, their advantages and disadvantages, applications. Principles of automatic control systems, management facilities properties.

**Electro Technology and Electric Drive.** The laws of electrical engineering. Modern methods of electromagnetic processes calculation in electrical circuits and devices. Methods of analysis and synthesis of circuits with different parameters of the electricity sources and properties of circles elements.

### **Compulsory components by decision of the Academic Council of the University**

Annotations of components: Philosophy, Ukrainian language for professional purposes, Foreign language, Physical education, Safety of labor and vital activity, Legal culture of a personality see Section 2.1.

**Sociology. Social essence.** Formation of human behavior in the process of work activity and place in the system of motivation and social control. The role of the workforce and small group in achieving the goal of production.

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**Economic Theory.** The study of discipline provides students with the assimilation of sound economic knowledge by future specialists, the formation of the logic of economic thinking and economic culture, teaching them basic methods of cognition and analysis of economic processes, the ability to make sound decisions about economic problems related to their future activities.

## 2. SPECIAL (PROFESSIONAL) TRAINING CYCLE

### Compulsory components

**Wood Science.** Features of the micro-and macroscopic structure of wood. The chemical composition of wood and its use as a chemical raw. Physical and mechanical properties of wood required for the improvement of the existing and creation of new processes. Classifications of wood defects. Classification of forest products and their main characteristics.

**Equipment of the Woodworking.** Basic theories of wood cutting and wood materials, cutting as a workflow of the woodworking machines, wood cutting tools, general information about the hardware of the woodworking enterprises, functional constituent parts and mechanisms of the woodworking machinery, wood cutting machine for general purpose, special equipment of the woodworking industries.

**Technology of the Sawmills and Woodworking Industries.** Cutting-wood productions. Raw materials. Methods, technology and equipment for logs and timber sawing. Warehouses. Timber sorting. Waste recycling. Combination of raw materials use.

**Technology of Wood Drying and Protection.** The discipline studies the problems and stages of the design, the selection of wood drying methods, the selection of equipment for drying, the method for calculation of the performance of the wood drying chambers of the different designs, thermal and aerodynamic calculation of the wood dryers; performance of heat and circulation equipment, planning of the drying shops.

**Ecology. Theoretical Foundations of Ecology.** The doctrine of the biosphere. Ecosystem and biogeocoenosis. Trophic chains. Pollution. Forestry production and its environmental impact. Cost-effectiveness of environmental protection measures.

**Principles Of Automation and AVP.** Principles of the main elements of automatic devices, their advantages and disadvantages, applications. Principles of automatic control systems, properties of control objects.

**Computer Graphics.** The course studies the effective work with documents in MS Word, the practical application of MS Excel spreadsheet (approximation of dependencies, analysis and optimization, linear programming tasks) schemes preparation in Visio system, the use of the statistical software package SPSS.

**The Technology of Wood Products.** Principles of wood products construction taking into the consideration the current requirements of the technical aesthetics, rational consumption of materials and labor force and the technology of their production as a system of rules and methods of wood materials processing into the products based on the modern achievements of science, research and compilation of the best practices. Ways and methods of the technological problems solving at the up-to-date level with the use of research elements. Objectives and methods of products quality management.

**Fundamentals of professional training.** The discipline reveals the peculiarities of studying in higher educational institutions, the students' rights and responsibilities, the rights of the students in the university, the history of the Education and Research Institute of Forestry and Park Gardening and the history of the National University of Life and Environmental Sciences of Ukraine, the internal organization of higher education, the organization of the educational process, the form of educational work in accordance with the educational plan, the hygiene of mental work and the general rules of work with the

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book and the library. It is emphasized on the traditional features of the certain groups disciplines study that have developed at the institute, the need to study general, general engineering and special disciplines.

**Macromolecular Chemistry.** The main classes of organic compounds, their significance and distribution in nature. Organic constituents of wood, adhesives, resins and other binders. Relationships between structure, properties and biological functions of organic substances and macromolecular compounds.

**Designing Woodworking Enterprises.** Scientific basis of design, technological processes design, design of conveyor lines, designing the instrumental, fitter- mechanical and other service shops, the calculation of vehicles; ventilation, heating of wood processing and other shops, forest resources of Ukraine and ways of their use improvement. The tasks of the discipline is the study of the methodological, organizational and scientific bases of industrial buildings design, the bases of technological processes design in the production, composition and volume of the project work, methods of their implementation, composition of the main project-normative documentation, principles of the computer-aided design.

**Technology of joiner's products.** The task of the discipline is to study the constructions and requirements for various groups of joinery products, their manufacturing technology, the main woodworking equipment used in the manufacture of joiner's products, the study of the directions of rational and integrated use of raw materials and the use of wood substitutes in joinery products.

**Economy of woodworking industry.** Subject, object, method and discipline task; the concept, the mechanism of formation and utilization of fixed and circulating capital. The state and economic analysis of technical equipment and technology. Theory of production, consumption, price, profit, profitability. Markets of resources, capital, labor, and finance. The basic laws of economics and mechanism of action.

**Materials Science.** Course is for general technological training of future professionals, namely - the laying of knowledge on the definition of properties and the choice of material for the manufacture of parts and the technology of their processing for the purpose obtaining the specified properties.

**Design of wood products.** Decorating the edges of the walls. Door. Capacity filling of buildings. Shuffle Shelves Support Blocking sections. Fastening of cases and shelves to the wall. Mirrors. Furniture. Computer design and construction of case products. Basic Provisions of the Unified System of Design Documents. Products and their component parts. Types of design documents. Stages of working out of design documentation. Requirements for text documents. Implementation and design of furniture drawings. General requirements for drawings. Drawing dimensions. Development of a technical project. Dimensional drawing. Drawings of a general appearance. Drawings of the general appearance of the product. Specification. Technical description. General design principles. Elements joiner's, constructive: brusks, frames, boxes, shields. Wood as a construction material. Requirements for the design of wood products. Technologicality of products. Joiner connections. Substantive provisions. Frame Angle Connections. Box-terminal connections. Connecting edges. Connection in length. Bond sticker Connection by fasteners Classification of joinery and structural elements. Properties of wood. Requirements for the design of wood products. Technologicality of products. Joiner connections. The basics of interchangeability. System of tolerances and landings. Dimensional chains. Unspecified marginal deviations. Accuracy and interchangeability. Roughness of the surface.

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## Optional components

### *Optional components by specialty (block 1)*

**Wood composite materials technology.** The main task of the discipline is to study the technologies of integrated and rational use of primary and secondary raw materials in the production of glued materials, improving product quality, increasing productivity, reducing the cost of production.

**Metrology, Standardization And Certification.** Content of the discipline: quantitative methods for quality assessment and standardization of timber and saw production, wood products, machine tools and equipment, and certification of technological processes in wood processing; product quality management; technical means of measurement; responsibility for non-compliance with standards.

**Technology of Structural Materials.** The main task of the discipline is to study raw materials for the production of slabs, requirements for the size and quality of wood particles. An overview of products from chopped wood, features of technology, design of molds. Classification and properties of wood panels.

**Marketing in the Wood-processing Enterprises.** Socio-economic nature of marketing. Formation of the marketing mix. Impact factors of marketing environment on the activity of woodworking companies. Understanding consumer behavior in markets of different types. Marketing research as a basis for making marketing decisions. Functions of marketing. Analytic functions of marketing. Marketing product policy. Pricing. Marketing policy distribution. Marketing promotion policy.

**Technology of Wooden House Building.** Subject contents: the current status of the wooden constructions production, wooden house building, architectural and planning decision and the design of wooden houses, types of walls, floors and roofs, carpentry in construction, carpentry on the building, the ways of increasing the durability of wood structures, mechanical testing methods, advanced products design and use of wood imitation, preparatory work before the production. The main objective of the discipline is the study of structures and requirements for the different wooden buildings, their production technology, rational and integrated use of raw materials, the study of the basic structural elements the wooden house is made of.

**Protective Treatment of Wooden Structures.** History of wood impregnation industry development; the purpose and technological goals of the protective wood processing; properties of wood that have an impact on the processes of protective woodworking; classification of fungi that damage wood; types of wood decay; conditions of mushroom development; a brief description of the destructive insects; characteristic of wood damage; antiseptics; flame retardants; methods of protection of round timber during storage on logs and warehouses; rules of arrangement of foundations, floors of the first floor, walls, floors and wooden roofs; basement waterproofing; preventive measures and control of detected house mushrooms; classification of wood impregnation methods; wood impregnation equipment; transport and auxiliary equipment; autoclaves; safety rules when working with protective substances; rules of industrial sanitation on wood impregnating enterprises.

**Modifying Wood and Wood Materials.** Structure, composition, chemical, physical, mechanical and technological properties of modified wood, raw material for the modified wood manufacture. Production and application technology of modified wood.

**Management in the Wood-processing Enterprises.** The concept and nature of management. The history of management. Features managerial activities of woodworking enterprises. Basic theory of managerial decisions. Methods of management decisions. The functions of management and their implementation on woodworking enterprises. Principles

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and methods of management. Leadership. Fundamentals of human resource management. Ethics and Culture Management.

**Furniture Production of Wood-composite Materials.** The relevance of the discipline is the need to form students' knowledge of organizational principles, techniques, design training of furniture production, the theory of design and design - design of furniture, ensuring: rational use of material and labor resources; high social and aesthetic indicators of furniture quality; operational qualities and competitiveness of furniture; application of design automation tools. As a result of studying the discipline, the student should know: - the content of the design preparation of furniture production; - terminology and regulatory technical documentation; - organizational forms and process of furniture design; - the content and methodology of furniture designing; - properties, characteristics of structural materials and components of furniture; - basic rules of furniture design and execution of design documentation; - basics of automation of furniture design and design preparation of furniture production; - methods and principles of quality control of furniture products; - organization of testing, certification and implementation of furniture products.

**Technology of Protective and Decorative Coatings.** Varnishes, paints, enamels, prime ground coat, putties. Adhesion and forces of tension. Methods of causing and consolidation of seal coat. Technology and equipment are for finishing of wood. Calculation of the productivity of equipment.

**Organization of Woodworking Industry.** Composition and structure of the woodworking industry. Organization and wages. Organization of wood processing. Planning and funding. Analysis of production.

**Technology of Manufacturing Structural Wood Elements.** Chairs and armchairs. Classification and requirements. Basics of Soft Chairs. General information and classification. Chairs installation seats. Fixing seats and backrests. Furniture for sitting and lying. Furniture for sitting and lying, armchairs for rest. Armchairs-beds. Sofas Sofa beds are single and double. Bars of upholstered furniture. Soft spring elements. Soft spring elements are one-sided and two-sided.

**Fundamentals of Accounting and Auditing on Woodworking Enterprises.** The discipline that studies the forms of economic laws at the level of the individual entity. The course involves the study of the functioning of inputs to determine the effectiveness of investments in efficient operation under conditions a market economy, the development of creative approaches to reasoning and management decision-making and analysis of the economic efficiency considering as an example woodworking industry enterprise.

### ***Optional components by specialty (block 2)***

**Technology of Glued Materials.** The main task of the discipline is to study the technologies of integrated and rational use of primary and secondary raw materials in the production of glued materials, improve product quality, increase productivity, reduce the cost of production.

**Product Quality Management.** The purpose of studying the discipline is to form a system of knowledge for students in the theory and methodology of quality management, principles of construction and functioning of quality management systems; ensure the study of regulatory, organizational and economic issues regarding modern quality management systems. The Quality Management course covers a wide range of problems and is therefore associated with virtually all disciplines taught at universities, as its purpose is not only to improve the consumer characteristics of products and services, but also to improve the quality of socio-economic and psychological aspects of people's lives, to which all subjects and sciences are oriented.

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**Wood Panels Technology.** The course gives the definition of wood panels, which are effectively used in various industries. There are no disadvantages inherent in natural wood of low quality wood. The overview of products made of crushed wood, features of technology, mold design, classification and properties of wood panels.

**Commercial Activity of Woodworking Enterprises.** The purpose of the discipline is to develop students' theoretical and practical skills in the organization and planning of commercial activity of woodworking enterprise, the use of principles and tools to justify management decisions in commercial activity.

**Technology and Calculation of Small Architectural Forms.** The main task of the discipline is the study of structures and requirements for various wooden elements, technology of their production, the study of rational and integrated use of raw materials, the study of basic structural elements, which consist of small architectural forms (arbors, arbors, pergolas, benches, etc.). As a result of studying the discipline, the student should know the technical solutions and structures of wooden small architectural forms, features of technology of production of wooden structures, technological requirements for wooden materials, technology of manufacturing of individual elements, connections and basics of design and be able to determine costs raw materials for the production of individual elements and parts of products, design technological processes for the production of parts for the IAF of wood, to calculate the specification of raw materials, to choose and calculate uvaty manufacturing, auxiliary and transport equipment, design of production processes LFA-s of various designs.

**Wood Protection Technology and Equipment.** The purpose and technological goals of the protective wood processing. Biological factors of destruction of wood; characteristic of wood damage by fungi and insects. Wood preservatives, chemical compounds, antiseptics and flame retardants. Physical processes during wood impregnation; action of capillary forces; diffuse movement of molecules; the action of excess pressure. Technological features of different methods of wood impregnation; schematic diagrams of the organization of production sites. Wood-impregnating equipment: basic, auxiliary and transport. Rules of safety at work with protective substances; rules of industrial sanitation at wood-impregnating enterprises.

**Chemicals for Wood Modification.** The purpose of the course is to provide the applicants with knowledge in the field of development of chemicals for modification of wood and wood materials, aimed at programmed improvement of natural properties of natural wood and expansion of ways of its use. In the course of studying the discipline, the student must learn the basic concepts of theoretical organic chemistry, classes of organic compounds, rules of nomenclature and basic methods of preparation, the relationship between classes and the main directions of practical use of the most important organic compounds; the relationship between the structure of a substance and its chemical and physical properties. Student should be able to write formulas of organic compounds by their names in rational and radical functional (IUPAC) nomenclature; write the equations of chemical reactions that underlie the methods of extraction and use of organic compounds, explain the basic mechanisms of the flow of chemical reactions of organic substances.

**Entrepreneurship and Business Culture.** The purpose of the discipline is to develop students' theoretical and practical skills in creating a woodworking or furniture company, study the environment and competition and types of business activities, relevant to the current situation, ethical problems of business, the formation of business culture in woodworking enterprise.

**Manufacture of Solid Wood Furniture.** The general current state and prospects of development of furniture production in Ukraine and abroad. Classification of furniture. Materials for the manufacture of furniture products. Furniture. Structure of furniture production technology. Production and technological process of furniture production. Typical technological processes of manufacturing cabinet furniture. Calculation of

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technological process and cost standards of material and labor resources. The quality of the furniture. Indicators and quality control of furniture.

**Chemical and Technological Foundations of Polymer Coatings.** Concepts about the nature and properties of high molecular weight compounds. The nature of solutions of high molecular weight compounds. Role and value of physical characteristics of polymers. Thermophysical properties of polymers. Physical state of polymers and structure of polymers. Synthetic film and film based on natural compounds. Classification, chemical bases and production technology. Water-based paints and varnishes. Pigments and fillers. Azopigments, phthalocyanine and anthraquinone pigments. General concepts of rheological systems. Viscous, viscoelastic and thixotropic liquids. Theories of polymer adhesion. Methods of creating polymer coatings on wood. Methods and equipment for drying polymeric coatings. Surface preparation and technological processes. Technological processes of transparent and opaque equipment. Calculation of equipment and organization of production in finishing shops. Organization of workplaces when performing technological operations. Labor protection and environmental protection. Toxicity of fire and explosion of materials. Fire safety classes.

**Regulation of Woodworking Enterprise Production Activity.** The purpose of the discipline is to acquire a complex knowledge of modern and effective forms and methods of management and organization of production at woodworking enterprises, formed with the help of special theoretical and practical training in the study of industrial activity of the enterprise. As a result of studying the discipline, the student should know: the basics of using the tools and objects of labor of woodworking; principles of rational use of equipment and production facilities, raw materials and materials; basics of labor normalization; organization of work in production and systems of remuneration; basics of innovative and commercial activity; legal aspects of the production activity and the relationship of the enterprise with employees; ways to increase production efficiency.

**Soft Furniture Products Technology.** The course covers the basics of upholstered furniture technology, including the basic properties of polymers, their methods of synthesis and processing, and textiles, including raw materials, properties and test methods. The following topics are discussed. The structure of the polymer and its relationship to specific properties. Mechanisms of macromolecule formation and plastic production technology. Viscoelastic properties of polymers. Processing of plastics. Textile raw materials and fabric production methods. Dyeing and other ways of modifying textiles. Methods of testing the properties of fibers and textiles. Sections and features of upholstered and upholstered furniture. Aspects of furniture functioning. The general scheme of production process of the selected frame furniture. Characterization of individual stages technological process of production. Preparation, processing and application of granular and bent elements, curved, composite and plate - devices, tools, principles of hanging elements. The characteristics of the joints used are drilling, toning, bending and other operations. Characteristics of upholstery materials. Upholstery Technology. Finishing technologies - properties, limitations of technology. Errors of technological operations and ways of their correction. Accuracy of technological operations.

**Organization of Accounting Activities at Woodworking Enterprises.** The purpose of the discipline is to master the students of the theoretical foundations of accounting with its features in woodworking enterprises, to reveal the essence of accounting, its role and place in the economic management of woodworking. As a result of studying the subject, the student should know: theoretical foundations of accounting activity of the enterprise; classification and use of accounting documentation in production activities; peculiarities of accounting of means and objects of work, and also other economic means; use the accounting system to reflect the activity of the enterprise; forms of conducting and organization of accounting at the enterprise.

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## 2.6. FACULTY OF VETERINARY MEDICINE

### Dean – Mykola Tsvilikhovskiy

Academician of the Ukrainian Academy of Agrarian Sciences, Doctor of Science (Biology), Professor

Tel.: (044) 527-82-31 E-mail: [m\\_tsvilikhovsky@nubip.edu.ua](mailto:m_tsvilikhovsky@nubip.edu.ua)

Adress: building № 12, room №324 “G”

The faculty organizes and coordinates Bachelor training in the following specialty:

### **211 Veterinary Medicine**

Educational - professional program «**Veterinary Medicine**»

Guarantor of the program – Danilov Vasyl Benedyktovych, Candidate of Veterinary Science, Associate Professor

Tel.: (044) 527 – 82 - 98 E-mail: [danylov.vasyl@gmail.com](mailto:danylov.vasyl@gmail.com)

Graduating departments:

Anatomy, histology and pathomorphology animal named after acad. V.G.Kasyanenko

Тел.: (044) 527-86-17. E-mail: [museum@nubip.edu.ua](mailto:museum@nubip.edu.ua)

Head of Department – Doctor of Veterinary Sciences, Professor Melnyk Oleg Petrovych

Obstetrics Gynaecology and Animal Reproduction Biotechnology

Tel.: (044) 527-83-46 E-mail: [akusherstvo@nubip.edu.ua](mailto:akusherstvo@nubip.edu.ua)

Head of Department- Candidate of Veterinary Science, Associate Professor Valchuk Oleksandr Anatoliyovych

Epizootiology, microbiology and virology

Tel.: (044) 527-80-10 E-mail: [epizootology@nubip.edu.ua](mailto:epizootology@nubip.edu.ua)

Head of Department - Candidate of Veterinary Sciences, Associate Professor Melnyk Volodymyr Vasylovych

Pharmacology, parasitology and tropical veterinary

Тел.: (044) 527-83-65 E-mail: [parma@nubip.edu.ua](mailto:parma@nubip.edu.ua)

Head of Department - Candidate of Veterinary Sciences, Associate Professor Ishchenko Vadym Dmytrovych

Therapy and clinical diagnosis

Tel.: (044) 527-87-92 E-mail: [kostenko\\_vm@nubip.edu.ua](mailto:kostenko_vm@nubip.edu.ua)

Head of Department - Candidate of Veterinary Science, Associate Professor Kostenko Vitalii Mykhaylovych

Surgery and pathophysiology named prof. I.O Povazhenka

Tel.: (044) 527-88-68 E-mail: [chirurgia@nubip.edu.ua](mailto:chirurgia@nubip.edu.ua)

Head of Department - Doctor of Veterinary Sciences, Associate Professor Malyuk Mykola Oleksiyovych

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Veterinary hygiene named prof. A.K. Skorokhodko

E-mail: [kucheruk\\_md@nubip.edu.ua](mailto:kucheruk_md@nubip.edu.ua)

Head of Department - Candidate of Veterinary Science, Associate Professor

Kucheruk Mariia Dmitryvna

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**Bachelor  
field of knowledge "Veterinary"  
in speciality "VETERINARY MEDICINE"  
Educational - professional program «Veterinary Medicine»**

Form of Training: - full-time studies	Licensed number of persons: 250
Duration of training credits	3 years 180 ECTS
Language of training	Ukrainian
Qualification of graduate	Jr. doctor of veterinary medicine

### **Concept of training**

According to the standard of education, introduced by the Ministry of Education and Science of Ukraine dated 07.02.2011, № 99 students standard and elective academic disciplines. Graduate receives basic higher education and profession of junior doctor of veterinary medicine, who in production under the guidance of a doctor of veterinary medicine performs veterinary preventive measures that are aimed to prevent disease and death of animals, improve their productivity, quality and safety of animal products, provides preventive and diagnostic measures, treatment of animals, veterinary-sanitary examination slaughter products, ensures compliance of veterinary and sanitary regulations in housing, feeding and reproduction of animals.

### **Practical training**

Bases of practical training students are educational, scientific, educational, scientific and industrial laboratories of basic institution of the University (Kyiv), its separate units, especially teaching and research farms of the University ("Velykosnitynske educational and experimental farm named by O. Muzychenko, "Agronomic Research Station," Teaching and Research Farm "Vorzel" Nemishaivo Agricultural College), where laboratory and practical classes, tutorials and practical training of students are kept. In addition, the Department has bilateral agreements with private clinics which deals with small domestic animals, agricultural enterprises of different ownership forms, which are used as a base for practical training.

**Academic rights of Graduates:** graduates can apply for Master's Degree Specialties and Educational (Educational-professional or Educational-scientific) programs specified in Table 1.2 Section 1.3 this Catalog.

### **Employment of Graduates**

Graduates with a degree from the Faculty of Veterinary Medicine junior doctor may be employed in enterprises, institutions and organizations, both state and other forms of ownership where they will carry out work in accordance with the acquired skills.

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**Bachelor`s Program and Curriculum  
in Specialty "Veterinary Medicine"  
Educational-professional program "Veterinary Medicine"**

Code n/a	Components of the educational and professional program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits ECTS	The final control
1	2	3	4
<b>1. GENERAL TRAINING CYCLE</b>			
<b>Compulsory components EPP</b>			
CC 1.	Bioinorganic Chemistry	3	test
CC 2.	Organic Chemistry	2	test
CC 3.	Biophysics	3	test
CC 4.	Philosophy	3	exam
CC 5.	Latin	3	test
<b>Total</b>		<b>14</b>	
<b>Compulsory components EPP by decision of the Academic Council of the University</b>			
CCU 1.	Ukrainian language for professional purposes	3	exam
CCU 2.	Foreign Language (for professional purposes)	3	exam
CCU 3.	History of Ukrainian Statehood	3	exam
CCU 4.	Physical education	2	test
CCU 5.	Safety of labor and vital activity	3	exam
<b>Total</b>		<b>14</b>	
<b>2. SPECIAL (PROFESSIONAL) TRAINING CYCLE</b>			
<b>Compulsory components EPP</b>			
CC 6.	Anatomy of domestic animals	5	exam
CC 7.	Biochemistry of animals with the basics of physical and colloid chemistry	3	exam
CC 8.	Cytology, histology, embryology	4	exam
CC 9.	Animal physiology	4	exam
CC 10.	Basics of biosafety, bioethics and veterinary ecology	3	test
CC 11.	Veterinary Sanitation and Hygiene	2	test
CC 12.	Veterinary Microbiology	2	exam
CC 13.	Veterinary Immunology	2	test
CC 14.	Veterinary virology	2	exam
CC 15.	Biotechnology in veterinary medicine	2	test
CC 16 .	Pathological Physiology	3	exam
CC 17.	Obstetrics, Gynaecology and Animal Reproduction Biotechnology	4	exam
CC 18.	Veterinary-sanitary examination	3	exam
CC 19.	Epizootology and infectious diseases	5	exam
CC 20.	General and Special Surgery	4	exam
CC 21.	Operative surgery, anesthesiology and topographical anatomy	2	exam
CC 22.	Parasitology and invasive disease	4	exam
CC 23.	Pathological anatomy and dissection	3	exam
CC 24.	Internal diseases of domestic animals	5	exam
CC 25.	Veterinary Pharmacology	3	exam
CC 26.	Veterinary clinical biochemistry	2	test
CC 27.	Clinical diagnostics animals diseases	3	exam
CC 28.	The organization and economics of veterinary affairs	2	exam
CC 29.	Veterinary toxicology	2	test
CC 30.	Feeding of animals	2	exam
CC 31.	Basics of breeding animals	2	test
CC 32.	History of Veterinary Medicine	2	test
CC 33.	Veterinary radiobiology	2	test
CC 34.	Medicinal Herbs	2	test
CC 35.	Professional Ethics	2	test
CC 36.	Genetics in Veterinary Medicine	2	test

**CURRICULA AND PROGRAMS OF BACHELOR DEGREE**

CC 37.	Management and Marketing in Veterinary Medicine	2	test
<b>Total</b>		<b>90</b>	
<b>The total amount of Compulsory components</b>		<b>118</b>	
<b>Optional components EPP</b>			
<b><i>Optional components by specialty (block 1)</i></b>			
OB 1.1	Fundamentals of psychology and pedagogy	3	test
OB 1.2	Anatomy of exotic animals	5	test
OB 1.3	Computer science in Veterinary Medicine	3	test
OB 1.4	Fundamentals of Veterinary Sanitation, Microbiology and Virology	3	test
OB 1.5	Methods for microbiological studies	3	test
OB 1.6	Biotechnology of Animal Reproduction	3	test
OB 1.7	Infectious diseases of small animals	2	test
OB 1.8	Quality and Safety of Agricultural Products	6	test
OB 1.9	Surgical diseases of productive animals	4	test
OB 1.10	Parasitic diseases of productive animals	5	test
OB 1.11	Fundamentals of judicial Veterinary	2	test
OB 1.12	Veterinary oncomorphology	2	test
OB 1.13	Diagnosis and treatment of internal diseases of productive animals	2	test
OB 1.14	Fundamentals veterinary legislation Ukraine	5	test
<b><i>Optional components by Student's Choice</i></b>			
OS 1	Nutrition and maintenance of small pets	3	test
OS 2	Food Safety and Quality	3	test
<b>Total</b>		<b>6</b>	
<b>The total amount of Optional components:</b>		<b>42</b>	
<b>3. OTHER TYPES OF TRAINING</b>			
CC 38	Educational practice	12	test
CC 39	Production practice	6	test
CC 40	<b>Certification of applicants</b>	2	exam
<b>THE TOTAL AMOUNT OF EPP</b>		<b>180</b>	

**Annotations of components in the curriculum**

**GENERAL TRAINING CYCLE**

**Compulsory components EPP**

**Bioinorganic Chemistry.** Chemical structure of matter, the basic theory of chemical processes, complex compounds. Chemistry of inorganic elements and their role in the life of the body, basis of chemical isotopes. Volumetric analysis, acid-base titration, redoksometria, physical and chemical analysis, photometry, chromatography.

**Organic Chemistry.** Structure, methods of production, physical and chemical properties, and use of the major classes of organic compounds - carbohydrates, alcohols, aldehydes, ketones, amines, acids, heterocyclic compounds. Properties of amino acids, carbohydrates, lipids, nucleic acids and proteins.

**Biophysics.** Physical and physico-chemical processes occurring in biological systems, the fundamental phenomena that form the basis of wildlife. Physical characteristics and physical properties of the body farm animals.

**Philosophy.** The course introduces the system of knowledge in such fields of philosophy as ontology, gnoseology (theory of cognition), social philosophy, historical types of philosophy that explain the essence of relation “a human-being – the world” in its most important manifestations. The course is characterized by world outlook orientation which allows to synthesize obtained knowledge of special and humanitarian disciplines in integral conception of the world – theoretical basis of university level of specialists training.

**Latin.** Latin grammar, spelling rules and specific terms of veterinary medicine.

### **Compulsory components by decision of the Academic Council of the University**

Annotations of components: History of Ukrainian Statehood, Ukrainian language for professional purposes, Foreign language (for professional purposes), Physical education, Safety of labor and vital activity see Section 2.1.

## **2. SPECIAL (PROFESSIONAL) TRAINING CYCLE**

### **Compulsory components EPP**

**Anatomy of domestic animals.** The structure of the body of animals exists in close connection with its functions. The machine movement. Osteology. Syndesmology. Myology. Overall cover. Splanchnology. Digestive apparatus. Breathing apparatus. Urogenital. Angiology. Endocrine glands. The nervous system. Senses. Features of the anatomy of poultry.

**Biochemistry of animals with the basics of physical and colloid chemistry.** Physical and chemical properties of organic compounds and solutions. Structure, function and metabolism of proteins, fats, carbohydrates, amino acids, nucleic acids, vitamins, enzymes, macro-and micronutrients that constitute the basis of the structure of body tissues. Biochemical processes underlying the functional activity of certain organs and systems.

**Cytology, histology, embryology.** Study of the cell. General embryology. Study of tissues. Histology of organs and systems.

**Animal physiology.** Physiological processes in animals, including the physiology of blood, lymph, heart and circulatory, physiology of respiration, digestion, metabolism and energy, thermoregulation, excretion, endocrine physiology, reproduction, lactation, muscular and nervous systems, higher nervous activity analyzers.

**Basics of biosafety, bioethics and veterinary ecology.** Fundamental properties (functions) of life. The body and the environment. Patterns of development, and the existence of the biosphere. Circulation of matter and energy in the biosphere. The structure of modern ecology.

**Veterinary Sanitation and Hygiene.** Learn sanitary and veterinary-sanitary requirements for environmental factors, livestock buildings, feed, water, soil, air and hygiene regulations and requirements for housing, feeding and maintenance of various types and age-sex groups of animals.

**Veterinary Microbiology.** Systematics, morphology and physiology of microorganisms spread in nature, their role in the transformation of matter in nature. The impact of environmental factors on microorganisms. Infection. Immunology. Types and features of pathogens: bacteria, bacilli, fuzibacteria and actinomycetes, mycobacteria, vibrio, spirochetes, mycoplasmas, rickettsia and chlamydia, microscopic fungi.

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**Veterinary Immunology.** Examines the central and peripheral organs of the immune system, mechanisms of immune responses, antibodies and antigens. Immunological diagnosis of infectious diseases. Serological diagnosis of disease response.

**Veterinary virology.** Physical structure and chemical composition of vibrios and viruses. Taxonomy, reproduction and cultivation of viruses. Effects on viruses of physical and chemical factors. Ecology of viruses. Genetics of viruses. Pathogenesis of viral diseases of animals. Features of antiviral immunity. Specific diagnosis and prevention of viral diseases of animals.

**Biotechnology in veterinary medicine.** Genetic and cellular engineering, Immunobiotechnology, Applied Biochemistry, Enzymology engineering, industrial engineering or microbiology. Transplantation of embryos, early identification and regulation of gender of animals, cloning and transgenic reception, monozygotic and chimeric animals. Hybridoma technologies for monoclonal antibodies and their usage.

**Pathological Physiology.** General patterns of emergence, development and completion of the disease. Nosology. Role of reactivity in pathology. Characteristics, classification of typical pathological processes; inflammation, dysplasia tissue disorders typical regional blood flow, metabolism, acid-base balance, thermoregulation; hypoxia, starvation. Adaptive-compensatory reactions in animals aimed at eliminating violations. Pathological physiology of organs and systems.

**Obstetrics, Gynaecology and Biotechnology Animals Reproduction.** Physiological basis and technique of obtaining sperm. Physiology and biochemistry of semen. The technology of artificial insemination of females and embryo transfer. Andrology. Physiology and Pathology of pregnancy, birth and the postpartum period. Operative Obstetrics. Obstetrical and gynecological check-ups. Diseases of the newborn. Diseases of the breast. Gynecology. Female and male infertility.

**Veterinary-sanitary examination.** The rules and methods of Veterinary evaluation of animal origin and foundation of technology and standardization of their production. Examination of slaughter products of healthy and sick animals, food poisoning and toxicity. The basic technology and hygiene of preserving, hygiene of production, veterinary and sanitary examination of eggs, milk and milk products, meat of wild animals, wildfowl, fish and marine mammals. Veterinary-sanitary inspection of food in the markets.

**Epizootology and infectious diseases.** Infection and Immunity. Evolution and classification of infectious animal diseases. Treatment and prevention of infectious diseases of ruminants, pigs, horses, birds, chicks, dogs and fur animals, bees and fish. Veterinary Sanitation. Diseases common to several species of animals and people.

**General and Special Surgery.** Veterinary traumatology. Surgical infection. Diseases of the skin, muscles, tendons, tendon sheaths and bursa, blood vessels, joints, injuries of nerves and brain. Tumors. Diseases in the area of the head, neck, withers, back, and chest wall, abdomen, pelvis and tail. Andrologic disease. Veterinary Orthopedics.

**Operative surgery, anesthesiology and topographical anatomy.** The doctrine of surgery due to topographic and anatomical features of certain parts of the body of animals. Anesthesiology, fixation, and the overthrow of drug reassurance. Technology and organization of mass operations. Prevention of infections in the work of doctor of veterinary medicine. Injection and puncture. Desmurgy. Surgical operations on the parts of bodies of animals.

**Parasitology and invasive diseases.** The emergence, development and extinction of invasive animal diseases. General parasitology. Veterinary Helminthology, Entomology, arachnology, protozoology.

**Pathological anatomy and dissection.** General patanatomy. Death and posthumous changes. Compensatory and recovery processes. Inflammation. Immunomorphology and immunopathology. Special pathological anatomy, diseases of the respiratory, digestive, cardiovascular, genitourinary and nervous systems. Diseases of the

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skin. Pathomorphology of infectious diseases. Sectional course. Forensic veterinary examination. Procession part. Special part.

**Internal diseases of domestic animals.** Internal diseases of farm animals, their etiology, pathogenesis, symptoms, course, diagnosis, treatment and prevention; laboratory studies. Diseases of the young animals. Diseases of poultry. Diseases of fur-bearing animals, rabbits and dogs.

**Veterinary Pharmacology.** Pharmacodynamics of drugs. Conditions affecting on the action of drugs. Key features and pharmacokinetic characteristics of different groups of drugs, their dosage. Compounding technology and formulations.

**Veterinary clinical biochemistry.** Using of variety of biochemical methods for the study clinical conditions of animals, especially of their use in the study of certain organs and systems to determine exact diagnosis and development of treatment and prevention of diseases. Biochemical tests and symptoms (syndromes) metabolic disorders and other animal diseases.

**Clinical diagnostics animals diseases.** Methods and peculiarities of the clinical studies of various animals, their use in the study of individual organs and systems, symptoms, syndromes and main stages of recognition of the disease. Special methods of research the conditions of separate organs and systems, detection of diseases in animals.

**The organization and economics of veterinary affairs.** Legislation on veterinary medicine in Ukraine. Organization and logistics of veterinary services and veterinary checks in regions, cities and farms. Planning, organization and economics of veterinary measures. Veterinary accounting, reporting and record keeping. The international veterinary organizations and veterinary services in some foreign countries.

**Veterinary toxicology.** Toxicology of mineral poisons, phosphorus and chlororganic compounds. Organic derivatives of mercury. Toxicology of phenoloksyacids and phenol. Toxicology of poisonous substances vegetable and animal origin. Poisoning by poor quality animal feed. Chemical and toxicological analysis.

**Feeding of animals.** Scientific basis of feeding farm animals, feed and nutritional evaluation the needs of animals in the factors of complete feeding. The physiological significance of individual nutrients feedstuff and usefulness of the concept of nutrition, assessment of nutritional feed and rations.

**Basics of breeding animals.** Breeding farm animals. Livestock. Pig. Sheep. Poultry. Equine.

**History of Veterinary Medicine.** History of Veterinary in the primitive community, in Kievan Rus` principalities IX-XIV century, in Russia XVI11 and XIX century. History of veterinary medicine in the USSR. The current state of veterinary medicine in Ukraine.

**Veterinary radiobiology.** Biological effects of ionizing radiation. Radiation injury of animals. Radioecology and toxicology of radioactive substances. Radiological and veterinary-sanitary examination of objects under veterinary supervision. The use of ionizing radiation in animal husbandry and veterinary medicine.

**Medicinal Herbs.** The flora of the planet and Ukraine, medicinal and poisonous flora; Collecting and harvesting of medicinal plant raw materials, processing technology and processing, chemical composition, pharmacological action, purpose, dosage forms, dosage, indications and contraindications for use.

**Professional Ethics.** Morality and ethics. Functions of morality in the development of personality doctor of veterinary medicine. Deontology. Universal values and moral code veterinarian by supreme moral values. Laws of Ukraine and International Law on the basics of Professional Ethics doctor of veterinary medicine.

**Genetics in Veterinary Medicine.** Studies the the basics of heredity and variation in organisms, reveals the principles of storage, transmission and realization of genetic information, including cytological and molecular basis of heredity, the laws of inheritance,

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characteristics (disability, illness), linked inheritance, basic genetic engineering, population and clean lines, basic immunogenetics.

**Management and Marketing in Veterinary Medicine.** Business plan: preparation and execution. The organization of the enterprise. Marketing operations.

### **Optional components EPP**

#### ***Optional components by specialty (block 1)***

**Fundamentals of psychology and pedagogy.** Provides psycho-pedagogical training of future professionals that will enhance overall psychological and pedagogical culture, a cohesive idea of the psychological characteristics of man as a factor in the success of its operations, the ability to think independently and to foresee the consequences of their actions.

**Anatomy of exotic animals.** Studies the of the structure of organs and systems of the exotic animals in conjunction of their structure and functions, and their development during ontogenesis and phylogenesis.

**Computer science in Veterinary Medicine.** The main goal of discipline is to master modern information computer technologies used in veterinary medicine to highlight the research results with sufficient validity and clarity.

**Fundamentals of veterinary sanitation, microbiology and virology.** Teaches evaluate microbes that are in the environment, studies microbiological parameters hygienic regulation, methods for monitoring the disinfection of objects of the environment as well as identify infectious animal diseases of bacterial and viral etiology.

**Methods for microbiological studies.** Studies the modern laboratory methods for detecting and identifying bacteria, viruses and fungi on animal health and pathology, quality and safety.

**Biotechnology of Animal Reproduction.** To form for a future doctor of veterinary medicine knowledge and skills in the physiology of animal reproduction, modern methods of identifying the optimal time of insemination, methods of obtaining semen from bulls and their evaluation insemination of females. Use and implementation of new directions of animal biotechnology (embryo transfer, sexing semen) in cattle.

**Infectious diseases of small animals.** Studies the diseases that cause significant changes in animal organisms and lead to decrease of physiological and working skills of small animals, and not seldom causes death. The study of this subject will enable students to gain knowledge of methods of diagnosis of the disease at any stage of its development, planning and timely laboratory diagnosis using modern methods, devices and methods, development, providing and monitoring of sanitation in farms of different ownership forms, at the objects of the environment, and prediction of diseases.

**Quality and safety of agricultural products.** Rules and methods of veterinary-sanitary assessment of products of animal origin and basis of technology and standardization of their production. Examination of products of slaughter of healthy and sick animals, food poisoning and toxicity. Fundamentals of technology and production hygiene, veterinary-sanitary examination of eggs, milk and milk products, meat, fish and animals. Veterinary-sanitary inspection of food in the markets.

**Surgical diseases of productive animals.** Studies surgical disease patterns of development and the general principles of treatment based on localization of pathological process in farm animals.

**Parasitic diseases of productive animals.** Studies localization of agents in animals, dissemination, ways of infection and factors of transmission of agents, pathogenesis of invasive disease in farm animals, principles of laboratory diagnostics and prevention and combating invasive diseases of farm animals.

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**Fundamentals of judicial Veterinary.** Examines the complex issues related to the legal framework of a doctor of veterinary medicine. Covers the basics of the legal framework of Ukraine, peculiarities of forensic veterinary examination in case of death of animals from different reasons.

**Veterinary oncomorphology.** Studies cell morphology tumor pathology, its structure, mechanisms of cooperation and breach of metabolic and functional mechanisms.

**Diagnosis and treatment of internal diseases of productive animals.** Examines clinical, instrumental and laboratory techniques for sick farm animals and causes, mechanisms of development, clinical and morphological manifestation, course and treatment of internal diseases.

**Fundamentals veterinary legislation Ukraine.** The course examines the theoretical and practical foundations of legal and legislative activity in the field of veterinary medicine. Considering the law as "the laws of social nature, embodied in legislation", this discipline manifests the importance of a legal activity in the field of veterinary medicine. Study of legally significant, legally regulated actions and operations aimed at meeting the public and private interests in the veterinary field

### ***Optional components by Student's Choice***

**Nutrition and maintenance of small pets.** Nutrition is a science that studies the rules of feeding. The study of this discipline provides mastering the basics of rational nutrition of animals, depending on their physiological features, age and physiologic condition. Neglecting of the basic rules of rational nutrition, excessive physical activity, or vice versa, decreasing in the motor activity of animals lead to various diseases. The main task of dietary nutrition is to select an effective, balanced diet, which will improve the general condition of the animal during intense stress, and will help to prevent diseases of the digestive and other body's systems. Also considered are the basics of canine, feline, ornithology, modern methods of keeping, grooming, feeding, drinking, breeding and use of dogs, cats, birds, rodents, reptiles kept at home, issues of humane treatment of pets, basics of ethology and dog training , skin care and its derivative animal health control.

**Food Safety and Quality.** The criteria of food quality and safety. Ways and sources of harmful substances intake, mechanism of its destructive influences and means of resistance. Theoretical and methodological principles of food safety. Overview of selected quality and safety indicators.

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## **2.7. FACULTY OF ALIMENTARY TECHNOLOGIES AND MANAGING BY QUALITY OF PRODUCTS OF AGRICULTURAL COMPLEX**

**Dean** – doctor of sciences, professor **Larissa Bal-Prylypko**

Phone: (044) 527-89-50, E-mail: [bplv@mail.ru](mailto:bplv@mail.ru)

Location: training housing №12, rooms 305 and 306

The faculty organizes and coordinates the process of training of bachelors by specialty:

### ***181 Food Technologies***

Educational-professional Program «**Food Technologies**»

The guarantor of the program - candidate of engineering sciences, associate professor Alexander A. Savchenko

Phone: (044) 527- 88-85 E-mail: [slob2210@ukr.net](mailto:slob2210@ukr.net)

Graduating department:

Technology of meat and fish products, and of sea foods

Phone: (044) 527- 88-85, E- mail: [slob2210@ukr.net](mailto:slob2210@ukr.net)

Head of the chair – candidate of engineering sciences, associate professor Alexander A. Savchenko

### ***229 Public health***

Educational and professional program "**Nutrition of healthy diet**"

The guarantor of the program is Candidate of Medical Sciences, Associate Professor Oleg Shvets

Phone: (044) 527-88-85 E-mail: [slob2210@ukr.net](mailto:slob2210@ukr.net)

Graduating department:

Meat, fish and seafood technologies

Phone: (044) 527-88-85 E-mail: [slob2210@ukr.net](mailto:slob2210@ukr.net)

Head of the Department - Candidate of Technical Sciences, Associate Professor Alexander A. Savchenko

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**Bachelor**  
**Field of knowledge of “Manufacturing and technologies”**  
**in Specialty “FOOD TECHNOLOGIES”**  
**Educational-professional Program «Food Technologies»**

Form of training:	Licensed number of persons:
– daytime	150
– extramural	50
Term of training	3 years and 10 months
Credits	240 ECTS
Language used in training	Ukrainian, English
Qualification of graduates	engineer-technologists

### Concept of training

The successful practical realization of solutions use in realization of importance for Ukraine problems of reprocessing of raw materials for producing of foodstuffs is possible in training of engineers-technologists of level of education of “Bachelor” by specialty of “Alimentary technologies”. The factors that define the problems to be solved in training of experts by specialty of “Alimentary technologies” are: increasing of output of high-quality traditional and innovative foods, development and introduction of intense technologies in use of results of fundamental research in sphere of biotechnology, realization of modern technical and technological solutions. The causes of studying of said problems are those that the modern processes of development of native and foreign industry are formed on base of functioning of enterprises that operate in sphere of biotechnical industry character by the closed cycle of manufacturing. The principal peculiarities of processes they use are realization of principle of purposeful reprocessing of food raw materials in concrete foodstuffs and specific mounting of technological equipment in their production.

### Practical training

TOV “Globinskii meat-packingfactory» Poltava region, STOV «Agricultural firm KUibyshevo» Poltava region, TOV «Agricultural firm Stolichnaya» Kyiv region, TOV «Kovin’ko-kovbasy», Vinnitsa region, TOV «Cherkas’ka prodovolcha kompaniia», city of Cherkasy, PP «Gaisynmiasokombinat» Vinnitsa region., «O. Muzychenko «Velykosnityns’ke NDG», PAT «Koziatynskii miasokombinat», Vinnitsa province., TOV «Lityns’kii miasokombinat», Vinnitsa region, TOV «Polis», Kyiv region., TOV «Boyarski kovbasy» Kyiv region, VAT «Ochakivskii rybokonservnyi kombinat», Mykolaiv region, TOV «Rybni promyslovi tekhnologiji», city of Zhitomir, ZAT «Chernigivs’ke pidpryemstvo po pererobtsi ta realizatsiji rybnykh tovariv «Chernigivryba», city of Chernigiv, TOV «Rybkoopprodukt», village of Pinchuki, Kyiv region.

### Proposed Topics for Bachelor theses

1. Project of meat and fat producing complex of productivity of 23 tons of meat per shift including 30 % of porcine meat in skin and 70 % of beef.
2. Project of work shop of productivity capacity of 2.5 tons of sausages per shift including 10 % of small sausages.
3. Project of industrial complex by producing of 28 tons of meat of birds per shift, including 50 % of hen and 50 % of broilers.

4. Project of workshop by producing of semi-finished meat products of productive capacity of 7.0 tons of finished products per shift, including 40 % of production packed in paste case.

5. Project of workshop by production of dried fish.

6. Project of workshop by producing of frozen fish.

7. Project of workshop by producing of preserved fish in small packing.

8. Project of workshop by producing of canned fish made of raw materials taken from the Black and Azov seas.

**Academic rights of Graduates:** graduates can apply for Master's Degree Specialties and Educational (Educational-professional or Educational-scientific) programs specified in Table 1.2 Section 1.3 this Catalog.

### **Employment of Graduates**

As provides the branch standard of higher education of Ukraine, the graduate obtains after finishing of training the qualification of engineer-technologist. The specialists are capable to carry out the work at certain positions by specialty accordingly to norms of the State classifier of professions of DK 003-96. The main sphere of their activities is work at industrial enterprises of meat- and fish industries, as well as at enterprises and firms of all forms of property that operate at conjugated spheres of activities. The principal types of their operation is carrying out of organizational, managing, industrial, pedagogical, projecting and R&D works in spheres of investigation of novel and betterment of existing technologies of producing of meat and meat products, and fish and fish products. After obtaining of the necessary qualification, graduates can work at enterprises of food and reprocessing enterprises of agricultural sphere of economy.

**Bachelor`s Program and Curriculum  
in Specialty «Food technologies»  
Educational-professional Program «Food Technologies»**

Code n/a	Components of the educational-professional program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits ECTS	The final control
1	2	3	4
<b>1. GENERAL TRAINING CYCLE</b>			
<b>Compulsory components</b>			
CC 1	Higher mathematics	7,0	exam
CC 2	Chemical base of alimentary technologies, including:	23,0	exam
CC 2.1	General and inorganic chemistry	6,0	exam
CC 2.2	Analytical chemistry	5,0	exam
CC 2.3	Organic chemistry	6,0	exam
CC 2.4	Physical and colloid chemistry	6,0	exam
CC 3	Engineering and computer` graphics	7,0	exam
CC 4	Physics	5,0	exam
CC 5	Biochemistry	6,0	test, exam
CC 6	Heat engineering	3,0	test, exam
CC 7	Electric engineering	3,0	exam
CC 8	Education in universities	3,0	exam
CC 9	Ethics and culture of nutrition	3,0	exam
<b>Total</b>		<b>59</b>	
<b>Compulsory components by decision of the Academic Council of the University</b>			
CC 10	History of Ukraine	3,0	exam
CC 11	Ukrainian language (by profession)	4,0	exam
CC 12	History of Ukrainian culture	3,0	exam
CC 13	Foreign language	5,0	test , exam
CC 14	Jurisprudence	3,0	exam
CC 15	Philosophy	4,0	exam
CC 16	Fundamentals of religion	3,0	exam
CC 17	Fundamentals of psychology	3,0	exam
CC 18	Physical training	4,0	test
<b>Total</b>		<b>32</b>	
<b>2. SPECIAL (PROFESSIONAL) TRAINING CYCLE</b>			
<b>Compulsory components</b>			
CC 19	Processes and apparatus used in alimentary technologies	8,0	exam, CP
CC 20	Technical microbiology	3,0	exam
CC 21	Generalized technologies used in industry by producing of alimentary production	16,0	exam
CC 22	Information technologies used in engineering calculations in the branch-industry	6,0	exam
CC 23	Technology of producing of polysaccharides and their use in food industry	3,0	exam
CC 24	Automation of process of manufacturing	3,0	exam
CC 25	Safety of work and life	4,0	exam
CC 26	Technological equipment used in the branch-industry	5,0	exam, CP
CC 27	Standardization, metrology, certification and quality management	4,0	exam
CC 28	R&D work of students	4,0	exam
CC 29	Economy of enterprises	3,0	exam
CC 30	Theoretical base of alimentary technologies	3,0	exam
CC 31	Fundamental principles of mechanics and reliability of equipment used in the branch-industry	3,0	exam
CC 32	Applied mechanics	4,0	exam, CP
CC 33	Informatics and information policy	3,0	exam
CC 34	Material science	3,0	exam
CC 35	Technology of producing of sanitary foodstuffs	3,0	exam
<b>Total</b>		<b>78</b>	

**CURRICULA AND PROGRAMS OF BACHELOR DEGREE**

<b>The total amount of mandatory components</b>		<b>180</b>	
<b>Optional components</b>			
<b><i>Optional components of specialty (block 1 "Technology of meat and meat products")</i></b>			
OB 1	Political science and fundamentals of sociology	3,0	exam
OB 2	Fundamentals of animal husbandry	4,0	exam, CP
OB 3	Fundamentals of physiology and hygiene of nutrition	3,0	exam
OB 4	Hygiene and sanitary at enterprises that produce foods	3,0	exam
OB 5	Management at enterprises of the branch-industry and fundamentals of business undertakings	3,0	exam
OB 6	Fundamentals of construction in industry	3,0	exam
OB 7	Physicochemical and technical base of processes of refrigeration	3,0	exam
OB 8	Technological calculations and accounting in the branch-industry	3,0	exam
OB 9	Industrial ecology of reprocessing enterprises	3,0	exam
OB 10	Control of quality and safety of production of branch-industry	3,0	exam
OB 11	Physicochemical and biochemical processes of reprocessing of meat	4,0	exam
OB 12	Technologies meat and meat products	13,0	exam, CP
OB 13	Projecting of enterprises of meat-processing industry	3,0	exam, CP
OB 14	Microbiology of meat and meat products	3,0	exam
<b>Total</b>		<b>54</b>	
<b><i>Optional components of specialty (block 2 "Fish and Seafood Technology")</i></b>			
OB 1	Political science and fundamentals of sociology	3,0	exam
OB 2	Fundamentals of animal husbandry	4,0	exam, CP
OB 3	Fundamentals of physiology and hygiene of nutrition	3,0	exam
OB 4	Hygiene and sanitary at enterprises that produce foods	3,0	exam
OB 5	Management at enterprises of the branch-industry and fundamentals of business undertakings	3,0	exam
OB 6	Fundamentals of construction in industry	3,0	exam
OB 7	Physicochemical and technical base of processes of refrigeration	3,0	exam
OB 8	Technological calculations and accounting in the of fish and seafood	3,0	exam
OB 9	Industrial ecology of reprocessing enterprises	3,0	exam
OB 10	Control of quality and safety of products of fish processing industry	3,0	exam
OB 11	Physicochemical and biochemical works by reprocessing of fish and seafood	4,0	exam
OB 12	Technology fish and seafood	13,0	exam, CP
OB 13	Projecting of enterprises of fish-processing industry	3,0	exam, CP
OB 14	Microbiology of fish and seafood	3,0	exam
<b>Total</b>		<b>54</b>	
<b><i>Optional components by Student's Choice</i></b>			
1	Selective discipline 1	3,0	exam
2	Selective discipline 1	3,0	exam
<b>Total</b>		<b>60</b>	
<b>3. OTHER TYPES OF TRAINING</b>			
CC 3.1	Work experience courses	4,0	exam
CC 3.2	Practical training	4,0	exam
CC 3.3	Preparation of bachelor' diploma (project)	3,0	exam
<b>THE TOTAL AMOUNT OF EPP</b>		<b>240</b>	

## Annotations of Components in the curriculum

### 1. GENERAL TRAINING CYCLE

#### Compulsory components

**Higher mathematics.** Determinants and systems of equations, functions, derivatives, methods of integration, differential equations of first order and upper orders, systems of differential equations, use of differential calculus in studying of functions and plotting of graphs.

**General and inorganic chemistry.** Structure of matter, types of chemical bonds, general regularities of passing of chemical processes, electrolytic dissociation and hydrolysis, oxidation and reducing equations, basic properties of chemical elements and their compounds.

**Analytical chemistry.** Gravimetric analysis, titrimetric analysis (acid-base interaction, methods of precipitation and forming of complexes), electrometric method, conductometry, polarography and amperometry, emission spectrometric analysis, luminescence.

**Organic chemistry.** Albumens, amino acids, enzymes, lipids, carboxylic (nutritional) acids, hydrocarbons, properties of organic compounds.

**Physical and colloid chemistry.** Chemical equilibrium, equilibrium of phases, chemical kinetics and catalysis, solutions of electrolytes, electrochemical processes and electromotive forces, structure of molecule, molecular spectra, intermolecular interaction, molecularly-kinetic and optical properties of disperse systems, surface effects and adsorption, emulsions and foams, aerosols, structure and properties of high-molecular compounds.

**Engineering and computer graphics.** Methods of projection, curve lines on surface, their practical use in constructing of technological equipment, machine graphics, use of computers in projecting and constructional work.

**Physics.** Physical foundations of mechanics, fundamentals of molecular physics and thermodynamics, direct electrical current, electromagnetism, electromagnetic oscillations and waves.

**Biochemistry.** Interrelation of processes of metabolism in organisms; biochemical processes occurred in storage and reprocessing of food raw materials; types of fermentation (alcoholic, propionic-acid, amylic), generalized regularities of metabolism, energetic metabolism.

**Informatics and information technologies.** Technical and programmatic means of realization of informative processes, algorithmization and programming, software and computer graphics, use of system of "Internet".

**Heat engineering.** Heat-exchanging apparatus, boiler installations, systems of supply of heat to enterprises, which produce foods, protection of environment.

**Electric engineering.** Electric machines, transformers, electric lighting, supply of energy to enterprises that produce foods, saving of electric energy.

**Education in universities.** Basic directions of activities of bachelors specialized in work at enterprises that produce foods, general concepts and information on engineering processes and development of food-producing enterprises, data on kinds of scientific information, types and kinds of editions, role of libraries in storage and search for information.

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**Ethics and culture of nutrition.** Nutritional base of mankind in history and now, stages of formation and progress of culture of nutrition worldwide and in Ukraine, causes of origination of events of crisis in alimentation and methods of their overcoming during the history of men's civilizations, general principles of progress of alimentary technologies and culture of consumption of foodstuffs.

### **Compulsory components by the decision of the Academic Council of the University**

Annotations of components: History of Ukrainian Statehood, Ethnocultural, Philosophy, Ukrainian language for professional purposes, Foreign language, Physical education, Legal culture of a personality see Section 2.1.

**Religious Studies.** Religious Studies as a Science and Educational Discipline. Theological-philosophical, psychological and sociological approaches to the study of religion. Psychological concepts of religion. Sociological concepts of religion. Elements and structure of religion. Functions and role of religion in society. The original forms of religion. General characteristics of the original forms of religion. Early historical forms of religion and tribal cults: fetishism, totemism, taboo, magic, animism. Shamanism. Ethnic religions. Characteristic features of ethnic religions. Types of ethnic religions. Elements and structure of religion. Functions and role of religion in society.

**Fundamentals of psychology.** The study of the mental properties of man as a whole education, a certain system of mental qualities, having the appropriate structure, internal connections, characterized by individuality and interconnected with the natural and social environment.

## **2. SPECIAL (PROFESSIONAL) TRAINING CYCLE**

### **Compulsory components**

**Processes and apparatus used in alimentary technologies.** Constructions and basic characteristics of modern equipment of enterprises that produce foods, technological processes and parameters, which are used in producing of various types of foodstuffs.

**Technical microbiology.** Interrelations of microorganisms among themselves and with other organisms, genetics and ecology of microorganisms, microbiological processes occurred in process of storage and reprocessing of food raw materials, control of microbiological, sanitary and hygienic conditions of manufactures.

**Generalized technologies used in industry by producing of alimentary production.** Assortment of foodstuffs, level of development and tendencies of progress of branches of economy in Ukraine and abroad. Composition, properties and quality of vegetative and zoic raw materials used in alimentary technologies. Advanced technological schemes used in the food industry. Complex schemes of reprocessing of raw materials in food industry. Efficient use of secondary raw materials.

**Information technologies used in engineering calculations in the branch-industry.** Theoretical and practical training of students by use of information and investigatory complex of data used in alimentary technologies and organization of access to modern informative resources, giving of knowledge on effective means and methods of development, storage, processing and transmission of information.

**Technology of producing of polysaccharides and their use in food industry.** Information of general character, nomenclature of polysaccharides. Classification of food additives of group of polysaccharides. Use of polysaccharides in food industry.

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Study of influence of polysaccharides on organisms of men.

**Automation of processes of manufacturing.** Technological processes of food industry subjected to automation, automated systems of operation by technological processes, elements of projecting of systems of automation of alimentary technologies, use and servicing of computerized systems of servicing of enterprises, which produce foods.

**Technology of producing of sanitary foodstuffs.** General characteristic and classification of foodstuffs, characteristics of basic functional ingredients and principles of development of functional foodstuffs.

**Technological equipment used in the branch-industry.** Principle of development of modern equipment to be used in the branch-industry. Rational methods of exploitation of the advanced equipment used in the branch-industry. Basic directions of progress of processes of mechanization and automation of technological lines.

**Standardization, metrology, certification and quality management.** Types of standards, procedures of their development and revision. State supervision and legal problems of standardization. Quality of production, control of work in ensuring of its proper quality. Certification. metrological service of the enterprise. Notions of measurement and means of measurement.

**R&D works of students.** Theoretical investigations and their experiments verification, factorial experiment, operation in processing of data by methods of mathematical statistics, basic knowledge on patent law, computerization of process of development of technical solutions.

**Economy of enterprises.** General characteristic of economy of food industry. Fixed funds of manufactures. Amortization of fixed manufacturing funds. Circulating assets of food industry enterprises.

**Theoretical base of alimentary technologies.** Basic concepts of technologies, procedures of their choose, as well as theoretical bases and regularities used in accomplishing of technological processes of food industry; theoretical base of processes of mechanical treatment of food raw materials,; physicochemical processes put in base of food technologies and theoretical base of work in thermal treating of food raw materials.

**Fundamental principles of mechanics and reliability of equipment used in the branch-industry.** Generalized principles of projecting of technical and technological schemes that should have the specified level of reliability. Investigation of wearing of technological environments in process of their exploitation and identification of longevity of servicing of details of technological equipment. Choose of constructive materials to be used for assuring of the specified level of reliability of operation of machines and apparatus in producing of foodstuffs.

**Material science.** Physicochemical and technical characteristics of materials, classification and specific features of materials.

**Technology of health food products.** General characterization and classification of foodstuffs, characterization of basic functional ingredients and principles of creation of functional foodstuffs.

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## Optional components

### *Optional components by specialty*

#### ***block 1 "Technology of meat and meat products"***

**Political science and fundamentals of sociology.** Formation of knowledge (basic stages of formation and progress of psychology of personality; methods used in its development, inter personal relations, processes occurred in groups, basic problems, concepts, social and psychological phenomenon.

**Fundamentals of animal husbandry.** Types of species, biology, methods of natural and artificial reproducing of animals, feeding and breeding of animals, basic technological processes of manufacture of products of husbandry.

**Fundamentals of physiology and hygiene of nutrition.** Fundamentals of theory of nutrition, hygienic characteristic of various foodstuffs, food additives, methods of development of conditions of safety of foodstuffs that are of high nutritional and biological value.

**Hygiene and sanitary at enterprises that produce foods.** The training program presumes studying of fundamental problems of sanitary and hygiene to be observed at enterprises that produce foods, as well as observance of established conditions of safety in manufacturing premises, at workshops and lines, as well as of norms of personal hygiene of personnel of the enterprise. There are considered also the problems of use apparatus of sanitary treatment of equipment and premises, as well as detailing of properties of detergents and disinfectants used in it.

**Management of enterprises of the branch-industry and fundamentals of business undertakings.** Organization principles of functioning of enterprises. Planning and organization of operation of the main manufacture. Principles of scientific organization of labor. normalization and organization of system of remuneration of personnel for their work. Organization of material and technical servicing of manufacture.

**Fundamentals of construction in industry.** Fundamental principles of construction in industry, planning of productive areas and fundamentals of sanitary technique.

**Physicochemical and technical base of processes of refrigeration.** Principles of operation of modern refrigerating equipment used in the branch-industry, its rational use and methods of advancement of processes of mechanization and automation of refrigerating technological lines.

**Technological calculations and accounting in the branch-industry.** Calculation of quantities of basic raw materials and auxiliary materials to used in producing of finished products, calculation of their prospective output. Choose of basic technological equipment, which would operate under the guidance of computerized means of control. Use of taken knowledge in conditions of optimization of realized processes of manufacturing; rational technological solutions; analysis of current situations at manufactures.

**Merchandising and packing of foodstuffs.** Practice and methods of evaluation of quality, forecasting of level of integrity and guarantees of safety of consumption of foodstuffs. Categorical apparatus of merchandising, its terms and definitions, nomenclature of indices of quality of new types of foodstuffs and their unification by in observance of clauses of normative documents of international category.

**Physicochemical and biochemical processes of reprocessing of meat.** Biochemical and physicochemical processes occurred in processes of storage and reprocessing of meat, interrelations of microorganisms amongst themselves and with other organisms in storage of finished products, generalized regularities of metabolism, energetic exchange.

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**Technology of meat and meat products.** Industry structure. The range of products of the industry. Nutritional value and consumption properties of products, their organoleptic and physico-chemical parameters. Technology of production of primary and secondary processing of raw materials of the industry. Complex processing of raw materials in the industry. Progressive ways of producing products. Product defects, causes and ways of prevention.

**Design of meat processing enterprises.** Students learn the methods of design, execution of technological calculations and graphic part during the design of meat processing enterprises.

**Microbiology of meat and meat products.** The role of microorganisms in various processes of processing and storage of meat raw materials; gaining practical skills for the identification and identification of micro-organisms that affect the quality and safety of meat and meat products; study of etiology of meat and meat products spoilage; study of systematics of preventive measures for prevention of food poisoning and infectious diseases originating from meat and meat products.

## ***Block 2 "Fish and Seafood Technology"***

**Political science and fundamentals of sociology.** Formation of knowledge (basic stages of formation and progress of psychology of personality; methods used in its development, inter personal relations, processes occurred in groups, basic problems, concepts, social and psychological phenomenon.

**Fundamentals of animal husbandry.** Types of species, biology, methods of natural and artificial reproducing of animals, feeding and breeding of animals, basic technological processes of manufacture of products of husbandry.

**Fundamentals of physiology and hygiene of nutrition.** Fundamentals of theory of nutrition, hygienic characteristic of various foodstuffs, food additives, methods of development of conditions of safety of foodstuffs that are of high nutritional and biological value.

**Hygiene and sanitary at enterprises that produce foods.** The training program presumes studying of fundamental problems of sanitary and hygiene to be observed at enterprises that produce foods, as well as observance of established conditions of safety in manufacturing premises, at workshops and lines, as well as of norms of personal hygiene of personnel of the enterprise. There are considered also the problems of use apparatus of sanitary treatment of equipment and premises, as well as detailing of properties of detergents and disinfectants used in it.

**Management of enterprises of the branch-industry and fundamentals of business undertakings.** Organization principles of functioning of enterprises. Planning and organization of operation of the main manufacture. Principles of scientific organization of labor. normalization and organization of system of remuneration of personnel for their work. Organization of material and technical servicing of manufacture.

**Fundamentals of construction in industry.** Fundamental principles of construction in industry, planning of productive areas and fundamentals of sanitary technique.

**Physicochemical and technical base of processes of refrigeration.** Principles of operation of modern refrigerating equipment used in the branch-industry, its rational use and methods of advancement of processes of mechanization and automation of refrigerating technological lines.

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**Technological calculations, accounting and reporting in the fish processing industry.** Calculations of basic raw materials, auxiliary materials and finished products, basic technological equipment with the use of electronic computers; application of knowledge in the conditions of carrying out and optimization of production processes; rational technological solutions; analysis of production situations.

**Industrial ecology of fish processing enterprises.** Ecology of food production and products, energy and ecology, monitoring of the natural environment, sources of pollution and classification of pollutants of the biosphere, environmental standards, protection of the air environment, water resources, biosphere.

**Control of quality and safety of products of fish processing industry.** Accounting for raw materials at reception. Quality control of raw materials at acceptance for processing; quality control of finished products. Determination of losses of raw materials during transportation, primary processing. Definition of raw materials, semi-finished products, finished products of mass fraction of moisture, solids, pH, minerals, proteins, fats, carbohydrates, vitamins, pectic substances.

**Physico-chemical and biochemical bases of fish and seafood processing.** Physico-chemical and biochemical processes in raw materials and products during salting, refrigeration and heat treatment, smoking, drying and new methods of technological treatment in order to achieve optimal modes of processing, formation of functional properties of raw materials and certain quality of finished products.

**Fish and seafood technology.** Theoretical and practical questions regarding processing technologies and technological characteristics of fish, invertebrates and other aquatic organisms; mastering the students' knowledge of chemical composition, biological and energy values of fish and seafood, basic technologies of its processing, methods of justification, development of technological schemes, selection of ways of performing technological operations, calculations of parameters of technological modes.

**Designing of fish processing enterprises.** The program provides for the study of theoretical and practical issues related to specific typical processes of fish storage, preservation and processing technology; application of CAD elements in the design of fish processing enterprises; technological projects for the production of fish products; design and graphic parts of production design.

**Microbiology of fish and seafood.** Studying the morphology and physiology of the main groups of microorganisms that affect the quality of fish and fish products; causes of spoilage of fish and fishery products; study of the systematics of preventive measures to prevent the occurrence of food poisoning in humans when consuming poor-quality fishery products.

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**Bachelor  
in the field of knowledge "Health care"  
in specialty "PUBLIC HEALTH"  
Educational and professional program "Nutrition of healthy diet"**

Form of study:	Licensed volume, persons:
– daily	50
– extramural	
Duration of study	4 years
Duration of study	240
The language of instruction	Ukrainian, English
Graduate Qualification	Bachelor of Public Health

### **Training concept**

The Bachelor's Program in Public Health specializes in the training of a new generation of specialists for public administration, local self-government, economic entities of various forms of ownership, incl. non-governmental organizations in the field of public health, which would contribute to the improvement and implementation of public policy and public administration aimed at solving problems related to the demographic crisis, increasing morbidity, disability and mortality among the population, significant public stratification in access to medical services, low cost-effectiveness of health care activities, the dissatisfaction of a large number of citizens with medical care and protection of patients' rights, identify of interindustry and intersectoral collaboration with public health in Ukraine by the national principle of "health care in all policies of the state."

**Academic rights of Graduates:** graduates can apply for Master's Degree Specialties and Educational (Educational-professional or Educational-scientific) programs specified in Table 1.2 Section 1.3 this Catalog.

### **Employment of Graduates**

A public health professional has broad employment prospects not only in health care but also in other professional fields, such as: • a medical assistant; specialist in hygiene; assistant manager at enterprises, organizations, and institutions; Social Worker; an epidemiology consultant; specialist in sanitary education and labor adaptation; instructor in physical training and rehabilitation; assistant rehabilitation therapist assistant; specialist in inclusive education; • tutor for working with children with special needs; valeology specialist; • disinfectant; health insurance specialist; expert on environmental and technogenic issues; chemical and radiation protection inspector; health teacher.

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**Bachelor's Program and Curriculum  
in specialty "PUBLIC HEALTH"  
Educational and professional program "Nutrition of healthy diet"**

Code n/a	Components of the educational-professional program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
<b>1. GENERAL TRAINING CYCLE</b>			
<b>Compulsory components of EPP</b>			
CC 1	Medical biology and genetics	5,0	Test, exam
CC 2	Analytical chemistry	4,0	exam
CC 3	Medical biochemistry	8,0	Test, exam
CC 4	Food Chemistry	3,0	exam
CC 5	Human cytology and histology	4,0	exam
CC 6	Pharmacology	4,0	exam
CC 7	Medical and biological physics	5,0	exam
CC 8	Latin and medical terminology	6,0	Test, exam
CC 9	Informatics and information technologies	5,0	exam
CC 10	Political science with the basics of sociology	3,0	exam
CC 11	University education	3,0	exam
CC 12	Health promotion	4,0	exam
CC 13	Theoretical foundations of food technology	4,0	exam
<b>Total</b>		<b>58</b>	
<b>Compulsory components EPP by decision of the Academic Council of the University</b>			
OC 14	History of Ukrainian statehood	3,0	exam
OC 15	Ukrainian (professional)	3,0	exam
OC 16	Ethno-cultural studies	3,0	exam
OC 17	Foreign Language	5,0	Test, exam
OC 18	Legal personality culture	3,0	exam
OC 19	Philosophy	3,0	exam
OC 20	Mental health	3,0	exam
OC 21	Physical Education	4,0	Test
<b>Total</b>		<b>27</b>	
<b>2. SPECIAL (PROFESSIONAL) TRAINING CYCLE</b>			
<b>Compulsory components</b>			
CC22	Healthcare Economics	4,0	exam
CC23	Human anatomy	7,0	Test, exam
CC24	Human physiology	6,0	exam
CC25	Biostatistics	4,0	exam
CC26	Biosafety	4,0	exam
CC27	Human ecology	4,0	exam
CC28	Psychology of health	4,0	exam
CC29	Pathomorphology and pathophysiology	6,0	Test, exam
CC30	The basics of a healthy lifestyle	4,0	exam
CC31	Microbiology, Virology and Immunology	6,0	exam
CC32	General hygiene	5,0	exam
CC33	Epidemiology: infectious diseases	5,0	exam
CC34	Epidemiology:noninfectious disease	5,0	exam
CC35	Bioethics with the basics of medical law	4,0	exam
CC36	Internal medicine with evaluation of research results	6,0	exam
CC37	Clinical chemistry and laboratory diagnostics	6,0	exam
CC38	Psychosomatics	6,0	exam
<b>Total</b>		<b>86</b>	
<b>The total amount of compulsory components</b>		<b>180</b>	
<b>Optional components EPP</b>			
<b>Optional components by specialty (block 1 "Nutrition of healthy eating")</b>			
OC1.1	Technology of healthy food	5,0	exam
OC1.2	Fundamentals of nutrition	4,0	exam
OC1.3	Nutritional and dietary supplements	3,0	exam

**CURRICULA AND PROGRAMS OF BACHELOR DEGREE**

OC1.4	Food hygiene	5,0	exam
OC1.5	The physiology of digestion and metabolism	5,0	exam
OC1.6	Biochemistry of digestion and metabolism	4,0	exam
OC1.7	Features of nutrition in different age groups	4,0	exam
OC1.8	Basics of medical nutrition	6,0	exam
OC1.9	Sports nutrition	3,0	exam
OC1.10	Baby and school meals	4,0	exam
OC1.11	Information technology in the field of public health	5,0	exam
OC1.12	Basics of the scientific research	3,0	exam
OC1.13	Ethics and deontology	4,0	exam
<b>Total</b>		<b>54</b>	
<b>Optional components at specialty (block 2 «Health promotion»)</b>			
OC1.1	Reproductive health	5,0	exam
OC1.2	Fundamentals of Sanogenic Thinking	4,0	exam
OC1.3	The basics of disaster medicine	3,0	exam
OC1.4	Psychology of crisis states	5,0	exam
OC1.5	The physiology of digestion and metabolism	5,0	exam
OC1.6	Biochemistry of digestion and metabolism	4,0	exam
OC1.7	Occupational health and injury prevention	4,0	exam
OC1.8	Emergency medical care	6,0	exam
OC1.9	Communication management	3,0	exam
OC1.10	The basics of social advertising	4,0	exam
OC1.11	Information technology in the field of public health	5,0	exam
OC1.12	Основи наукових досліджень	3,0	exam
OC1.13	Environmental psychology	4,0	exam
<b>Total</b>		<b>54</b>	
<b>Optional components by Student's Choice</b>			
1	Optional subject 1	3,0	exam
2	Optional subjects 1	3,0	exam
<b>Total amount of optional components</b>		<b>60</b>	
<b>3. OTHER TYPES OF TRAINING</b>			
CC40	Studying practice	3,0	
CC41	Industry practice	3,0	
CC42	Bachelors qualification thesis (diploma or project)	3,0	
<b>THE TOTAL AMOUNT OF EPP (without military training)</b>		<b>240</b>	

## Annotations of Components in the curriculum

### 1. GENERAL TRAINING CYCLE

#### Compulsory components

**Latin and medical terminology.** The purpose of the discipline is to prepare the public health specialist for understanding anatomical, pharmaceutical and clinical terminology and writing prescriptions.

**Analytical chemistry.** Gravimetric analysis, titrometric analysis (acid-base interaction, deposition and complexation methods) potentiometric method, conductometry, polarography and amperometry, emission spectral analysis, luminescence.

**Medical and biological physics.** Formation of students' system of knowledge about basic physical principles and approaches to the study of processes in the wild, physical and technical principles of functioning of medical and technical devices, the use of

mathematical methods in biomedical research, which form the basis of subject competencies in medical and biological physics and is an integral a component of the professional competence of the future health care professional, as well as the basis for the study of vocational-oriented natural and clinical disciplines.

**University education.** The basic directions of activity of the bachelor of food production, the general concepts and information about engineering and development of food production, information about scientific information, types and types of publications, the role of libraries in storage and search of information.

**Informatics and information technologies.** Theoretical and practical training of students in the use of the information-research complex in the field of health care, organization of access to modern information resources, provision of effective means and methods of creation, storage, processing and transfer of information.

**Political science with the basics of sociology.** Formation of knowledge (stages of formation and development of personality psychology; methods of personality psychology, interpersonal relationships, group processes, basic problems, concepts and socio-psychological phenomena, disclosure of the basic problems of the concept and social psychological phenomena.

### **Compulsory components by decision of the Academic Council of the University**

Annotations of components: History of Ukrainian Statehood, Ethnocultural, Philosophy, Ukrainian language for professional purposes, Foreign language, Physical education, Legal culture of a personality see Section 2.1.

## **2. SPECIAL (PROFESSIONAL) TRAINING CYCLE**

### **Compulsory components**

**Human anatomy.** Disclosure on the basis of modern achievements of macro- and microscopic anatomy of the structure of the human body, its physiological systems, organs and tissues, establishing the relationship of the structure of organs with the performed functions, the formation of the concept of the interdependence and unity of the structure and function of human organs, their variability in the process of phylogeny and ontogeny.

**Medical biology and genetics.** Fundamentals of human activity, studying the laws of heredity, variability, individual development and morphophysiological adaptation of the person to environmental conditions in connection with its biosocial essence and the influence of molecular genetic, cellular, ontogenetic, population, environmental, human.

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## 2.8. FACULTY OF MECHANICS - TECHNOLOGY

**Dean** - Associate Professor **Yaroslav Mykhaylovich**

Tel .: (044) 527-85-34 E-mail : mtf11k@ukr.net

Location: educational building number 11, room. 309

The faculty organizes and coordinates Bachelor training in the following specialties:

### **208 Agroengineering**

Educational-professional Program “**Agroengineering**”

Guarantor of the program – Associate Professor Mykhaylovich Yaroslav M.

Tel .: (044) 527-85-34 E-mail : yaroslav\_m@ukr.net

Graduating departments:

Agricultural machinery and systems engineering them Acad. P.M. Vasylenka

Tel .: (044) 527-85-37 E-mail: \_sgms@ukr.net

Head of Department – PhD, Gumenyuk Yuriy O.

Mechanization of livestock

Tel .: (044) 527-85-35 E-mail: [hmelvas@ukr.net](mailto:hmelvas@ukr.net)

Head of Department – PhD, Khmelovskiy Vasyl S.

Technical service and engineering management them M.P. Momotenka

Tel .: (044) 527-88-53\_ E-mail: vdv-tsim@ukr.net

Head of Department - Doctor of Technical Sciences, prof . Voytyuk Valery D.

Occupational Health and environment engineering

Tel .: (044) 527-82-99\_ E-mail: voynaiov@bigmir.net

Head of Department - PhD. Voinalovych Alexander V.

Tractors and cars and biological energy systems

Tel .: (044) 527-88-95 E-mail: vvchuba@ukr.net

Head of Department – PhD. Chuba Vyacheslav V.

### **275.03 Transport Technologies (on Motor Transport)**

Educational-professional Program “**Transport Technologies (on Motor Transport)**”

Guarantor of the program – PhD. Domin Oleksandr A.

Tel .: (044) 527-86-32 E-mail : demin31@gmail.com

Graduating departments:

Transport technology and tools in agriculture

Tel .: (044) 527-86-32 E-mail: p.ovchar22@ukr.net

Head of Department – PhD, Ovchar Petro A.

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Tractors and cars and biological energy systems  
Tel. :( 044) 527-88-95 E-mail: vvchuba@ukr.net  
Head of Department - PhD. Chuba Vyacheslav V.

Technical service and engineering management them M.P. Momotenka  
Tel. :( 044) 527-88-53\_ E-mail: vdv-tsim@ukr.net  
Head of Department - Doctor of Technical Sciences, prof . Voytyuk Valery D.

**Bachelor**  
**Field of Knowledge "Agricultural science and food"**  
**in Specialty "AGROENGINEERING"**  
**Educational-professional program «Agroengineering»**

Form of Training:	Licensed number of persons:
– Full-time	200
– Part-time	200
Duration of Training	4 years
Credits ECTS	240
Language of Teaching	Ukrainian, English
Qualification	Bachelor of Agroengineering

### Concept of training

Of knowledge and skills specialist in next generation processes, machines and equipment for plant growing, cattle breeding, biotechnology, process industry etc. based on modern standards of education adapted to the requirements of the world's best educational programs for the public and private sectors of Ukraine.

### Practical training

Passage education (Trial, repair and metalwork) and industrial (mechanical-technological, vocational and technological, production in enterprises) recommended practices 127 enterprises, including strategic partners: KUHN Ukraine; John Deere Ukraine; Amaco Ukraine; Technician enerzhi; Astra; Zeppelin Ukraine; Lemken Ukraine; Vaderstadt Ukraine; Tan; HARDI; NSC "Institute of Mechanization and Electrification of Agriculture"; UkrNDIPVT them. Leonid Pogorelii.

### Proposed Topics for Bachelor theses

1. Development of the process and rationale of cars growing crops (wheat, barley, rye, sorghum, sugar beet, corn, sunflower, etc.).
2. Development of technology and justification of technical service of agricultural machinery (by brand and type).
3. Evaluation of technical state of working of agricultural machinery (by brand mobile power tools, tractors, grain, corn, forage harvesters, beet machines, sowing complexes, etc.) in the development process of their recovery.
4. Development of technology and of technical substantiation of construction machinery (brands and types).
5. Development of the process and rationale of machine processing of agricultural products.
6. Development of the process and rationale of machines for the production of biofuels (biogas).
7. Development Process repairing agricultural machinery (brands) and justification (development) set of means of implementation.
8. Rationale kit machinery and equipment (vivotsefermy, MTF, pig, etc.) to the research process (maintenance, feeding, etc.).
9. Justification measures to prevent accidents and injuries in manufacturing processes APC.

**Academic rights of Graduates:** graduates can apply for Master's Degree Specialties and Educational (Educational-professional or Educational-scientific) programs specified in Table 1.2 Section 1.3 this Catalog.

### **Employment of Graduates**

Receives basic higher education and can work in positions that correspond to the 3rd and 4th qualifying levels under state classifier professions: Head of the repair shop, mechanized detachment chief engineer on the use of ICC technical service engineer, engineer, inspector health and safety.

**Bachelor`s Program and Curriculum  
in Specialty «Agroengineering»  
Educational-professional program «Agroengineering»**

Code n/a	Components of the educational-professional program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits ECTS	The final control
1	2	3	4
<b>1. GENERAL TRAINING CYCLE</b>			
<b>Compulsory components EPP</b>			
CC 1	Physics	5,0	exam
CC 2	Descriptive geometry and computer graphics	5,0	exam
CC 3	Higher Mathematics	5,0	exam
CC 4	Higher and Applied Mathematics	3,0	exam
CC 5	Chemistry	5,0	exam
<b>Total</b>		<b>23</b>	
<b>Compulsory components EPP by decision of the Academic Council of the University</b>			
CCU 1	Ukraine history	3,0	exam
CCU 2	Ethnocultural	3,0	exam
CCU 3	Ukrainian language for professional purposes	3,0	exam
CCU 4	Foreign Language	7,0	exam
CCU 5	Physical Training	5,0	test
CCU 6	Philosophy	4,0	exam
CCU 7	Social sciences	4,0	exam
CCU 8	Safety and life	4,0	exam
CCU 9	Legal culture of the person	3,0	exam
<b>Total</b>		<b>36</b>	
<b>2. SPECIAL (PROFESSIONAL) TRAINING CYCLE</b>			
<b>Compulsory components EPP</b>			
CC 6	Materialscience and TCM	8,0	exam
CC 7	Theoretical Mechanics	4,0	exam
CC 8	Theory of mechanisms and machines	6,0	exam
CC 9	Mechanics of materials and structure	5,0	exam
CC 10	Tractors and cars	15,0	exam
CC 11	Agriculture machines	16,0	exam
CC 12	Fuel and lubricants and other operating supplies	4,0	exam
CC 13	Standartization and teachical measurements	3,0	exam
CC 14	Parts of machines	4,0	exam
CC 15	Lifting machines	3,0	exam
CC 16	Machines and equipment for livestock	4,0	exam
CC 17	Machines in stockbreeding	7,0	exam
CC 18	Operation of machines and equipment	6,0	exam
CC 19	Techical servis of machines	8,0	exam
CC 20	Reliability of equipment	4,0	exam
CC 21	Machines and equipment for processing of agricultural products	4,0	exam
CC 22	Basics of production management	3,0	exam
CC 23	Repair of machines	4,0	exam
<b>Total</b>		<b>108</b>	
<b>The total amount of Compulsory components</b>		<b>167</b>	
<b>Optional components EPP</b>			
<b>Optional components by specialty</b>			
OB 2.1	Technology of growing, processing and storage agriculture products	7,0	exam
OB 2.2	Computers and Computer Technology	3,0	exam
OB 2.3	The " machine -field - biological matrix "	3,0	exam

OB 2.4	Heating Engineering	4,0	exam
OB 2.5	Hydraulics	3,0	exam
OB 2.6	Basics of car and equipment management	4,0	exam
OB 2.7	Theoretical foundations of electrical engineering	4,0	exam
OB 2.8	Mechanical and technological properties agriculture materials	3,0	exam
OB 2.9	History and philosophy agriculture techincs	3,0	exam
OB2.10	Standardization and certification machinery and equipment	4,0	exam
OB 2.11	Hydro and Pneumodrive of new machines	5,0	exam
OB 2.12	Economic discipline	7,0	exam
OB 2.13	Machinery and equipment for biotechnology	4,0	exam
<b>Total</b>		<b>54</b>	
<i>Optional components by Student's Choice</i>			
OS 1		3	
OS 2		3	
<b>Total</b>		<b>6</b>	
<b>The total amount of Optional components</b>		<b>60</b>	
<b>3. OTHER TYPES OF TRAINING</b>			
CC 24	Cultural education training	6	
CC 25	Preparation to diplom project	5	
CC 26	State certification	2	
<b>THE TOTAL AMOUNT OF EPP</b>		<b>240</b>	

## Annotations of Components in the curriculum

### 1. GENERAL TRAINING CYCLE

#### Compulsory components

**Physics.** Increased knowledge and understanding of phenomena and laws of nature, reflected in classical and modern physics and related to the use of industrial, technology and everyday life to environmental protection and life safety.

**Descriptive geometry and computer graphics.** Formation of knowledge on the formation of geometric objects, and perform reading technical drawings, imaging techniques including computer graphics; teach students to geometric modeling of objects and processes to give them the knowledge and skills required to perform and read drawings for various purposes, such as that carried out by hand or computer, and solving for the pictures, drawings and model engineering geometric problems.

**Higher and Applied Mathematics.** Formation of theoretical knowledge and practical skills on the basis of mathematical apparatus, the main methods of quantitative measurement chance of factors affecting any processes, principles of mathematical statistics used in the planning, organization and management of production and technological processes.

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**Chemistry.** Submit student basic theoretical issues of physical chemistry and basic concepts of Macromolecular Chemistry.

### **Compulsory components by decision of the Academic Council of the University**

Annotations of components: "History of Ukrainian Statehood", "Ethnocultural Studies", "Philosophy", "Ukrainian Language for Professional Purpose", "Foreign Language", "Physical Education", "Sociology", "Labor Protection", "Legal Culture of Personality" see Section 2.1.

## **2. SPECIAL (PROFESSIONAL) TRAINING CYCLE**

### **Compulsory components**

**Materials science and TCM.** Provide future skill set of knowledge and skills of fixed assets dimensional processing of structural materials and tools needed for understanding of modern agricultural engineering production.

**Theoretical Mechanics.** To deepen students' knowledge of theoretical material about the basic laws of nature, on the basis of which they create the computational schemes required in engineering, but also as a means of educating future engineers with the skills of scientific generalizations.

**Theory of mechanisms and machines.** To deepen students' knowledge of theoretical material on the basic laws of nature on which settlement schemes create needed in engineering, but also as a means of education for future mechanical engineers skills for scientific generalizations.

**Mechanics of materials and structures.** Forming students' knowledge of strength of materials; Geometric characteristics of flat sections; external and internal forces; the method of sections; diagrams of the internal forces; tensile and compression; mechanical properties of materials; calculation for strength and rigidity at a stretching and compression; basic theory of stress and strain state; strength criteria; shift; torsion; bend; additional questions bending theory; sophisticated resistance; general theorem resilient systems, common methods for determining the movements; statistically undetectable system; calculation of plane curves beams; calculation of thick-walled cylinders and rotating discs; elements of the theory of thin shells; design calculation for the boundary conditions; stability of compressed rods; elastic vibrations; Strength of Materials steps to re-stress variables; payments under shock loads; contact stress; fracture mechanics bases.

**Tractors and cars.** Forming students' knowledge of basic operational characteristics of cars and tractors; Theory cars and tractors; design and calculation of the vehicle; structure and dynamics of internal combustion engines; construction of cars and tractors.

**Agricultural machinery.** The course provides future professionals with deep knowledge of the structure, construction and commissioning for the specific conditions of work agricultural machines, theory and calculation processes and working bodies of machines that are necessary for highly efficient use of means of mechanization in agricultural production, research aimed at improving the existing and new machines.

**Fuel and lubricants and other operating supplies.** In the study discipline deals with the theory and practice of fuel and lubricants for machines agricultural production. The course is designed for students to obtain knowledge on the rational use of fuels, lubricants, technical liquids and non-metallic materials, manufacture of fuels and lubricants, their assortments, properties of qualities as affecting the reliability and efficiency of engines units work machines agricultural production, ways of implementing fuels and lubricants not based on oil.

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**Standardization and technical measurements.** Forming students' knowledge and skills that allow you to improve the quality of products qualified agricultural engineer, use of standards, regulations interchangeability, metrology and quality control.

**Parts of machines.** The study operating principles of calculation and design of machine parts and mechanisms of general purpose and handling equipment. We study kinematic calculations, the basis of calculation for strength and stiffness, design methods, the rational choice of materials.

**Lifting machines.** Study structure handling machines and the agricultural production mechanization and automation of agricultural production, methods of calculation and design.

**Machinery and equipment for livestock.** To provide students with knowledge about the structure, management, basic theory and methods of calculation machines and equipment for animal based ahrozootehnichnyh, sanitary-veterinary and technical and economic requirements and work conditions.

**Machines in stockbreeding.** To acquaint students with the basics of streaming-design production lines in animal husbandry, installation and commissioning, production and technical service, research equipment and processes.

**Operation of machines and equipment.** Training specialist who can competently decide on operation of machines and equipment in conditions of farmers and individual farms, rental companies and peasant unions. The subject of the study is streaming mechanized processes of production of crops, methods of experimental determination and theoretical calculation of basic technical and operational parameters of machine and tractor units and complete plants and their work in setting up producer.

**Technical service machines.** Obtaining theoretical knowledge and practical skills that will be needed in practice: design principles of maintenance of machinery and equipment APC; principles of the industrial and technological base of manufacturing equipment; procedure for installation and commissioning of machinery and equipment APC; principles for determining prospective directions of the agricultural and services service; basis of analysis and research designs of machinery and equipment and evaluation of their technical level; order documentation on the supply of logistics, preparation of reporting documentation, conducting technical examination and registration of complaints; procedure and methods of diagnosing complex machines, flaw details.

**Reliability of equipment.** Mastering the future mechanical engineer basics of technological processes of repair of machines and assemblies, get practical skills perform common maintenance operations.

**Machines and equipment for processing agricultural products.** To provide students with knowledge about the structure, management, basic theory and methods of calculation machines and equipment for processing agricultural products taking into account properties of agricultural materials and technical and economic requirements and working conditions.

**Basics of production management.** To acquaint students with the basics of streaming-design production lines in the processing industry, construction and commissioning, production and technical service, research equipment and processes.

**Repair of machines** Mastering the future mechanical engineer basics of mastering the basics of organizing repair facilities and bases of calculation and design of repair facilities.

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## Optional components

### *Optional components by specialty*

**Technology of growing, processing and storage agriculture products.** The development of the system of knowledge development and evaluation of agricultural products, effective implementation of the selection process in the desired direction and organization biologically reasonable and economically expedient production technology, processing and storage of agricultural products.

**Computers and computer technology.** Requires educational and professional program students must be able to: build a comprehensive axonometric drawings and three-dimensional images of objects; intsydentnist solve the problem on two geometric figures (point, line, plane surface); solve problems at the intersection of two geometric shapes (straight, plane surface); find the distance between the geometric shapes and angles between them; law for a given formation projection points to build curves and surfaces; perform cuts and cross sections of complex geometric shapes; find life-size oblique sections; execute engineering and construction drawings for YESKD standards; Know: Principles and methods of construction projection images; positional methods for solving problems; metric methods for solving problems; methods of formation curves and surfaces; YESKD state standards.

**The "machine-field - biological matrix".** Academic discipline studies the basic principles of environmentally sound and cost-effective functioning of the "machine - biological matrix" in terms of vehicles in terms of interaction with the biological environment. As a result of the discipline the student acquires knowledge of the elements and indicators that define the system "machine - biological matrix" lines and methods that improve the functioning of the "machine - biological media" and contributes to the quality of technological and transport operations under the terms of the ecological aspects of the use of mobile agricultural machinery and vehicles.

**Heating Engineering.** Mastering knowledge systems of methods of obtaining, transformation, transmission and use of heat and principle of thermal machines and apparatus intended for this purpose thermodynamics, heat transfer (heat transfer) that make up the theoretical foundations of heat engineering.

**Hydraulics** Formation of skills that allow the material to make the right choice considering the mechanical movement of fluid in various natural and man-made environment

**Basics of car and equipment management.** Forming students' knowledge of organizational and methodological foundations of practical training students in the process of driving and mobile agricultural machinery of machinery, technology, economics, planning, organization and management.

**Mechanical and technological properties of agricultural materials.** Formation of skills that allow to make the correct choice of material based agricultural mechanics and technological properties, provide savings in materials, weight; Theoretical Foundations of mastery.

**History and philosophy of agricultural machinery.** Introducing students to further their independent deliberation history increment of scientific knowledge within the individual branches of natural sciences, humanities, social and technical sciences under certain historical stages of development of science and culture in general in order to master the intellectual wealth of the world scientific culture, which is stored in history and the which is based modern science.

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**Standardization and certification machinery and equipment.** Sets out the general principles of standardization, metrology and certification of agricultural machinery and equipment. Deals with the laws of Ukraine on standardization, metrology and certification and ISO Basis of normative documents for formation of specifications, processes for the manufacture of machinery and equipment, quality control cards and company standards.

**Hydro Pneumodrive and agricultural machinery.** The formation of future professionals skills and knowledge of modern methods of design, production and operation of modern machines agricultural production, which are equipped with hydraulic and pneumatic.

**Economic discipline.** The formation of future professionals of the agricultural sector of the special knowledge and practical skills in the field of Agricultural Economics, Planning indicators of industrial and economic activity, the use of agricultural economic management organization considering factors external and internal environment.

**Machinery and plant biotechnology.** To provide students with knowledge about the structure, management, basic theory and methods of calculation machinery and equipment. The development of a system of knowledge on the theoretical and practical foundations for the study of biotechnology processes with environmental focus and addressing related environmental challenges utilization (biopererobky) waste and rubbish, the degradation of the different nature of pollution, ensure the production of environmentally friendly products based on cheap and available raw materials.

**Bachelor**  
**Field of Knowledge "Transport"**  
**in Specialty «TRANSPORT TECHNOLOGIES (ON MOTOR TRANSPORT)»**  
**Educational-professional program «Transport Technologies (on Motor Transport)»**

Form of Training:	Licensed number of persons:
– Full-time	100
– Part-time	100
Duration of Training	4 years
Credits ECTS	240
Language of Teaching	Ukrainian, English
Qualification	Bachelor of transport technologies

### **Concept of training**

Providing knowledge, skills and professional skills in the field of next generation transport technologies in the agricultural and environmental sectors based on modern standards of education adapted to the requirements of the world's best educational programs for the public and private sectors of Ukraine's economy.

### **Practical training**

Passage education (trial, on management techniques) and industrial (professional and technological, production in transport companies) recommended practices 89 enterprises.

### **Proposed Topics for Bachelor theses**

1. Development (improvement) of traffic on the street settlement using elements of the automated traffic control system.
2. Development of rational international routes of vehicles for the carriage of agricultural goods.
3. Development of transport and process crops for harvesting company (association management, etc).
4. Development of recommendations to improve the safety of vehicles and pedestrians on the road along the street (Avenue, Square, etc.) the settlement.
5. Development of transport and production process when transporting farm animals in the enterprise (association management, etc).
6. Development of transport and production process at transportation of poultry in terms of the company (association management, etc).
7. Development of transport and production process for the carriage reproductive material of farm animals and poultry in terms of the company (association management, etc).

**Academic rights of Graduates:** graduates can apply for Master's Degree Specialties and Educational (Educational-professional or Educational-scientific) programs specified in Table 1.2 Section 1.3 this Catalog.

### **Employment of Graduates**

Receives basic higher education and can work in positions that correspond to the 3rd and 4th qualifying levels under state classifier professions: specialist logistics, logistics expert, a technical expert in management, transport operations inspector, the inspector of traffic safety, inspector of safety and quality, detachment chief vehicle engineer of the use of vehicles, technical service engineer.

**Bachelor`s Program and Curriculum in Specialty  
«Transport Technologies (on Motor Transport)»  
Educational-professional program «Transport Technologies (on Motor Transport)»**

Code n/a	Components of the educational-professional program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits ECTS	The final control
1	2	3	4
<b>1. GENERAL TRAINING CYCLE</b>			
<b>Compulsory components EPP</b>			
CC 1	Physics	4	exam
CC 2	Higher Mathematics	8	exam
CC 3	Fundamentals of systems theory and control	8	exam
CC 4	Chemistry	4	exam
CC 5	Probability Theory and Mathematical Statistics	4	exam
CC 6	Vehicles	4	exam
<b>Total</b>		<b>32</b>	
<b>Compulsory components EPP by decision of the Academic Council of the University</b>			
CCU 1	History of Ukrainian Statehood	4	exam
CCU 2	Ethnocultural	4	exam
CCU 3	Ukrainian for professional purposes	4	exam
CCU 4	Foreign language (English, German, French, Spanish)	8	exam
CCU 5	Physical Education	4	test
CCU 6	Fundamentals of Legal Culture and Customs Law	5	exam
CCU 7	Work and life safety	7	exam
<b>Total</b>		<b>36</b>	
<b>2. SPECIAL (PROFESSIONAL) TRAINING CYCLE</b>			
<b>Compulsory components EPP</b>			
CC 7	Basic theory of transport processes and systems	6	exam
CC 8	Basics of European Standards transport	4	exam
CC 9	General course of transport	5	exam
CC 10	Organization of traffic	4	exam
CC 11	Operational properties of roads and buildings	4	exam
CC 12	Information Systems and Technology	6	exam
CC 13	Freight transport	6	exam
CC 14	Technologically transport processes in agriculture production	4	exam
CC 15	Research of operations in transport systems	6	exam
CC 16	Interaction of transport	6	exam
CC 17	Technical means of traffic	4	exam
CC 18	Fundamentals of economy of transport ( tariffs and tariff system)	5	exam
CC 19	Logistics	6	exam
CC 20	Transport planning of territories	4	exam
CC 21	Vehicle safety	4	exam
CC 22	Organization of international road	4	exam
<b>Total</b>		<b>78</b>	
<b>The total amount of Compulsory components</b>		<b>146</b>	
<b>Optional components EPP</b>			
<b>Optional components by specialty</b>			
OB 1.1	Engineering and Computer Graphics	3	exam
OB 1.2	System "machine - biological matrix "	3	exam
OB 1.3	Technical mechanics	3	exam
OB 1.4	Hygiene and features of animal transportation and livestock products	3	test
OB 1.5	Knowledge of cargo	3	exam
OB 1.6	Social sciences	3	exam
OB 1.7	Hoisting machinery	4	exam
OB 1.8	Performance Features vehicles	3	exam
OB 1.9	Fundamentals of forensics and road accident expertise	3	exam
OB 1.10	Traffic rules	3	exam

**CURRICULA AND PROGRAMS OF BACHELOR DEGREE**

OB 1.11	Philosophy	3	exam
OB 1.12	Fundamentals of Engineering Management	3	exam
OB 1.13	Passenger transportation	4	exam
OB 1.14	Lubricants and other operating supplies	3	test
OB 1.15	Maintenance vehicle	3	exam
OB 1.16	Technology storage of agricultural products during transportation	3	test
OB 1.17	Transport law	4	test
<b>Total</b>		<b>54</b>	
<b><i>Optional components by Student's Choice</i></b>			
OS 1		3	test
OS 2		3	test
<b>Total</b>		<b>6</b>	
<b>The total amount of Optional components</b>		<b>60</b>	
<b>3. OTHER TYPES OF TRAINING</b>			
CC 23	Cultural education preparing	<b>6.0</b>	
CC 24	Preparation and protection of bachelor's works	<b>7.0</b>	
CC 25	Manufacturing Practice	<b>21.0</b>	
<b>THE TOTAL AMOUNT OF EPP</b>		<b>240</b>	

**Annotations of Components in the curriculum**

**1. GENERAL TRAINING CYCLE**

**Compulsory components**

**Physics.** Increased knowledge and understanding of phenomena and laws of nature, reflected in classical and modern physics and related to the use of industrial, technology and everyday life to environmental protection and life safety.

**Higher mathematics.** Formation of theoretical knowledge and practical skills on the basis of mathematical apparatus, the main methods of quantitative measurement change of factors affecting any processes, principles of mathematical statistics used in the planning, organization and management of production and technological processes.

**Vehicles.** Forming students' knowledge in the field of transport, review of the research and development of various types of vehicles. Specifications, parameters and indicators of vehicles, their design features and operation.

**Chemistry.** Submit student basic theoretical issues of physical chemistry and basic concepts of Macromolecular Chemistry.

**Probability and Mathematical Statistics.** Formation of theoretical knowledge and practical skills on the basis of mathematical apparatus of the theory of probability and mathematical statistics, basic methods of quantitative measurement change of factors affecting any processes, principles of mathematical statistics used in the planning, organization and management of production and technological processes.

**Fundamentals of systems theory and control.** Forming students' knowledge of general purposeful methodology, systems theory and systems analysis techniques used in managing organizations and decision-making related to administrative, financial, and manufacturing problems, purposeful systems theory, modeling, and research focused on transportation technology .

### **Compulsory components by decision of the Academic Council of the University**

Annotations of the components: "History of Ukrainian Statehood", "Ethnocultural Studies", "Philosophy", "Ukrainian Language for Professional Purpose", "Foreign Language", "Physical Education", "Labor and Life Safety", "Fundamentals of Legal Culture and Customs Law" see section 2.1.

## **2. SPECIAL (PROFESSIONAL) TRAINING CYCLE**

### **Compulsory components**

**Operations research in transport systems.** Formation of theoretical knowledge and practical skills formalize control problems in transportation systems using specialized optimization methods.

**Basic theory of transport processes and systems.** Formation of the conceptual apparatus systematology, acquiring knowledge about the mathematical foundations of describing transport systems, modeling and analysis of their functioning within the system approach; acquiring the necessary skills application of knowledge to solve practical problems. The subject of discipline is the process of transport for passengers and goods and resources for its operation.

**General course of transport.** Students learn the concepts of "Single transport system", "Single transport network", and acquiring knowledge about the importance of all modes of transport for timely and qualitative satisfaction of the needs of the economy and population in transportation, improving the economic efficiency of the transport system.

**Organization of the road.** Forming students theoretical and clear legal knowledge and skills for surveillance of road transportation of dangerous, oversized and heavy cargo and practical skills to use them in practice SAI; deep understanding of the importance of traffic management and surveillance of roads, flawless performance of official duties, self-help tasks facing the traffic police Internal Affairs of Ukraine, and functions related to the implementation of traffic management services; identifying and documenting crimes related to the maintenance and operation of roads, buildings and road crossings, transportation of dangerous, oversized and heavy cargo.

**Information systems and technology.** Forming students' knowledge of sustainable building modern information systems and technology, and develop skills to create databases using modern database management systems and data banks.

**Operational properties of roads and buildings.** Learn the basics of technology and production organization roads and buildings, structures and products; determine the direction of the production base; teach the technical and economic indicators perform selection flowsheets, raw materials and equipment with the use of operational properties of roads and buildings.

**Technologically transport processes in agricultural production.** Learn the basics of technology and technology-organization of transport processes in agricultural production, to teach the technical and economic indicators to justify the choice to carry out technological schemes of raw materials and equipment.

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**Freight transport.** Forming students' academic and professional expertise in organizing, planning and managing various kinds of cargo transportation. Subject dystsiplyny is a process of cargo units, transportation of goods from shipment to places of consumption and processes to ensure their implementation.

**Interaction of transport.** Study of the main provisions of the complex problems of development and interaction between different modes of transport as a unified system. The subject of discipline are the ways of interaction between different modes of transport in transport nodes. According to this expert in the field of transport technologies should know: bases the development process of delivery, method of transport process operational management, fundamentals of interaction modes of transport, estimate the interaction of transport networks and nodes; be able to: analyze in the transport of intermodal traffic, organize planning and management to determine the costs and benefits to find ways of further development, to determine the characteristics of traffic in mixed traffic, to determine compliance with transportation and processing facilities of interacting modes of transport and to choose the means to harmonize their performance, analyze Technology Combined transport in order to establish areas of use, costs and benefits to find ways of further development, predict traffic development prospects in mixed traffic; have an understanding of the organization of control over the implementation of the process, the organization of monitoring and control and execution of certain operations of the complex as a whole.

**Basics of European standards for road transport.** Study of material on the safety of commercial road transport in Ukraine, compliance of state legislation with the requirements of the European Union and best international experience.

**Technical means of traffic management.** Explore Foundations of placement of road signs, markings use in accordance with road conditions, operation of means of control, road and fence rails devices, materials and equipment for marking.

**Fundamentals of transport economics.** Getting students the knowledge, skills and abilities that allow to structure and solve the economic problems of transport and thus ensure its competitiveness in the transport market.

**Logistics.** Summary course provides students acquisition of theoretical knowledge in management of logistics, means of production and commodity-material stocks transport companies, trade organizations and databases in the marketplace.

**Transport planning of rural areas.** Mastering the basics of designing residential areas of the village, the industrial zone of the village, street and backbone of the village, landscape and recreational areas, rural infrastructure.

**Vehicle safety.** Learn the basics for safe operation and use of vehicles, studying the theoretical foundations of traffic safety on the streets, etc., studies the movement of vehicles.

**Organization of international road transport.** Learn the basics of technology and organization, definitions, basic provisions, state road transport in Europe, the role of the transport factor in the economy of Ukraine, international freight transport in Ukraine, problems of improving the competitiveness of road transport Ukraine, information transport, the general concept of the document.

## **Optional components**

### ***Optional components by specialty***

**Sociology.** Social essence. Formation of human behavior in the process of work activity and place in the system of motivation and social control. The role of the workforce and small group in achieving the goal of production.

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**Philosophy.** The course introduces the system of knowledge from such sections of philosophy as ontology, epistemology (theory of cognition), social philosophy, historical types of philosophy, which reveal the essence of the relation "man - world" in its most basic manifestations. The course is characterized by an outlook orientation, which allows to synthesize the acquired knowledge from professional and humanitarian disciplines into a holistic worldview - the theoretical basis of the university level of training of specialists.

**Passenger traffic.** Formation of knowledge and understandings conceptual foundations of the organization and management of passenger traffic, the acquisition of skills for process control passenger traffic. The subject is discipline techniques and methods of organization of passenger transport.

**Transport Law.** The objective of discipline is legal provisions extrapolation to the field of industrial relations as preparing qualified obtaining them requires the relevant set of legal expertise and practical skills in international and national transport law needed to work on national and international markets of transport services, as well as the formation of his understanding of contemporary issues legal organization of transport, international legal norms and principles governing the relations of the transport market.

**Engineering and computer graphics.** Formation of knowledge on the formation of geometric objects, and perform reading technical drawings, imaging techniques including computer graphics; teach students to geometric modeling of objects and processes to give them the knowledge and skills required to perform and read drawings for various purposes, such as that carried out by hand or computer, and solving for the pictures, drawings and model engineering geometric problems.

**The "machine-biological media"** Provide scientific principles and teach future specialist car transporter synthesis and properties of biological matrix when used in industrial processes transport.

**Technical mechanics.** To deepen students' knowledge of theoretical material on the basic laws of nature on which settlement schemes create needed in transport technologies, but also as a means of education in the future of transport skills for scientific generalizations.

**Knowledge of cargo.** He studies the properties of objects and materials related to the process of transportation.

**Hoisting machinery.** Study structure handling mechanization and automation of agricultural production, methods of calculation and design.

**Lubricants and other operating supplies.** In the study discipline deals with the theory and practice of fuel and lubricants for road transport. The course is designed for students to obtain knowledge on the rational use of fuels, lubricants, technical liquids and non-metallic materials, manufacture of fuels and lubricants, their assortments, properties of qualities as affecting the reliability and efficiency of work of engines units of cars by introducing fuel and lubricants for not petroleum-based.

**Performance Features vehicles.** Consider the basic laws of motion of vehicles, as well as their relationship with the specifications, design parameters and conditions of movement of vehicles.

**Fundamentals of Engineering Management.** Formation of modern management thinking, the basics of system management organizations of any species - adequate decision-making on the future place of work. Forming students-Transport Knowledge of theoretical foundations and practical skills of management and marketing.

**Technology of storage of agricultural products during transportation.** To give students a basic knowledge of the technologies of agricultural products plant and animal origin to the transportation and direct transport various technical means of modern technologies with minimal losses; teach students to find and implement the most effective technology and mechanization of transportation of agricultural products; justify hygiene

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requirements for the quality of raw materials and finished products during transportation of agricultural products.

**Hygiene and features of animal transportation and livestock products.**

Formation of theoretical knowledge among students, on the types of transport for transportation of animals and their products, modern methods and methods of sanitary treatment of transport, packaging, mechanisms and equipment. The discipline combines technological knowledge with the student's sanitary-hygienic norms and processes that are necessary for the cultivation of animals, the production of livestock products, its transportation and sale. Helps to master the regulatory documents and hygiene requirements for the types of vehicles involved in the transportation of animals and livestock products that can be used in practical work.

**Fundamentals of forensics and road accident expertise.** Formation of skills that allow you to make the right choice of methods of simulating the investigation of a crime by a previously developed plot, more rationally determine the sequence of investigative actions, practices of disclosure, investigation and prevention of crimes, the mechanism of the event, the disclosure of internal links and contradictions in the studied phenomena and facts of transport technologies.

**Vehicle Maintenance.** To study the main factors that determine the organization of maintenance and repair of vehicles, economic and geographical characteristics of the city (district), the mode of operation of production units of the enterprise, the choice and adjustment of standards for the design of transport enterprise, the calculation of the production program of the TOR enterprise, the calculation of the production program of maintenance and repair by number of technical actions, calculation of production program of maintenance and repair in units of labor, calculation yrobnychoyi program support work.

**Traffic rules.** The provisions of the investigation and investigation of crimes, the trial of cases, the process of proving, proving in a court case in a traffic accident the establishment of the facts of the past, the information about which get to the pre-investigator and the investigator in the form of information requiring special identification, recording, research and interpretation, expert examination , ensures the establishment of objective truth in the event of a traffic accident.

## 2.9. FACULTY of CONSTRUCTION AND DESIGN

**Dean** – Ph.D. (Technical Sciences), associate professor **Zynoviy Ruzhylo**

Tel.: +38 (044) 527-81-29 E-mail: dekanat\_kd@ukr.net

Location: building № 11, room 305

The faculty organizes and coordinates Bachelor training in the following specialties:

### ***133 Sectoral engineerin***

Educational and professional program "**Sectoral engineerin**"

The guarantor of the program is Doctor of Technical Sciences, Professor Vyacheslav Sergeevich Loveikin

Tel.: (044) 527-87-34, E-mail: machinebuild\_centre@twin.nauu.kiev.ua

Graduating departments:

Constructing of Machines and equipment

Tel.: +38 (044) 527-87-34, E-mail: machinebuild\_centre@twin.nauu.kiev.ua

Head of department – Doctor of Technical Sciences, professor Vyacheslav Loveykin

Reliability of Machinery

Tel.: (044) 527-87-71 E-mail: novitskiyAV@ukr.net

Head of department – Ph.D. (Technical Sciences), associate professor Andriy Novitskiy

Tractors and automobiles and bio energy system

Tel.: +38 (044) 527-88-95 E-mail: [vychuba@ukr.net](mailto:vychuba@ukr.net)

Head of department – Candidate of Technical Sciences, Associate Professor Chuba Vyacheslav Vladimirovich

Mechanics

Tel.: +38 (044) 527-83-25 E-mail: berezovyi@nubip.edu.ua

Head of department – Ph.D. (Technical Sciences), associate professor Mykola Berezovyi

### ***192 Construction and civil engineering***

Educational and professional program "**Construction and Civil Engineering**"

The guarantor of the program - candidate of technical sciences, associate professor Bakulin Evgenyi Anatolyevich

Tel.: (044) 527-87-34, E-mail: machinebuild\_centre@twin.nauu.kiev.ua

Graduating departments:

Tel.: (044) 527-85-78 E-mail: bakulin959@ukr.net

Head of department – Candidate of Technical Sciences, associate professor Evgenyi Anatolyevich Bakulin

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Mechanics

Tel.: +38 (044) 527-83-25 E-mail: [berezovyi@nubip.edu.ua](mailto:berezovyi@nubip.edu.ua)

Head of department – Ph.D. (Technical Sciences), associate professor Mykola  
Berezoyi

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**Bachelor  
field of knowledge "Mechanical engineering"  
in speciality «SECTORAL ENGINEERING»  
Educational and professional program «Sectoral engineering»**

Form of Training:	Licensed number of persons:
– full-time studying	170 students
– part-time studying	120 students
Duration of studying:	
– full-time studying	4 years
– part-time studying	5 years
Credits ECTS	240
Language	Ukrainian, English
Academic degree	Bachelor of Engineering

### Conception of training

Today agroindustrial production requires the presence of multifunction machines and equipment. Such machines can be created only at presence of highly skilled staff – engineers-designers. Training of engineers-designers is based at high level of teaching of fundamental and general technical disciplines, and also knowledge of perspective development of agricultural machines constructions.

### Practical training

During practical training the faculty is oriented on close co-operation and collaboration with educational-experimental enterprises of university, such as: Separated subdivision of NULES of Ukraine “Velykosnytynske Education and Research Farm named after O. Muzychenka”, Separated subdivision of NULES of Ukraine “Agronomic Research Station”, Separated subdivision of NULES of Ukraine “Education and Research Farm “Vorzel”, Separated subdivision of NULES of Ukraine “Boyarka Forestry Research Station”.

### Proposed Topics for Bachelor theses

1. Improvement of the construction of the tire fitting stand;
2. An improvement of methane-tank construction for the biogas production;
3. Development of machine for trees transplantation;
4. Development of turn mechanism of stationary wrecker crane;
5. An improvement of device of sprinkler of the field cultures for liquid mineral fertilizers application.

**Academic rights of Graduates:** graduates can apply for Master’s Degree Specialties and Educational (Educational-professional or Educational-scientific) programs specified in Table 1.2 Section 1.3 this Catalog.

### Employment of Graduates

The enterprises of the special purpose of specialist training and bases of practical studying are offered for further employment or at leading enterprises of agroindustrial and nature protection industries of economy of Ukraine.

**Bachelor`s Program and Curriculum  
in Specialty «Sectoral engineerin»  
Educational and professional program «Sectoral engineerin»**

Код н/д	Components of the educational-professional program (academic disciplines, course projects (works), practices, qualification work)	Number of credits	Form of final control
<b>1. GENERAL TRAINING CYCLE</b>			
<b>Compulsory components of OPP</b>			
CC 1	Higher mathematics	9,0	exam
CC 2	Chemistry	3,0	test
CC 3	Informatics and computer equipment	3,0	test
CC 4	Descriptive geometry	3,0	exam
CC 5	Physics	5,0	exam
<b>Total</b>		<b>23,0</b>	
<b>Compulsory EPP components by decision of the University Academic Council</b>			
OKY 1	Philosophy	3,0	exam
OKY 2	Foreign Language	5,0	test
OKY 3	History of Ukrainian statehood	3,0	exam
OKY 4	Ukrainian for professional purposes	3,0	test
OKY 5	Physical training	0	test
<b>Total</b>		<b>14,0</b>	
<b>2. SPECIAL (PROFESSIONAL) TRAINING CYCLE</b>			
<b>Compulsory components of OPP</b>			
OK 6	Applied mathematics	3,0	test
OK 7	Theoretical mechanics	5,0	exam, test
OK 8	Material sciences	5,0	exam, test
OK 9	Technology of constructing materials	4,0	exam, test
OK 10	Mechanics of materials and constructions	7,0	exam, test
OK 11	Interchangeability, Standardization and technical measuring	5,0	exam, test
OK 12	Theory of mechanisms and machines	8,0	exam, test, KP
OK 13	Engineering and computer graphics	6,0	test
OK 14	Mechanical and technological properties of agricultural materials	3,0	test
OK 15	Parts of machines	7,0	exam, test, KP
OK 16	Machines and equipment for crop production	6,0	exam, test
OK 17	Basis of machines constructions for animal production	6,0	exam, test
OK 18	Machinery and equipment for bioenergetics	3,0	test
OK 19	Hydraulic driving devices of agricultural technics	3,0	exam
OK 20	Heating engineering	3,0	exam
OK 21	Dynamics and durability	3,0	test
OK 22	Professional orientation	3,0	test
OK 23	Technology of mechanical engineering	7,0	exam, test, KP
OK 24	Basis of constructing of mobile power vehicles	7,0	exam, test, KP
OK 25	Lifting and transporting machines	3,0	test
<b>Total</b>		<b>97,0</b>	
<b>Optional components EPP</b>			
<b>Optional components by specialty (block 1)</b>			
ББ 1.7	Patent science and copyright	3,0	test
ББ 1.8	Basis of electrical engineering	3,0	exam
ББ 1.9	Labor protection	4,0	exam
ББ 1.10	Hydraulics	3,0	exam
ББ 1.11	Fundamentals of management, marketing and entrepreneurship	3,0	test
<b>Total</b>		<b>16,0</b>	
<b>Optional components by specialty (block 2)</b>			
<i>2.1. According to the list of the program "Agricultural machinery and equipment. production »(MOB)</i>			
ББ 2.1.1	Technology of animal products production	3,0	test
ББ 2.1.2	Technology of crop products production	3,0	test

**CURRICULA AND PROGRAMS OF BACHELOR DEGREE**

ББ 2.1.3	Fuels, oils and other consumables	4,0	test
ББ 2.1.4	Bioenergy systems in agricultural production	3,0	test
ББ 2.1.5	Theory of cutting, metal-working and instruments	5,0	test
ББ 2.1.6	Design and ergonomics of agricultural machinery	8,0	test
ББ 2.1.7	Modeling machines and aggregates	6,0	test
ББ 2.1.8	Tillage mechanics	3,0	test
ББ 2.1.9	Reliability of agricultural technics	6,0	exam, test
ББ 2.1.10	Fundamentals of machine construction	12,0	exam, test, KP
ББ 2.1.11	Economic effectiveness of design solutions	3,0	test
ББ 2.1.12	Fundamentals of equipment management	3,0	test
<b>Total</b>		<b>59,0</b>	
<i>1.2. Specialization «Equipment of forest complex» (OLK)</i>			
ББ 2.2.1	Forest crops	3,0	test
ББ 2.2.2	Machines and equipment for forestry	8,0	exam, test
ББ 2.2.3	Theory of cutting, woodworking machine-tools and equipment	6,0	test
ББ 2.2.4	Fuels, oils and other consumables	4,0	test
ББ 2.2.5	Woods cutting and transporting	3,0	test
ББ 2.2.6	Designing of machines for forestry	3,0	test
ББ 2.2.7	Woodworking technology	4,0	test
ББ 2.2.8	Standardization and certification of machines	3,0	test
ББ 2.2.9	Basics of technology management	4,0	test
ББ 2.2.10	Constructing of machines for forestry	9,0	exam, test, KP
ББ 2.2.11	Economic efficiency of construction solutions	3,0	test
ББ 2.2.12	Reliability equipment of forest complex	5,0	exam, test
ББ 2.2.13	Technical maintenance of machines and equipment of forest complex	4,0	test
<b>Total</b>		<b>59,0</b>	
<i>1.3. Specialization "Robotics and robotic systems and complexes" (PCK)</i>			
ББ 2.3.1	Dynamics of robots, manipulators and UAVs	3,0	test
ББ 2.3.2	Mobile platforms and robot drives	5,0	test
ББ 2.3.3	Fuels, oils and other consumables	4,0	test
ББ 2.3.4	Touch devices of robots	3,0	test
ББ 2.3.5	Robot control systems and UAVs	3,0	test
ББ 2.3.6	Optimization of robot modes and UAVs	8,0	test
ББ 2.3.7	Operating systems and programming languages for robots and UAVs	6,0	test
ББ 2.3.8	Mechatronic systems of robots and UAVs	3,0	test
ББ 2.3.9	Reliability of agricultural equipment	6,0	exam, test
ББ 2.3.10	Calculation and construction of robots and manipulators	12,0	exam, test, KP
ББ 2.3.11	Economic efficiency of construction solutions	3,0	test
ББ 2.3.12	Fundamentals of equipment management	3,0	test
<b>Total</b>		<b>59,0</b>	
<b>Optional components by Student's Choice</b>			
ББС 1	Discipline 1	3,0	exam
ББС 2	Discipline 2	3,0	exam
<b>Total</b>		<b>6,0</b>	
<b>3. OTHER TYPES OF TRAINING</b>			
ББ 3.1	Practical training	18,0	test
ББ 3.2	Driver training	3,0	test
ББ 3.3	Preparation and defense of bachelor's thesis	6,0	
ББ 3.4	State attestation	1,0	
<b>Total</b>		<b>28,0</b>	
<b>TOTAL VOLUME OF THE EDUCATIONAL PROFESSIONAL PROGRAM</b>			
<b>МОБ</b>			<b>240</b>
<b>ОЛК</b>			<b>240</b>
<b>РРСК</b>			<b>240</b>

## Annotations of Components in the curriculum

### 1. GENERAL TRAINING CYCLE

#### Compulsory components

**Higher mathematics.** (The study of this discipline allows learning to use mathematical (analytical) methods for description and study of physical, technical, technological and other processes. Knowledge of the systems of linear equalizations, basis of vector algebra, equalizations of line and plane in space, basic formulas and theorems of differential and integral calculation, substantive provisions and methods of decisions of differential equalizations will allow to decide and analyse the systems of linear equalizations, decide the tasks of analytical geometry and mathematical analysis, apply knowledge in practice, ground decision, conduct the analysis of decision, apply mathematical methods to the decision of the applied technical and technological tasks.)

**Chemistry.** (Fundamental discipline «chemistry» provides students of knowledge about composition, structure, properties and transformations of matters, which are basis of construction materials, and knowledge of terms of protracted, saving, ecologically – safe exploitation of machines and systems of natural resources using. The study of chemistry provides a basis for training students professionally – the oriented and special disciplines and it promotes forming of modern world view of a man.)

**Computer science and equipment.** (The informative processes, methods and facilities of getting, transformation, transmission, storage and usage of information, application of information technologies are studied in the discipline course. The purpose of discipline study is forming of modern level of informative and computer culture, grant to the students and fixing by them knowledge of basis of computer science and computing engineering, acquisition of practical skills of work on a modern computer technique, and also ability to apply them during work with the modern computer systems of treatment of information.)

**Descriptive geometry.** (Discipline studies dimensional forms and methods of their image on a plane, examines the methods of construction of images and methods of decision of dimensional tasks by these images. The study of discipline allows developing dimensional thought and capacities for the analysis of geometrical forms, forms skills of construction of volume graphic models, operation by draft as the mean of graphic information transfer. Mastering the knowledge of the course of descriptive geometry provides further study of such disciplines as engineering and computer graphics, parts of mechanisms and machines, theoretical mechanics, etc., helps to improve the level of execution of drawings of course and diploma projects.)

**Physics.** (The discipline studies properties of the material world, a variety of physical phenomena, principles of co-operation and motion of material bodies, and also processes and mechanisms for their control, called to form students' analytical and modelling thinking. A student acquires physical knowledge during the process of mastering of physical concepts, principles, and theories for the further learning general technical disciplines.)

#### Compulsory components by decision of the Academic Council of the University

Annotations of components: History of Ukrainian Statehood, Philosophy, Ukrainian language for professional purposes, Foreign language, Physical education see Section 2.1.

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## 2. SPECIAL (PROFESSIONAL) TRAINING CYCLE

### Compulsory components

**Applied mathematics.** (The applied mathematics which is based on a theory of chances and mathematical statistics is the important constituent of mathematical education of future specialists. The purpose of discipline – to teach future specialists bases of modern mathematical tools, necessary for an analysis and decision of practical tasks, to assist in forming the students' skills in mathematical design and using of mathematical methods to solve applied tasks. The study of the discipline will allow students to compile the simplest models of real objects and processes and conduct their qualitative analysis, choose research methods of complex models and apply them to practical problems, process experimental data using mathematical statistics.)

**Theoretical mechanics.** (The discipline studies general acts and principles of mechanical motion, equilibrium of material objects, mechanical systems and existent methods and facilities of solving tasks, drafting of calculation models of the real technical objects.)

**Material science.** (This course, which studies the laws that determine the structure and properties of materials depending on their composition and processing conditions, is one of the main in the cycle of disciplines that determine the training of engineers. Progress in the field of mechanical engineering is closely related to the economy of materials, reducing the weight of machines and devices, improving the accuracy, reliability and efficiency of mechanisms and devices, with the creation and development of new, most economical materials with a variety of mechanical and physicochemical properties. In this regard, the study of the discipline will allow to get acquainted with modern highly effective methods of increasing strength properties, corrosion resistance, heat and cold resistant alloys, effective methods of surface treatment of products to significantly increase wear and corrosion resistance, development and use of new polymeric and composite materials. a given set of properties.)

**Technology of construction materials.** (This discipline studies basic information about the methods of receipt of construction materials and methods of its physical and chemical, technological and mechanical treatment with the purpose of providing of necessary properties and forming of wares in the proper constructions of machines and mechanisms.)

**Mechanics of materials and constructions.** (The discipline studies the methods of engineering calculations of machine details, elements of construction on durability, inflexibility and firmness in the conditions of action of the static and dynamic loadings recognition change of temperature and processes, related to duration of exploitation at simultaneous reliability, longevity and economy.)

**Interchangeability, standardization and technical measuring.** (The discipline purpose is studying principles of organization of machine-building production on the basis of interchangeability, acquaintance with the operating norms of precision and quality, capture methods and methods of their control, studying bases of standardization and quality management of products in machine industry. Mastering of discipline will allow to the future engineers to provide the necessary level of planning of machines and technological rigging due to using of decisions which are based on principles of interchangeability and standardization.)

**Theory of mechanisms and machines.** (The discipline studies bases of research, calculation and planning of the mechanical systems, devices, mechanisms and equipment in the conditions of editing, exploitation and unitization of working machines in modern agricultural building, and also general methods of structural, kinematics and dynamic analysis and synthesis of mechanisms and machines of agricultural technique.)

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**Engineering and computer graphic arts.** (The questions of imaging by projection method of technical wares, units and details, methods of details connection; the rules of presentation of information of their making technology and application conditions are studied in discipline. The studying of standards, related to the drafts of details, is carried out in the process of implementation of graphic tasks. Complete mastery of engineering and computer graphics as a means of expression of technical thought is achieved as a result of mastering the whole set of technical disciplines of the relevant profile. The purpose of studying the discipline is to form in the student practical skills of construction at a high technical level of machine-building drawings with the use of educational and methodical and reference literature and computer technology.)

**Mechanical and technological properties of agricultural materials.** (It is complex discipline which studies physical and mechanical properties of such agricultural materials, as soil, fertilizers and material of hypogenous taking into account the changes of temperature and humidity.)

**Parts of machines.** (It is base technical discipline which studies methods, rules and norms of calculation and constructing of typical details and frame-clamping units of machines. Bases of calculations are also studied on durability and inflexibility, methods of constructing, rational choice of materials and methods of connection of details. The task of course is to get skills of calculation and constructing of machine details and units, to master methods, rule and planning norms, which are provided of making the reliable and economic constructions, and also development engineering thinking of students.)

**Machines and equipment for crop production.** (The constructions of machines, types and structure of their workings organs and occasions, process of co-operation of worker of parts, are examined with the processed material and environment, and also technological adjusting and classification of machines and equipment which is used in a plant-grower.)

**Basis of machines constructions for animal production.** (It is complex discipline which studies the value of mechanization of technological processes of production of goods of stock-raising and zootechnic requirements to the processes and hardware, that they are executed. The question of structure, principle of action, classification and estimation, and also basis of constructing and calculation of machines and equipment of stock-raising enterprises is considered.)

**Machinery and equipment for bioenergetics.** (The discipline involves studying the theoretical principles and methods of machines and equipment parameters calculation for the production of renewable energy from biomass, the acquisition of practical skills for working processes and adjustment of engineering tools for making and effective using of biofuels in agricultural sector.)

**Hydraulic driving devices of agricultural technicians.** (Discipline studies structures, theories of workings processes and rules of exploitation of hydraulic driving devices, which are needed for the high-efficiency use of agricultural technique, high-quality service and repair, purposeful perfection. The study of construction, principle of action, adjusting, hydrokinetics, characteristics of speed and power of hydraulic driving devices used in agricultural machines and bases of theory is foreseen to the calculation of hydraulic devices.)

**Heating engineering.** (The discipline studies features and technical aspects of transformation of natural energy resources (organic and nuclear fuel, warmth of bowels of the earth, energy of sun, water and wind and others) in the directly in-use forms of energy (warmth, work and their derivatives, for example – electric energy). Discipline includes technical thermodynamics, theory of heating- and mass-transfer, examines heat-engines and refrigeration devices, compressors and ventilators, fuel burning equipment and caldron settings.)

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**Dynamics and durability.** (It is complex discipline, which studies the methods of engineering calculations of details of machines, elements of construction on durability, inflexibility and firmness at additional influence of forces of inertia, which arise up at the dynamic loading and swaying processes. The separate section of this discipline is devoted to the methods of engineering calculations of details of machines and elements of construction on durability, inflexibility and firmness at presence of cracks.)

**Professional orientation.** (The course reveals the essence of training specialists in the speciality "Mechanical engineering» develops an understanding of the specifics of the field of "Machinery & materials", acquaints students with their capabilities in order to offer them to choose one of the most appropriate professions taking into account the needs of production.)

**Technology of mechanical engineering.** (The discipline studies the methods of obtaining and processing of blanks to ensure high quality of products, economy of materials, high productivity. It includes the development of technological processes (routing and operating) the receipt and processing of work pieces, that make various of structural materials, their technical and economic characteristics, the study of the schematics of equipment and tooling, design shops of machine-building plants issues manufacturability of designs blanks, parts, machines and equipment, taking into account methods of their obtaining, technological methods of increase of reliability of machine.)

**Basis of constructing of mobile power tools.** (The discipline gives to the future engineers necessary knowledge from bases of theory and methods of substantiation of parameters and indicators of tractors and cars and their engines, definition of dependence of their performance against speed and power indicators, construction and working conditions, methods and equipment for testing of tractors and automobiles, basic tendencies and directions of their improvement, acquires the skills to formulate requirements to the properties and operating characteristics of tractors and cars depending on the operation conditions, perform analytical substantiation of their main parameters, taking into account the perform analytical substantiation of their main parameters under particular conditions of agricultural production and the achieved level of autotractor industry, independently solve the problems of the heat and dynamic calculation of automotive engines and traction and dynamic calculations of tractors and cars, perform preparatory work and test tractors and cars, non-motor and motor tests of tractor engines, at the modern scientific and methodological level to process experimental data and analyze the results, independently master tractors and cars of new designs of their mechanisms, components, units and systems and analyze them operational qualities to ensure rational use.)

**Lifting and transporting machines.** (At the study of discipline the structure of different types of a lifting-transport equipment, methods of planning of modern facilities of mechanization and automation of constituent and movable operations, is examined, in a that number conveyers, conveyers, robots, manipulators, and also facilities of small mechanization, method of calculation, constructing, planning and exploitation of machines and mechanisms which execute lifting-transport operations.)

### **Optional components of OPP**

#### ***Optional components by specialty (block 1)***

**Patenting and copyright.** The study of this discipline allows future specialists in the field of agricultural engineering to obtain the necessary knowledge of the system of intellectual property protection, the ability to apply in practice methods of legal protection of scientific and technical achievements and creative products.

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**General electrical engineering** (This discipline is the theoretical basis on which the study of the following electrical engineering disciplines is based. The main task of the course is to study the basics of power supply, electric drive and electrical safety. As a result of studying the discipline the student learns the basic laws used in the analysis of electrical circuits, basic methods of analysis of electrical circuits, masters the general method of constructing circuit and mathematical models of electrical circuits, is able to analyze typical electrical circuits under typical external influences, has practical analytical, numerical and numerical skills. research of the basic processes taking place in electrotechnical circuits, knows rules and schemes of power supply, the electric drive and electric safety.)

**Life Safety** (The discipline covers legal and organizational issues of labor protection, hazardous and harmful factors of the working environment and methods of their reduction to standard values, the basics of fire safety and electrical safety in order to prevent accidents and occupational diseases at work. The purpose of the discipline is theoretical and practical training of specialists, who on the basis of the knowledge were able to develop and implement safe working conditions at the working places of agro-industrial complex employees, to design technical asobi safety. The objective of the discipline is to train future specialists capable of implementing labor protection solutions aimed at improving working conditions, reducing injuries and occupational diseases in the field of agro-industrial complex, and increasing efficiency.)

**Hydraulics.** (In the cycle of disciplines the basic physical and mechanical properties of liquids, substantive provisions of hydrostatics, hydrodynamics are marked. The existing structures of hydraulic machines, basis of hydraulic driving devices are studied. The planning and calculation of the agricultural water systems are conducted.)

**Fundamentals of management, marketing and entrepreneurship.** Formation of the ability to solve professional issues; formation of practical skills in organizational design, financial resources management, etc.; to teach to make appropriate and reasonable managerial decisions, to analyze the generalizing economic performance of a construction organization, to defend their point of view adopted decisions, to lead a discussion. Formation of legislative base for creation and running own business.

### ***Optional components by specialty (block 2)***

#### ***Specialization "Machinery and equipment agricultural production»***

**Technology of animal products production.** (Discipline is included in the block of disciplines after the choice of student, which form a bachelor, capable on the basis of knowledge of biological features of agricultural animals and progressive technologies of purveyance of forage and technologies of production of milk, beef, pork, products of the pig breeding and sheep breeding to get the products of high quality with the least charges of forage and labour. In discipline the biological features of agricultural animals, progressive technologies of purveyance of forage and technology of production of different types of products of stock-raising, zootechnic requirements, are examined to the machines, equipment and facilities of mechanization and automation on stock-raising farms and complexes.)

**Technology of crop products production.** (A course is occupied by a central place in agricultural production and built on principles (principles) of biological science, which studies the features of development of plants, their requirement to the terms of environment. On principle it is important to capture the complex of modern knowledge and skills, which allow to promote the productivity of agricultural cultures, improve quality and stored of products on the basis of knowledge of biology of cultures in relation to concrete

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ground-climatic terms, a future engineer, and also effectively to use ground-climatic resources and guard of environment.)

**Design and ergonomics of agricultural machines.**(In an educational course disciplines are examined substantive provisions of design are sciences about the artistic constructing of technique, his category, their property and quality. Facilities and methods of prosecution are studied of form, composition of machine; skills of development of characters of functions of control and management are obtained; students meet with the right of ownership on developments in industry of design and bases of its defence.The main points of ergonomics are considered – scientific and practical discipline, which studies activity of man, instruments and facilities of its activity, environment in the process of their co-operating with the purpose of providing of efficiency, safety and comfort of vital functions of man. Influence of psychical tension, fatigue, emotional factors and personal qualities of man is investigated on efficiency of labour activity. The features of perception, attention, memory, thought of man are studied, it agile vehicle, possibility of perception and redoing of information.)

**Modeling of machines and units** (The bases of modeling of agricultural processes on the computer are considered, the basic concepts and definitions are established, methods of application of the automated systems at management of processes in manufacture are investigated..)

**Fuel, oil and other consumables.** (The discipline studies theoretical and practical questions of fuel properties, lubricants and other consumable (paints, adhesives, interior materials and the impact of the quality of technical and economic indicators of machines and equipment of agricultural and forestry production; develops the skills of definition of the basic indicators of the quality and selection of suitable varieties and brands of petroleum products, special liquids and other consumables)

**Tillage mechanics.** (The methods of formalization of agricultural materials and environments and methods of construction of equalizations which describe co-operating with them of workings organs of machines of Agrarian complex with the purpose of determination of kinematics and dynamic parameters of workings organs are examined.)

**Theory of cutting, metal-working and instruments.** (The discipline studies a concept and deadlines for processing by cutting, physics and mechanics processes, construction and geometry of cutting tools and materials for their manufacture, construction of metal-cutting machines and accessories to them, and the types that do not run on them with a substantiation of rational cutting modes, discusses the physical and chemical processing of machine parts.)

**Bioenergy systems in agricultural production** (Discipline examines concepts and terms regarding bioenergy systems that are used in animal husbandry, the structure of bioenergy systems, basic principles of their operation, the theoretical basis of calculation of their structural and energy parameters, technical and economic indicators of the use of bioenergy systems.)

**Reliability of agricultural machines** (This is a complex discipline that studies: timing and definition of reliability; engineering and physical bases of reliability of agricultural machines; mathematical theory of reliability; testing of machines for reliability; ways to ensure the reliability of agricultural machinery. The purpose of the discipline - to teach future professionals to ensure the reliability of agricultural machinery for a specified time, provided the optimal cost of material and labor resources for their design, production, operation, maintenance and repair.)

**Constructing of agricultural machines.** (The discipline foresees the study of theoretical bases and basic methods of planning of competitive resource saving of agricultural machines, technological equipment and mechanized processes. A receipt of skills students is from the calculations of machines with the use of modern methods and

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computer programs, that will allow promote the technical and aesthetically beautiful level of machines, reduce their prime price.)

**Economic effectiveness of design solutions** (Studying the economic aspects of making design decisions in order to maximize the benefits. Auditory and practical classes on discipline envisage students mastering the economic foundations of production in agro-industrial enterprises.)

**Fundamentals of technics control.** (The discipline deals with the study of operating control of tractors and self-propelled agricultural purpose facilities, preparing them for the work and performance of agricultural machinery. Provided technical design capabilities tractors and units can be fully applied only at excellent learning and rational use of qualified control techniques in different engines conditions, which requires good knowledge of the structure and interaction mechanisms and systems of machines, rules of their maintenance and operation.)

### ***Specialization „Equipment of forest complex”***

**Forest crops** (Educational discipline examines the wide circle of questions, which touch ecology, biology and technology of artificial forest renewing and propagation. Taking into account that most specialists of forestry industry work with artificially renewed forests, the primary objective of discipline is directed to study of new technologies of forest propagation considering the regional and local typical conditions of plantings. The main objectives of the discipline are to form students' skills in construction and implementing in the production of measures for expanded reforestation, taking into account modern requirements for growing forest crops and solving other problems related to silvicultural production..)

**Machines and equipment for forestry.** (Educational discipline studies the modern state, problems and prospects of development of engineer for forestry, types of modern tractors, intended for forestry, machines for collection and treatment of seed, machine for bringing organic-mineral fertilizers, sowing and forest-planting machines, machines for the deck-houses of care of the forest, for a fight against forest fires, and also machines for uprooting of stumps and export of them from a silvicultural area.)

**Theory of cutting, woodworking machine-tools and equipment.** (The discipline studies a concept and deadlines for processing by cutting, physics and mechanics processes, construction and geometry of cutting tools and materials for their manufacture, construction of woodworking machines and accessories to them, and the types that do not run on them with a substantiation of rational cutting modes, discusses the physical and chemical processing of wood.)

**Fuel, oil and other consumables.** (The discipline studies theoretical and practical questions of fuel properties, lubricants and other consumable (paints, adhesives, interior materials and the impact of the quality of technical and economic indicators of machines and equipment of agricultural and forestry production; develops the skills of definition of the basic indicators of the quality and selection of suitable varieties and brands of petroleum products, special liquids and other consumables.)

**Woods cutting and transporting.** (Educational discipline studies the question of technique and technology of purveyance of wood raw material, his roughing-out and supply to the users, acquaints with the methods of work in forestry at the tree felling of wood, to the effective forms of management of organization of labour at the use of new machines and mechanisms, to the decline of energy consumption and financial resources.)

**Designing of machines for forestry.** (In an educational course disciplines are examined substantive provisions of design are sciences about the artistic constructing of technique, his category, their property and quality. Facilities and methods of prosecution

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are studied of form, composition of machine; skills of development of characters of functions of control and management are obtained; students meet with the right of ownership on developments in industry of design and bases of its defence.)

**Woodworking technology** (The study of the discipline provides future professionals with theoretical and practical knowledge on techniques and technologies of woodworking in the new conditions of technologies for harvesting wood raw materials, its primary processing and supply to consumers.)

**Standardization and certification of machines.** (General principles of standardization, metrology and certification of technique are expounded in discipline. It is reflected accordingly Principles of Ukraine on standardization, metrology and certification and national standards of basis of drafting of normative documents, technical requirements intended for forming, technological processes on making of technique and equipment, maps of control of their quality and standards of enterprise, the rules of the metrology providing of processes of estimation of quality of technique and their certification are resulted.)

**Basics of technology management** (The discipline deals with the issues of methods of studying the management bodies of self-propelled forest products, their preparation for work and work with forest machinery. Technical possibilities of tractors and aggregates provided by the design can be fully used only at excellent mastering and rational application of qualification methods of machine control in different conditions, for which it is necessary to know well the structure and interaction of mechanisms and systems of machines, rules of their service and operation.)

**Constructing of machines for forestry.** (The method of constructing of machines for forestry is examined, analytical pre-conditions of conformities to principle of workings processes of knots and units are grounded, and also dependences are set for determination of rational parameters and modes of operations of machines.)

**Economic efficiency of construction solutions.**(Technological processes of engineering tools intervention in the structure of living matter to change its properties in usefulness of the person are studied. Lectures and workshops on the discipline provide for students assimilating the basics of biofuel production process engineering in terms of agricultural enterprises.)

**Reliability equipment of forest complex.** (It is complex discipline which studies: terms and determinations of reliability; engineering and physical bases of reliability of equipment of forest complex; mathematical theory of reliability; there is a reliability test of machines; methods of providing of reliability of equipment of forest complex. Purpose of discipline – to teach future specialists to provide reliability of equipment of forest complex during the set time on condition of optimum charges of financial and labour resources on their planning, production, exploitation, technical service and repair.)

**Technical maintenance of machines and equipment of forest complex.** (Discipline is the special scientifically applied to the cycle of professional preparation of specialist from constructing and design of machines. In discipline general principles of maintenance of the in good condition state and operability technique for users with the use of the preventive-maintenance system of technical service, basic principles of accompaniment of the constructed and made machines are expounded regulated normatively technical by a document on exploitation of machines, technical service, repair, by requirements to fuels and oils materials, by a nomenclature on made spare parts (numeration and authentication).)

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***Specialization "Robotics and robotic systems and complexes"*****Robot and UAV control systems**

The course focuses on the application of control theory in robotics. Topics to be covered include: an overview of classical and modern methods of control system development, such as PID control, status feedback, optimal control, adaptive control and hybrid system control; mobile robot control; controlling of with robot manipulators.

**Robot touch devices**

Learn the structure and operation of digital and analogue sensors. Special attention is paid to the methods of signal processing.

**Optimization of robot motion modes and UAV**

This course introduces you to modern methods of mode optimization. Setting and isolating optimization tasks on dynamic robot models. The influence of terminal and integral optimization criteria on the robots' movement is studied. On physical models of robots students implement the obtained optimal modes of motion.

**Operating systems and robot programming languages and UAV**

Discipline covers the problem of achieving the correct synchronization of robotic systems, which means ensuring that the system responds to real-time requirements. The course teaches how to plan real-time systems in theory using established mathematical methods and how to implement them in practice using common planning methods. Students will also learn how to program a C system using the FreeRTOS real-time core. It also examines future real-time systems, namely multi-core real-time systems

**Fuel, oil and other consumables.**

(The discipline studies theoretical and practical questions of fuel properties, lubricants and other consumable (paints, adhesives, interior materials and the impact of the quality of technical and economic indicators of machines and equipment of agricultural and forestry production; develops the skills of definition of the basic indicators of the quality and selection of suitable varieties and brands of petroleum products, special liquids and other consumables.)

**Robot and UAV mechatronic systems**

The course is devoted to the presentation of the general initial basics of robotics for junior students as an introduction to their future specialty. The course covers a wide range of issues: from the classification of industrial robots, control systems, kinematics, means of adaptation of robots to robotic technological complexes used in various industries.

**Mobile platforms and robot drives**

The task of studying the discipline is to present the basic concepts and algorithms necessary for the development of mobile robots operating autonomously in complex environments. The main emphasis is on mobile and kinematic mobile work, perception of the environment, localization and cartography on the basis of probability map and motion planning. Lectures and exercises in this course include several types of robots, such as wheeled and tracked i-tracks and drones.

**Robot, manipulator and UAV dynamics**

In this course, students will learn how to develop dynamic models of robotic manipulators, mobile robots and drones (quadrotors). We will look at robot dynamics, path generation, motion planning and non-linear control, and develop real-time planning and control software modules for robotic systems. This course provides basic theoretical tools and allows you to develop control algorithms.

**Reliability of robotic systems**

It is a complex discipline studying: terms and definitions of reliability; engineering and physical foundations of reliability of robotic systems; mathematical theory of reliability; testing of machines for reliability; ways to ensure reliability of equipment. The purpose of the discipline is to teach future specialists to ensure the reliability of robotic systems within

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the established time at the optimal cost of material and labor resources for their design, production, operation, maintenance and repair.

**Calculation and construction of robots and manipulators**

Modern computer-aided robot design systems are being studied. Modern methods of calculation and optimization of robot construction. Methods of additive manufacturing of robot constructions

**Economic efficiency of construction solutions**

The economic aspects of making construction decisions are studied in order to obtain maximum benefit. Auditorium and practical classes in the discipline provide for students to obtain the economic basics of production in the conditions of agro-industrial enterprises.

**Basics of technology management**

The discipline deals with the issues of methods of studying the controls of self-propelled agricultural machinery, robotic systems and complexes, their preparation for work and work with machinery. Technical capabilities of tractors and aggregates provided by the design can be fully used only at excellent assimilation and rational application of qualifying methods of machine control in various conditions, for which it is necessary to know well the structure and interaction of mechanisms and systems of machines, rules of their service and operation.

**Bachelor**  
**field of knowledge "Architecture and Construction"**  
**in speciality «CONSTRUCTION AND CIVIL ENGINEERING»**  
**Educational and professional program "Construction and Civil Engineering"**

Forms of Learning, licensed volume:	
– fixed-time	50
– correspondence	50
Terms of Learning	4 years
Tests ECTS	240 ECTS
Language of instruction	Ukrainian
Qualification graduate	Bachelor (Technical) in Building

### **Concept of training**

Knowledge, skills and professional skills of new generation in construction of agricultural and environmental systems based on modern standards of education adapted to requirements of the world's best educational programs for public and private sectors in Ukraine.

### **Practical training**

Passing study (trial, geodesic) and industrial (vocational, technical, industrial enterprises) practices recommended by 52 companies, including strategic partners: John Deere Ukraine, Ukraine Amaco; Knauf Ukraine, Astra.

### **Proposed Topics for Bachelor theses**

1. Project of construction of rural, agricultural and environmental systems.
2. The project of building fortifications agricultural and environmental systems.
3. Development of technology for building production facilities in rural areas, agriculture and environmental protection facilities.
4. Development of technologies for inspection and testing of buildings in rural areas, agriculture and environmental protection facilities.
5. Evaluation of properties of metals and materials in the construction of rural, agricultural and environmental systems.
6. The development process and rationale of building machines for specific production conditions.
7. The development process and rationale mechatronic systems construction equipment.

**Academic rights of Graduates:** graduates can apply for Master's Degree Specialties and Educational (Educational-professional or Educational-scientific) programs specified in Table 1.2 Section 1.3 this Catalog.

### **Employment of Graduates**

Receives basic higher education and can work in positions that correspond to 3rd and 4th levels of qualification according to state of professions: head (another supervisor) district (division) in construction, Head of Logistics, Head of CAD managers (stewards) in construction, engineer in architecture and engineering, head of construction team, squad chief mechanical engineer of use of construction equipment, technical service engineer, civil engineer, building inspector and fire safety.

**Bachelor`s Program and Curriculum  
in Specialty "Construction and civil engineering"  
Educational and professional program "Construction and Civil Engineering"**

Code n/a	Components of the educational and professional program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits ECTS	The final control
<b>1. GENERAL TRAINING CYCLE</b>			
<b>Compulsory components EPP</b>			
OK 1	Physics	7,0	exam , test
OK 2	Descriptive geometry and engineering graphics	7,0	exam , test
OK 3	Higher Mathematics	10,0	exam
OK 4	Chemistry	3,0	test
<b>Total</b>		<b>27,0</b>	
<b>Compulsory components EPP by decision of the Academic Council of the University</b>			
OKY 1	History of Ukrainian statehood	4,0	exam
OKY 2	Ukrainian language (for professional purposes)	4,0	exam
OKY 3	Foreign language (for professional purposes)	6,0	test
OKY 4	Labour protection	4,0	test
OKY 5	History and philosophy of construction	3,0	test
OKY 6	Ethnocultural	4,0	exam
OKY 7	Introduction to the profession	4,0	exam
OKY 8	Physical education	0	test
<b>Total</b>		<b>29,0</b>	
<b>2. SPECIAL (PROFESSIONAL) TRAINING CYCLE</b>			
<b>Compulsory components EPP</b>			
OK 5	Theory of mechanisms and machines	4,0	exam , test
OK 6	Theoretical Mechanics	6,0	exam , test
OK 7	Mechanics of materials and structures	6,0	exam , test
OK 8	Construction technique	4,0	test
OK 9	Architecture buildings	8,0	exam , test , KP
OK 10	Structural Mechanics	6,0	exam , test
OK 11	Bases and foundations	7,0	exam ., test , KP
OK 12	Fundamentals of design and construction business	4,0	exam
OK 13	Water supply and sanitation	3,0	test
OK 14	Construction technology	6,0	exam , test , KP
OK 15	Metal structures	6,0	exam , test , KP
OK 16	Reliability construction equipment	3,0	test
OK 17	Heat and ventilation	4,0	exam
OK 18	Building construction	4,0	exam
OK 19	Reinforced concrete and stone structures	7,0	exam , test , KP
OK 20	The production base construction	4,0	test
OK 21	Organization of construction	6,0	exam , test , KP
OK 22	Engineering calculation software	5,0	exam
<b>Total</b>		<b>93,0</b>	
<b>Optional components EPP</b>			
<b>Optional components by specialty (block 1)</b>			
ББ 1.1	Fundamentals of management, marketing and entrepreneurship	4,0	test
ББ 1.2	Science of law	3,0	exam
<b>Total</b>		<b>7,0</b>	
<b>Optional components by specialty (block 2)</b>			
ББ 2.2	Engineering geodesy (general rate)	4,0	exam
ББ 2.3	Engineering geology soil mechanics and foundations	3,0	test
ББ 2.4	Construction materials science and welding in	5,0	exam , test

**CURRICULA AND PROGRAMS OF BACHELOR DEGREE**

	construction		
B5 2.5	Construction economy	3,0	test
B5 2.6	Inspection and testing of buildings	3,0	test
B5 2.7	Design of technical service enterprises	3,0	test
B5 2.8	Seismology	3,0	test
B5 2.9	Fundamentals of computer-aided design in construction	3,0	exam , test
B5 2.10	Technical maintenance and repair of buildings	3,0	test
B5 2.11	Modern building materials	3,0	exam
B5 2.12	Constructions of wood and plastic	3,0	test
B5 2.13	Planning of cities and settlements	3,0	exam
B5 2.14	Metrology and standardization	3,0	exam
B5 2.15	Electrical engineering in construction	3,0	test
B5 2.16	Computers and computer technology	5,0	test
B5 2.17	Design of livestock enterprises	3,0	test
<b>Total</b>		<b>53,0</b>	
<b><i>Optional components by Student's Choice</i></b>			
B5C 1	Discipline 1	3,0	
B5C 2	Discipline 2	3,0	
<b>Total</b>		<b>6,0</b>	
<b>3. OTHER TYPES OF TRAINING</b>			
OK 3.1	Internship	18	test
OK 3.2	Preparation and defense of bachelor's thesis	6	exam
OK 3.3	State attestation	1	
Total		25,0	
<b>TOTAL VOLUME OF OPP</b>		<b>240</b>	

## Annotations of Components in the curriculum

### 1. GENERAL TRAINING CYCLE

#### Compulsory components

**Physics.** (The discipline studies properties of the material world, a variety of physical phenomena, principles of co-operation and motion of material bodies, and also processes and mechanisms for their control, called to form students' analytical and modelling thinking. A student acquires physical knowledge during the process of mastering of physical concepts, principles, and theories for the further learning general technical disciplines.)

**Descriptive geometry.** (Discipline studies dimensional forms and methods of their image on a plane, examines the methods of construction of images and methods of decision of dimensional tasks by these images. The study of discipline allows developing dimensional thought and capacities for the analysis of geometrical forms, forms skills of construction of volume graphic models, operation by draft as the mean of graphic information transfer. Mastering knowledge of descriptive geometry provides further study of such disciplines as engineering and computer graphics, machine parts and machines,

theoretical mechanics, etc., helps to increase the level of execution of drawings of course and diploma projects.)

**Higher mathematics.** (The study of this discipline allows learning to use mathematical (analytical) methods for description and study of physical, technical, technological and other processes. Knowledge of the systems of linear equalizations, basis of vector algebra, equalizations of line and plane in space, basic formulas and theorems of differential and integral calculation, substantive provisions and methods of decisions of differential equalizations will allow to decide and analyse the systems of linear equalizations, decide the tasks of analytical geometry and mathematical analysis, apply knowledge in practice, ground decision, conduct the analysis of decision, apply mathematical methods to the decision of the applied technical and technological tasks.)

**Chemistry.** (Fundamental discipline «chemistry» provides students of knowledge about composition, structure, properties and transformations of matters, which are basis of construction materials, and knowledge of terms of protracted, saving, ecologically – safe exploitation of machines and systems of natural resources using. The study of chemistry provides a basis for training students professionally – the oriented and special disciplines and it promotes forming of modern world view of a man.)

### **Compulsory components by decision of the Academic Council of the University**

Annotations of components: Ethnocultural, Philosophy, Ukrainian language for professional purposes, Foreign language, Physical education see Section 2.1.

**History and philosophy of construction.** The discipline ensures the perception of world architectural and construction trends and their development with the historical formation of society.

**Introduction to the profession.** Introducing students to the basics of building as complex production process. Trace the entire construction process from design work linked to the area, construction management, training and provision of necessary equipment, in fact the process of construction of modern technologies, ordering the construction area, communication software structure and more.

## **2. SPECIAL (PROFESSIONAL) TRAINING CYCLE**

### **Compulsory components**

**Theory of mechanisms and machines.** (The discipline studies bases of research, calculation and planning of the mechanical systems, devices, mechanisms and equipment in the conditions of editing, exploitation and unitization of working machines in modern agricultural building, and also general methods of structural, kinematics and dynamic analysis and synthesis of mechanisms and machines of agricultural technique.)

**Theoretical mechanics.** (The discipline studies general acts and principles of mechanical motion, equilibrium of material objects, mechanical systems and existent methods and facilities of solving tasks, drafting of calculation models of the real technical objects.)

**Mechanics of materials and constructions.** (The discipline studies the methods of engineering calculations of machine details, elements of construction on durability, inflexibility and firmness in the conditions of action of the static and dynamic loadings recognition change of temperature and processes, related to duration of exploitation at simultaneous reliability, longevity and economy.)

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**Construction technique.** (Forming students knowledge of modern construction machinery, equipment and power tool, learning basic types of design solutions and construction machinery and equipment, their use in industry, development of skills of self-selection sets of machines and equipment considering type of work and conditions of use.)

**Architecture of Buildings and Constructions.** (Develop students' creativity, their creative ideas can be realized only in material form in products and structures made of concrete materials to teach properly select materials for buildings on which building material is made in tree or rock, metal or concrete in monolith, depends on architectural appearance and design solution and cost, terms and conditions for use of building.)

**Structural Mechanics.** (Forming students knowledge of structural mechanics, kinematics analysis systems statically definable structure, movable load calculations, general theorem on elastic system, statically undetectable system, spatial rod systems, numerical methods for calculation of elastic metal structures; terms in calculation of strength of metal construction machinery, accounts for strength of metal structures of road vehicles beam type; calculations for strength metal frame type structures, lattice calculations of metal structures, metal structures calculated in form of beams, walls, plates and shells, estimates of strength of major components of cars, free vibrations of mechanical systems machines, forced oscillations, dynamics of problem is not oscillatory systems.)

**Bases and foundations.** (Deepening knowledge of soil properties of different origin, composition and condition; better knowledge of soil properties change under influence of external factors, accounting contemporary theoretical developments in field of soil mechanics, accounting practices foundation of modern construction. The student should be able to: carry out selection framework to assess IHU construction site, type, construction and main dimensions of foundation, based on IHU construction site, perform calculations compatible bases and foundations as one of parts of building; create technical drawings on your PC using one of common graphics packages according to requirements of state standards, know: method for determining type of soil on basis of research and design characteristics of soil, Foundations of shallow and deep foundations lay, basis of calculation bases for boundary condition (I, II), requirements of national standards for design bases and foundations.)

**Fundamentals of design and construction business.** (Forming students knowledge about selection of effective design solutions for high-level design, general information about buildings and structures, their classification, basic concepts with definitions of basic requirements for buildings and their components, classification of construction and design of buildings and main provisions of unification, standardization and modular coordination in building size, foundation and underground construction solutions foundations of buildings, designs exterior and interior walls of buildings to meet modern standards, requirements, classification and design solutions for ceilings, floors, roofs and roofs of buildings, foundation design of industrial single and multi-storey buildings, principles of choice of space-planning and design decisions related to functional purpose and placement processes, the formation of master plans.)

**Water supply and sanitation.** The formation of future professionals with the skills and knowledge of modern methods of design, construction and operation of water and wastewater populated cities, residential and industrial projects (basic provisions and requirements of state standards for water and wastewater systems, classification and basic characteristics of systems and schemes of water supply and wastewater settlements, residential and industrial projects, principles and choice of scheme water and wastewater facility; basic principles of sanitation equipment of buildings and structures, the definition of the design of the fence, water supply and preparation of different water quality requirements, the definition of the design of drainage and sewage from different customers).

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**Construction technology.** To deepen students' knowledge of theory, and acquire skills to make independent technological and organizational solutions in terms of installation of precast concrete structures, design technology and comprehensive mechanization of assembly processes.

**Metal structures.** Forming students knowledge about elements of metal, mixed frames of industrial buildings – beams, girders, trusses, girders, columns, connections, etc.; sheet structures, which include large-diameter pipelines, storage capacity for liquids (tanks), gas (gas holders), granular materials (bunkers and silos), construction and installation of steel, refineries, chemical plants, energy facilities (protective shell and carrying domain, air, distillation columns, reactors, etc.), high-rise buildings – towers and masts line radio and Tellez communications, networks, power, drilling tower, surveying marks, smoke and vent pipes, construction road and rail bridges, viaducts companies, moving bridge structure, tower and gantry cranes, large excavators, hydraulic structures, etc.; multi-frame (tall) civic buildings; span roof construction of hangars, shops aircraft, shipbuilding and engineering, laboratories, public buildings (theaters, concert halls, markets, indoor stadiums, exhibition halls), other structures, which impose special requirements, eg related to space exploration, nuclear energy and so on.

**Reliability construction equipment** (Discipline that studies: terms and definitions of reliability; engineering and the physical basis of reliability of building structures; mathematical theory of reliability; reliability testing; ways to ensure reliability. The purpose of discipline - to train future professionals to ensure the reliability of objects within a specified time with optimal costs of material and labor resources for their design, manufacture, operation, maintenance and repair.

**Heat and ventilation** (Consolidate theoretical knowledge on properties of moist air, consolidate theoretical knowledge construction process heating and cooling with constant and variable moisture content, fixing basic assumptions of theory of heat transfer, familiarity with method of calculating value of thermal resistance of enclosing structures of buildings and determining heat loss room, determine estimated cost of heat for heating, ventilation and hot water, execution trace heating systems and selection of diameters pipelines heating system.)

**Building construction.** (To acquaint students with basics of building: with individual products and design elements that are part of buildings, with appointment of structures and relationships between them, with the basic requirements that apply to structural elements of buildings and buildings themselves taking into account specific conditions of use.)

**Reinforced concrete and stone structures.** Entry students knowledge of methods of calculation, design, construction and operation of concrete and masonry structures, taking into account requirements for reliable and safe operation, efficiency and environmental friendliness of these structures.

**The production base construction.** Learn basics of technology and manufacture of building materials, structures and products, identify areas of production base construction, to teach technical and economic parameters to perform selection process diagrams, raw materials and equipment.

### **Optional components**

#### ***Optional components by specialty (block 1)***

**Fundamentals of management, marketing and entrepreneurship.** Formation of the ability to solve professional issues; formation of practical skills in organizational design, financial resources management, etc.; to teach to make appropriate and reasonable managerial decisions, to analyze the generalizing economic performance of a construction

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organization, to defend their point of view adopted decisions, to lead a discussion. Formation of legislative base for creation and running own business.

**Science of law.** Forms students' legal aspects of the organization of construction production.

### ***Optional components by specialty (block 2)***

**Engineering geodesy (general rate)** Learning contents and main directions of geodetic activities, mastering basic methods of surveying, geodetic surveys, development of surveying instruments.

**Engineering geology.** Graphically display lithologic composition of rocks area, describe the terrain, perform analysis and assessment of current state of geophysical environment, perform long-term weather conditions and changes that occur in geophysical environments and forms of relief for a long time to carry out individual sections of engineering and survey reports in construction.

**Building materials.** Study of fundamental properties of building materials and their changes in operating conditions, study range of building materials and their production technologies, study of relationship of features "structure - structure - property" as well as their patterns of changes in physics-chemical, physical, mechanical and other effects and to identify effective construction materials field functionality.

**Construction economy.** Formation of future professionals building management system specialized knowledge and practical skills in field of construction economics, planning indicators of industrial and economic activities, use of economic management construction company based on factors external and internal environment.

**Inspection and testing of buildings** Preparation of bachelors and engineers builders who have deep knowledge of methods and tools for studying the basic properties of building materials, research and evaluation of the stress-strain state of constructions, buildings and structures in all production stages (from design to operation); are competent in organization systems, application methods and non-destructive quality control of construction products; oriented design scheme in construction of buildings, perfectly aware of the methodology of experimental research, know and be able to apply appropriate methods and means of measurement; capable of quality control in construction perform inspection and to test structures, buildings and facilities, to draw conclusions about their condition and the possibility of further exploitation.

**Seismology.** Study of theoretical knowledge about causes of emergence, spread and effects of earthquakes in seismically active areas of country on basis of current research activity of earth's surface motion of tectonic plates and continents. Installation and determine effect of mechanical waves on construction sites of various designs. Study and application of modern methods of increasing seismic.

**Basics of computer-aided design in construction.** Introduction to basic computer programs aided design of building structures, modern and review the latest software systems of calculation and aided design, introduction of integrated tools in the operating systems Windows and MS Office, as well as in most software programming language VBA for Applications.

Software engineering calculations. Feasibility studies and calculations different variant solutions design, research organizations for different types of design.

Technical operation and repair of buildings and structures. Forms the basics of maintenance of buildings and structures, the frequency of interventions and means of maintaining buildings and structures in working order.

**Modern building materials.** Formation of skills that allow you to make right choice of material based on operating conditions, provide cost savings in materials, weight and buildings, mastering theoretical basis of design

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**Constructions of wood and plastic.** To teach students properly handled and hold works, use beams, purlins, studs, rafters, arches, frames, trusses, spatial span and special design.

**Metals and welding in construction.** Provide scientific principles and teach future professional bachelor properties of metals when used in technological processes of welding in construction industry.

**Engineering structures** To acquaint students with basics of building: with individual products and design elements that are part of buildings, with appointment of structures and relationships between them, with basic requirements that apply to structural elements of buildings and buildings themselves taking into account specific conditions of use.

**Organization of construction.** Gaining theoretical knowledge and practical skills that will be needed in practice. Interdependent system of training to perform certain types of work, installation and maintenance of general order on construction site, order and timing of works, supply all kinds of resources to ensure effectiveness and quality of certain types of work or construction projects.

**Metrology and Standardization.** Preparation Bachelor-builder who needs to know metrological support of production and main methods and means of measurement in engineering practice and familiarize yourself with legal framework of metrology and statistical analysis and evaluation of measurement errors. Familiar with methods of measuring linear displacements and deformations by mechanical and electromechanical devices, methods of measurement of mechanical quantities using electrical transducers, methods of non-destructive quality control and testing of buildings and structures. Familiar with basics of standardization.

**Electrical construction.** Forming students' knowledge of electrical construction; linear range DC; linear range of single-phase alternating current; three-phase current; transformers; Electric machines DC; AC machines; low voltage switching equipment and relay; Electrical measurement; choice section of wires and cables; Safety in electrical installations.

**Computers and computer technology.** As required educational and professional program students must be able to: build a comprehensive axonometric drawings and three-dimensional images of objects; intsydentnist solve problems on two geometric figures (point, line, plane surface); solve problems at the intersection of two geometric shapes (straight, plane surface); find the distance between geometric shapes and angles between them; for a given law education to build projection points of curves and surfaces; perform cuts and cross sections of complex geometric shapes; find life-size oblique sections; execute engineering and construction drawings for YESKD standards; Know: Principles and methods of projection images; positional methods for solving problems; methods for solving metric problems; methods of formation of curves and surfaces; YESKD state standards.

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## **2.10. EDUCATION AND RESEARCH INSTITUTE OF ENERGETICS, AUTOMATICS AND ENERGY SAVING**

**Director** – Doctor of Technical Sciences, Professor **Victor Kaplun**

Tel.: (044) 527-85-80; E-mail: [epafort1@ukr.net](mailto:epafort1@ukr.net)

Location: Building № 8, Room 11

The ERI organizes and coordinates Bachelor training in the following specialties:

### ***141 Power Engineering, Electrical Engineering and Electrical Mechanics***

Educational-professional Program «**Power Engineering, Electrical Engineering and Electrical Mechanics**»

Graduating departments:

Department of Automatics and Robototechnical Systems named after acad. I.I. Martynenko

Tel.: (044) 527-82-22, (044) 527-83-82 E-mail: [avto.ea@gmail.com](mailto:avto.ea@gmail.com)

Head of department – Doctor of Technical Sciences, Professor, Honored Worker of Education Vitaliy Lysenko

Department of Electrical engineering, electromechanics and electrotechnology

Tel.: (044) 527-87-55; (044) 527-87-89 E-mail: [elmash\\_nubip@ukr.net](mailto:elmash_nubip@ukr.net)

Head of department – Doctor of Technical Sciences, Associate Professor Andrei Zhylytsov

Department of Power Supply named after Prof. V.M. Synkov

Tel.: (044) 527-85-80 E-mail: [epafort1@ukr.net](mailto:epafort1@ukr.net)

Head of department – Candidate of Technical Sciences, Associate Svitlana Makarevych

Department of Heat and Power Engineering

Tel.: (044) 527-87-48 E-mail: [gorobetsv@ukr.net](mailto:gorobetsv@ukr.net)

Head of department – Doctor of Technical Sciences, Associate Professor Valeryi Gorobets

### ***144 Heat power engineering***

Educational-professional Program «**Heat power engineering**»

Graduating departments:

Department of Heat and Power Engineering

Tel.: (044) 527-87-48 E-mail: [gorobetsv@ukr.net](mailto:gorobetsv@ukr.net)

Head of department – Doctor of Technical Sciences, Associate Professor Valeryi Gorobets

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***151 Automation and Computer Integrated Technologies***

Educational-professional Program «**Automation and Computer Integrated Technologies**»

Graduating department:

Department of Automation and Robotics Systems named after acad.I.I. Martynenka  
Tel.: (044) 527-82-22, E-mail: [avto.ea@gmail.com](mailto:avto.ea@gmail.com)  
Head of department, Doctor of technical sciences, professor Lysenko Vitaliy Pylypovych.

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**Bachelor**  
**field of knowledge "Electrical Engineering"**  
**in specialty «POWER ENGINEERING, ELECTRICAL ENGINEERING**  
**AND ELECTRICAL MECHANICS»**  
**Educational Program «Power Engineering, Electrical Engineering**  
**and Electrical Mechanics»**

Form of Training:	Licensed number of persons:
– Full-time	150
– Part-time	150
Duration of Training	3 years 10 months
Credits	240 ECTS
Language of Teaching	Ukrainian
Qualification	Bachelor of power engineering, electrical engineering and electrical mechanics

### Concept of training

The educational process is based on a systems approach and interdisciplinary training principles to foster students' broadmindedness non-standard thinking, the ability to solve overhead and socio-economic problems and meet the needs of modern production and the labor market.

### Practical training

Practical training is carried out in educational and research facilities of the university and the leading enterprises like poultry "Ukraine", "Kiev", "Havrylivski", Greenhouse "Pusha Vodytsya", PC "Kyyivsilektro", PC "Kyyivelektromontazh", companies "Oblenergo".

### Proposed Topics for Bachelor theses

1. Autonomous system of animal energy complex using gas generator installation.
2. The set of measures to improve efficiency in diagnosing of electrical repair shops.
3. Electrification of technological processes in pigsties-vidhodivelynyku.
4. Energy efficient heating system in greenhouse.
5. Microprocessor Protection System PL-10 kV.
6. Power supply of poultry farms from solar panels and connection to State Enterprise "Energorynok".
7. The project of reconstruction of transformer substation of Bila Tserkva CHP.

**Academic rights of Graduates:** graduates can apply for Master's Degree Specialties and Educational programs specified in Table 1.2 Section 1.3 this Catalog.

### Employment of Graduates

Professionals trained to work in the following sectors: installation, repair and maintenance of electric motors, generators, transformers, electricity distribution and control apparatus, production and distribution of electricity, electric, electronic and optical equipment.

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**Bachelor`s Program and Curriculum in Specialty**  
**"Power Engineering, Electrical Engineering and Electrical Mechanics"**  
**Educational-professional Program**  
**«Power Engineering, Electrical Engineering and Electrical Mechanics»**

Code n/a	Components of the educational-professional program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits ECTS	The final control
1	2	3	4
<b>1. GENERAL TRAINING CYCLE</b>			
<b>Compulsory components EPP</b>			
OK1.	Higher mathematics	15	exam
OK2.	Physics	8	exam
OK3.	Theoretical mechanics	4	exam
<b>Compulsory components EPP by decision of the Academic Council of the University</b>			
OK1.1.	History of Ukrainian statehood	4	exam
OK1.2.	Ukrainian language for professional purposes	4	exam
OK 1.3.	Physical Education	8	tests
OK1.4.	Foreign Language	4	exam
OK1.5.	Philosophy	4	exam
OK1.6.	Ethnocultural studies	4	exam
<b>2. SPECIAL (PROFESSIONAL) TRAINING CYCLE</b>			
<b>Compulsory components EPP</b>			
OK4.	Engineering and computer graphics	4	exam
OK5.	Computer technology and programming	4	exam
OK6.	Fundamentals of heat engineering	4	exam
OK7.	Electronics and integrated circuits	4	exam
OK8.	Electrical materials	4	exam
OK9.	Electrotechnical Systems of Power Consumption	4	exam
OK10.	Theoretical foundations of electrical engineering	9	exam
OK11.	Electrical apparatus	4	exam
OK12.	Electric machines	8	exam
OK13.	Electrical networks	4	exam
OK14.	Foundations of Automation	5	exam
OK15.	Electrical Part of Stations and Substations	4	exam
OK16.	Microprocessor technology	4	exam
OK17.	Metrology and electrical measurements	4	exam
OK18.	Fundamentals of Electric Drive.	8	exam
OK19.	Fundamentals of Electricity Supply.	5	exam
OK20.	Fundamentals of relay protection and automation of power systems	5	exam
OK21.	Economy and energy services organization	4	exam
OK22.	Energy saving and alternative energy sources	4	exam
OK23.	Mathematical Problems of Energetics	5	exam
<b>The total amount of Compulsory components</b>		<b>124</b>	
<b>Compulsory components EPP by decision of the Academic Council of the University</b>			
OK 1.7.	Safety of Labour and Activity.	4	exam
OK 1.8.	Fundamentals of Scientific Research	4	exam
OK 1.9.	Basics of Business, Management and Marketing	4	exam
<b>The total amount of mandatory components according to the decision of the Academic Council of the University</b>		<b>32</b>	
<b>Optional components EPP</b>			
<b>Optional components by specialty (block 1 "Electricity")</b>			
B5 1.1	Software of engineering and technical calculations	4	exam
B5 1.2	Hydraulics	4	exam
B5 1.3	Technology of production, storage and processing of agricultural products	3	exam
B5 1.4	Mounting of Energy Equipment and Control Systems	4	exam
B5 1.5	Fundamentals of digital control and programming of microcontrollers	4	exam

**CURRICULA AND PROGRAMS OF BACHELOR DEGREE**

B51.6	Industrial electronics and transforming equipment	3	exam
B5 1.7	Special electric machines	4	exam
B5 1.8	Project management	4	exam
B5 1.9	Diagnostics of power equipment	4	exam
B5 1.10	Basics of Technical Operation of Energy Equipment and Control Facilities	4	exam
B5 1.11	Electric drive of industrial machinery and mechanisms	4	exam
B5 1.12	Fundamentals of AIC energy objects design	4	exam
B5 1.13	Technical service of energy equipment	4	exam
B5 1.14	Thermal power plants and systems	4	exam
<b>Optional components by specialty (block 2 "Electrical Engineering")</b>			
B5 2.1	Software of engineering and technical calculations	4	exam
B5 2.2	Hydraulics	4	exam
B5 2.3	Technology of production, storage and processing of agricultural products	3	exam
B5 2.4	Mounting of Energy Equipment and Control Systems	4	exam
B5 2.5	Fundamentals of digital control and programming of microcontrollers	4	exam
B52.6	Industrial electronics and transforming equipment	3	exam
B5 2.7	Special electric machines	4	exam
B5 2.8	Project management	4	exam
B5 2.9	Diagnosis, maintenance and repair of electrical equipment	4	exam
B5 2.10	Power equipment of power plants	4	exam
B5 2.11	Reliability and design of electrical systems	4	exam
B5 2.12	Transients in energy	4	exam
B5 2.13	High voltage technology	4	exam
B5 2.14	Expert decision-making systems in energy	4	exam
<b>Optional components by Student's Choice</b>			
OS 1	<i>Elective discipline 1</i>	3	exam
OS 2	<i>Elective discipline 2</i>	3	exam
<b>Total</b>			<b>60</b>
Other types of training			
Educational Practice		10	test
Industrial Practice		5	test
Diploma Project		9	defense of Bachelor work
<b>THE TOTAL AMOUNT OF EPP</b>		<b>240</b>	

## Annotations of Components in the curriculum

### 1. GENERAL TRAINING CYCLE

#### Compulsory components

**High Maths.** Analytic geometry, linear and vector algebra. Elements of field theory. Functions of a complex variable. Differential calculus. Elements of functional analysis. Integral calculus. Differential Equations. Sequences and series. Harmonic analysis.

**Physics.** Physical principles of mechanics. Fundamentals of molecular physics and thermodynamics. Electricity and magnetism. Elements of solid state physics. Optics. Nuclear Physics.

**Theoretical mechanics.** Theoretical mechanics. Theory of mechanisms and machines. Mechanics of materials and structures. Machine parts

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## Compulsory components by decision of the Academic Council of the University

Annotations of components “History of Ukrainian Statehood”, “Ethnocultural”, “Philosophy”, “Ukrainian for Professional Purposes”, “Foreign Language (English, German, French, Spanish)”, “Physical Training”, “Labour and Life Safety”, “Legal Personal Culture” see Section 2.1.

## 2. SPECIAL (PROFESSIONAL) TRAINING CYCLE

### Compulsory components

**Engineering and Computer Graphics.** Descriptive Geometry. Terms and conditions kreslennya. Oformlennya circuitry.

**Computer Technologies and Programming.** Computer architecture. Operating systems and software computing technologies. Systems and Technology Management database. Computer networks. Working in local area computer networks and the Internet. Basic programming and algorithmic languages. High-level programming languages. Mathematical package MathCAD. Programming in the mathematical package MathCAD. Computer graphics and image editors.

**Electrical Apparatus.** Manual control devices. Automatic switches. Electromagnetic starters, contactors. Devices of protective shutdown. Hybrid electric vehicles. Electromagnets. Vacuum breakers.

**Electrical Machines.** Electrical Machines DC. Transformers. Asynchronous machines. Synchronous machines.

**Electronics and Microcircuitry.** Element base electronics. Electronic devices. Amplifiers. Sensors. Regulators.

**Electrical Materials** Dielectrics. Conductor and semiconductor materials. Magnetic materials and materials for electronic devices.

**Electrotechnical Systems of Power Consumption.** Basic usage and sources of optical radiation. Lighting installation and networks. Irradiation installation. Physical and technological and electro-physical properties of agricultural products and materials. Methods of electrical heating. Electric equipment and its calculation. Electro-technological methods of cultivation of agricultural products.

**Metrology and Electrical Measuring.** Analog gauges. Digital gauges. Methods and tools for measuring electrical, magnetic and non-electrical quantities. Metrology and metrological activities.

**Foundations of Automation.** Automation systems and elements. Means of automation. Linear systems of automatic control. Nonlinear and optimal automatic control.

**Fundamentals of Electricity Supply.** Parameters calculation. Electrical power systems: operation, structure, purpose and choice. Monitoring, protection and control of electrical networks. Reliability, quality and efficiency of power supply systems.

**Fundamentals of Electric Drive.** Mechanical and Electrical Specifications DC motors and AC. Transients in electric drives. Adjust the coordinate drive. Power drive. Choice of electric vehicles and electric control and protection. Scheme electric. General procedure for selecting drive.

**Mathematical Problems of Energetics.** Analytical methods of mathematical modeling of production facilities. The models of typical objects construction based on the experiment results. Algorithms of realization of models on computers. Euler, Runge-Cutta's algorithms.

**Fundamentals of Heat Engineering.** Fundamentals of Heat Mass Transfer. Thermal power plants and the application of heat in agriculture.

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**Economy and Energy Services Organization.** Economic efficiency of investment in the energy sector. The economic mechanism. Scheduling and wages in the energy sector. Revenue, profitability, financial activities in electricity. Energy planning. Recovery costs of fixed income.

**Electrical Part of Stations and Substations.** Circuit breakers. Contactor. Devices of emergency shutdown. Olives switches. Vacuum switches. Gas circuit breakers.

**Theoretical Foundations of Electrical Engineering.** DC circuit. AC circuit. Turn on the RL, RC, RLC circuit on a sinusoidal voltage. Three-phase three-and four leading range of AC. Asymmetry in power grids and measures for its reduction. Asymmetrical loading three-phase transformer and power losses. Transients in electrical circuits.

### **Compulsory components by decision of the Academic Council of the University**

**Safety of Labour and Activity.** Safety system "man - technology - environment." General concepts of analysis and risk assessment. Means and security measures. Public administration and supervision of Safety. failure of the system. Direct and indirect assessment of harm to people and the environment. Assessment of environmental and social risks of adverse effects.

**Fundamentals of Scientific Research.** Methodological foundations of scientific research organization. The specificity of research activities. Total research methodology. Principles of scientific information. General requirements for the design and writing scientific works.

**Basics of Business, Management and Marketing.** HR management system in the organization. Analysis and quality of staff turnover. Plan of personnel. Methods of recruitment and selection, assessment of motivation and professional development.

### **Optional components**

#### ***Optional components by specialty***

**Hydraulics.** Hydrostatics and hydrodynamics. Hydraulic machines. Basics of agricultural water supply and sanitation.

**Diagnostics of Power Equipment.** Methods for determination electrical equipment reliability. Various types of electrical equipment operational reliability. Control methods electrical equipment operability. Device providing of the test measurements and tests of electrical equipment. Modeling of emergency operating modes. Algorithms of troubleshooting technical products.

**Fundamentals of AIC Energy Objects Design.** Methods of design of electrification, automation and energy in agriculture. Computer technologies in design. Requirements for the project.

**Electronic Devices in Control Systems.** Development and debugging of microprocessor systems in agricultural production. Discrete signals, their coding. DAC and ADC. The synthesis of digital systems.

**Electric Drive of Industrial Machinery and Mechanisms.** Driving characteristics of machines and mechanisms. The principles and control of electronic circuits. Complete equipment for automatic control. Experimental methods of driving characteristics.

**Special electric machines.** Feeding machines. Processing enterprises. Systems and equipment of poultry farms. Machines for mechanization of agricultural work.

**Mounting of Energy Equipment and Control Systems.** Working drawings for Electroinstallation works Instruments, machinery and tools for electric installation works. The main types of electric installation works technology implementation. Planning and organization of electrical work.

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**Basics of Technical Operation of Energy Equipment and Control Facilities.**

Legal and regulatory principles and operating power equipment problems. Power equipment in agriculture, optimization and reliability. Maintenance and repair of power equipment. The organization commissioning, acceptance testing and operation of rural energy.

**Industrial Electronics and Transforming Equipment.** Passive components of electronic circuits. Diodes and their models. Transistor schemes. Feedback. The operational amplifier. Characteristics of logic integrated schemes families. Digital microcircuits.

**Technical Service of Energy Equipment.** Maintenance and repair of electrical equipment. The organization commissioning, acceptance testing and operation of rural energy. Maintenance of transformer substations and transmission lines.

**Technology of Production, Storage and Processing of Agricultural Products.** Technologies crop production. Technology of production of livestock and poultry. Technologies of processing and storage of crop production, livestock and poultry.

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**Bachelor**  
**field of knowledge "Electrical Engineering"**  
**in specialty «HEAT POWER ENGINEERING»**  
**Educational-professional Program «Heat Power Engineering»**

Form of Training:	Licensed number of persons:
– Full-time	50
– Part-time	
Duration of Training	3 years 10 months
Credits	240 ECTS
Language of Teaching	Ukrainian
Qualification	Bachelor of heat power engineering

### **Concept of training**

The educational process is based on a systems approach and interdisciplinary training principles to foster students' broadmindedness non-standard thinking, the ability to solve overhead and socio-economic problems and meet the needs of modern production and the labor market.

### **Practical training**

Practical training is carried out in educational and research facilities of the university and the leading enterprises like poultry "Ukraine", "Kiev", "Havrylivski", Greenhouse "Pusha Vodytsya", PC "Kyyivsilektro", PC "Kyyivelektromontazh", companies "Oblenergo".

### **Proposed Topics for Bachelor theses**

1. Modernization of the energy supply system of the greenhouse economy using energy-saving technologies.
2. Development of an energy supply system for an energy-saving farmhouse.
3. Improvement of the microclimate system in poultry houses using alternative energy sources.
4. Power supply of the pig farm using a biogas plant.
5. Reconstruction project of the district heating boiler with the use of solid fuel boilers.

**Academic rights of Graduates:** graduates can apply for Master's Degree Specialties and Educational (Educational-professional or Educational-scientific) programs specified in Table 1.2 Section 1.3 this Catalog.

### **Employment of Graduates**

The specialists are ready to work in the following branches of the economy: installation, repair and maintenance of heat and power equipment, generators, transformers, heat-distributing and control equipment; production and distribution of heat energy, production of heat and power equipment.

**Bachelor`s Program and Curriculum  
in Specialty «Heat Power Engineering»  
Educational-professional Program «Heat Power Engineering»**

Code n/a	Components of the educational-professional program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits ECTS	The final control
1	2	3	4
<b>1. GENERAL TRAINING CYCLE</b>			
<b>Compulsory components EPP</b>			
OK1.	High Maths	15	exam
OK2.	Physics	10,0	exam
OK3.	Theoretical mechanics.	3,0	exam
OK4.	Chemistry	3,0	exam
<b>Compulsory components by decision of the Academic Council of the University</b>			
OK 1.1	Foreign Language	4	exam
OK1.2	Philosophy	3	exam
OK 1.3	History of Ukraine	3	exam
OK 1.4	Ukrainian for Professional Purposes	3	exam
OK 1.5	Physical Education	10	tests
OK 1.6	Ethnocultural	3	exam
<b>2. SPECIAL (PROFESSIONAL) TRAINING CYCLE</b>			
<b>Compulsory components EPP</b>			
OK5	Engineering Graphics	3	exam
OK6	Computer Technologies and Programming	3	exam
OK7	Technical thermodynamics	11	exam
OK8	Foundations of Automation	4	exam
OK9	Fundamentals of electrical engineering and electromechanics	3	exam
OK10	Control and measuring devices and apparatus	4	exam
OK11	Fundamentals of Electricity Supply in Agroindustrial complex	4	exam
OK12	Hydro-gas dynamics	8	exam
OK13	Thermal networks	3	exam
OK14	Fundamentals of Heat Mass Transfer processes	8	exam
OK15	Heat power installations and systems	8	exam
OK16	Thermal power plants	4	exam
OK17	Software of Engineering Calculations	4	exam
OK18	Water supply and drainage	4	exam
OK19	Fundamentals of Electric Drive	7	exam
OK20	Energy-saving technologies and use of energy resources	3	exam
OK21	Economy and Energy Services Organization.	3	exam
OK22	Heat-technological processes in the processing of agricultural products	3	exam
OK23	Electronics and Microprocessor Technics	3	exam
<b>The total amount of Compulsory components</b>		<b>121</b>	
<b>Compulsory components by decision of the Academic Council of the University</b>			
OK 1.5.	Introduction to speciality	3	exam
OK 1.6.	Safety and life	3	exam
OK 1.7.	Material science and technology of materials	3	exam
<b>The total amount of Compulsory components by decision of the Academic Council of the University</b>		<b>35</b>	
<b>Optional components EPP</b>			
<b>Optional components by specialty (block 1)</b>			
B5 1.1.	Generation and transportation of electricity at power station	120	exam
B5 1.2.	Renewable sources of electric energy	120	exam
B5 1.3.	Electrical Technologies in Agriculture	90	exam
B5 1.4.	Accumulation of thermal and electric energy	120	exam
B5 1.5.	Fundamentals of Scientific Research	90	exam

**CURRICULA AND PROGRAMS OF BACHELOR DEGREE**

ББ 1.6.	Diagnosis and maintenance of power equipment	90	exam
ББ 1.7	Modeling of heat transfer processes and hydrodynamics	120	exam
ББ 1.8	Accounting and regulation of energy costs	120	exam
ББ 1.9	Alternative sources of thermal energy	120	exam
ББ 1.10	Design of systems of electric and heat supply of objects of agrarian and industrial complex	120	exam
ББ 1.11	Heat supply, heating and ventilation systems	120	exam
ББ1.12	Gas supply	90	exam
ББ 1.13	Energy audit of objects of electric and heat consumption	120	tests
ББ 1.14	Fundamentals of maintenance and servise of power equipment	90	exam
ББ 1.15	Basics of Business, Management and Marketing	90	exam
<b>Optional components by Student's Choice</b>			
OS 1	<i>Elective discipline 1</i>	3	exam
OS 2	<i>Elective discipline 2</i>	3	exam
<b>Загальний обсяг вибіркових дисциплін</b>		<b>60</b>	
<b>OTHER TYPES OF TRAINING</b>			
Educational Practice		10	test
Industrial Practice		5	test
Diploma Project		9	defense of Bachelor work
<b>THE TOTAL AMOUNT OF EPP</b>		<b>240</b>	

## Annotations of Components in the curriculum

### 1. GENERAL TRAINING CYCLE

#### Compulsory components

**Physics.** Physical foundations of classical mechanics. Foundations of molecular physics and thermodynamics. Electricity and Magnetism. Physics of oscillations and waves. Optics. Basics of Atomic physics and Quantum mechanics. Principles of solid state physics. Theory of relativity. Basics of nuclear physics and nuclear energy.

**High Maths.** Elements of linear, vector algebra and analytical geometry. Differential calculus of function of one and several variables. Complex numbers. Transformation Laplas, numbers on orthogonal system, conformity between operations above originals and images. Integral calculus of function of one and several variables. Differential equations, differential equations systems. Numerical and functional numbers. The harmonious analysis.

**Theoretical mechanics.** Theoretical mechanics. Theory of mechanisms and machines. Mechanics of materials and structures. Machine parts.

**Chemistry.** Structure of atoms, molecules, substances, their modular condition. Chemical reactions. Solutions of electrolytes and non-electrolytes. Corrosion and protection of materials and alloys. Concept PH. Electrochemical processes.

## Compulsory components by decision of the Academic Council of the University

Annotations of components: History of Ukrainian Statehood, Ethnocultural, Philosophy, Ukrainian language for professional purposes, Foreign language, Physical education see Section 2.1.

## 2. SPECIAL (PROFESSIONAL) TRAINING CYCLE

### Compulsory components

**Foundations of Automation.** Automation systems and elements. Means of automation. Linear systems of automatic control. Nonlinear and optimal automatic control.

**Fundamentals of electrical engineering and electromechanics.** The course "Electrical Engineering and Electromechanics" is a discipline for the fundamental training of engineers in electrical specialties. This science studies electrical and magnetic phenomena, the transformation of electrical energy into mechanical, the production of electrical energy and methods and means of its use. The purpose of the discipline is to familiarize students with the basics of modern electrical engineering, with the methods of calculating electrical circuits, with the principles of work of electromechanical converters, including with the principles of operation of electric machines of direct and alternating current, information micromachines. The tasks of the discipline are to: teach students to calculate electric and magnetic circuits in the steady and transient modes, to determine the characteristics of electric machines and to calculate effective and safe modes of their use. As a result of studying the discipline, the student must know the basics of the analysis of electric circuits of direct and alternating currents; the principles of the theory of quadrupole and its use; basic principles of the analysis of transients in electric circuits; the principles of electromechanical energy conversion; designs and principles of operation of electric machines (including micromachines). Student should be able to solve typical problems of analysis of electric circuits; to calculate transients in electric circuits; apply knowledge of the laws of electrical engineering and electromechanics for the efficient and safe operation of electromechanical transducers.

**Thermal power plants.** Structure of construction of thermal power plants. The main elements of thermal power plants and their interconnection. Thermodynamic and technological bases of thermal power plants. Study of the principles of functioning of steam and gas boilers, electric generators for the generation of electric energy. The main constructions of heat and power equipment and ways to improve the efficiency of the TPS are considered.

**Control and measuring devices and apparatus.** The legislative and normative acts in metrology. General problems of measurement and errors. The theory and practice of measurement precision and measurement systems. Analogue measuring apparatuses. Measuring mechanisms. Registering devices. Digital devices. Measuring of electrical and magnetic magnitude.

**Heat-technological processes in the processing of agricultural products.** The purpose of discipline is to form students' knowledge of the main processes of heat and mass transfer during the processing and storage of agricultural products, namely cooling processes, phase transformations and other processes. The principles of the devices for the processing of agricultural products are considered: dryers, shredders, refrigeration units, etc. The methods of thermal and hydraulic calculation of devices for processing and storage of agricultural products are considered. Acquaintance with modern methods and approaches in storage of agricultural products.

As a result of studying the discipline the student must know: the basics of the functioning of devices and industrial objects in the processing and storage of agricultural

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products, methods of their calculation and bases of operation.

**Engineering and Computer Graphics.** Projection drawing. Looks, cuts and sections. Thumbnails and work drawings. Elements of structural joints. Assembly drawing. Detailing Drawing using the AutoCAD system. Areas of use of computer graphics. Basics of PC software computer graphics. AutoCAD automated drawing system. Setting up tasks for computer graphics. Fundamentals of graphical representation of information, graphic primitives and tools for editing CAD systems; the basis of solid-state modeling of parts.

**Computer Technologies and Programming.** Computer architecture. Operating systems and software computing technologies. Systems and Technology Management database. Computer networks. Working in local area computer networks and the Internet. Basic programming and algorithmic languages. High-level programming languages. Mathematical package MathCAD. Programming in the mathematical package MathCAD. Computer graphics and image editors.

**Energy-saving technologies and use of energy resources.** The purpose of discipline is mastering the basic principles and methods of energy saving, introduction of modern energy-saving technologies, modern approaches and challenges in the development, design and operation of energy-saving installations and systems. The discipline allows students to study renewable energy sources, calculate them and get acquainted with the establishment of automatic control of modern energy supply systems based on renewable energy sources.

**Software of Engineering Calculations.** Electronics and Microprocessor Technics. Passive electronics. Semiconductor diodes, transistors, thyristors. Photovoltaic, optoelectronic and indicating devices. Electronic Amplifiers. Digital and pulse devices. Power supplies. Microprocessor devices. Microcomputer structure, microprocessor architecture, microprocessor command system, hardware microcontrollers, interrupt system, device matching with the object.

**Economy and Energy Services Organization.** Economic efficiency of investment in the energy sector. The economic mechanism. Scheduling and wages in the energy sector. Revenue, profitability, financial activities in electricity. Energy planning. Recovery costs of fixed income.

The general questions of estimation of energy efficiency of functioning of energy systems of agroindustrial complex, including those using renewable and secondary energy sources, are considered. The methods of determining the efficiency of power systems are described. The peculiarities and problems of financial and economic analysis of objects of agrarian and industrial complex are analyzed.

**Water supply and drainage.** The basic principles of water supply and drainage for settlements are considered. Principles of water treatment and transportation of drinking water to consumers are studied. The designs and functioning of the Rozhnovsky towers and the methods of treatment of drinking water in them are considered. The bases of sewage and water treatment of sewage are studied.

**Thermal networks.** The purpose of discipline is to study the basic principles of building thermal networks for the efficient transport of heat energy. The processes of transportation of heat carriers in thermal networks are considered. Thermal and hydraulic calculation of heating networks is carried out, types of insulation materials for pipelines and methods of their protection against destruction are considered. The ways of improvement of heat networks for minimizing heat losses during the transportation of thermal energy

**Fundamentals of Electricity Supply in Agroindustrial complex.** The discipline includes: general information on the production, transmission, distribution and consumption of electric energy; power supply tasks; reliability of power supply of enterprises and settlements; quality of electric energy in electric networks; electrical loads of networks; efficiency of electric networks; elements of electric networks; calculation of

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electric networks; voltage regulation in electric networks; calculation of air lines for mechanical strength; transients in electrical networks; reserve and non-traditional sources of electric energy; means of protection of systems of power supply from emergency modes of work; relay protection and automation of power supply systems.

**Fundamentals of Electric Drive.** Mechanical and Electrical Specifications DC motors and AC. Transients in electric drives. Adjust the coordinate drive. Power drive. Choice of electric vehicles and electric control and protection. Scheme electric. General procedure for selecting drive.

**Hydro-gas dynamics.** The discipline involves the preparation of students for the independent solution of theoretical and applied problems of hydrodynamics, knowledge of the laws of hydraulics, principles of operation and design of hydraulic systems, the operation of hydraulic devices and machines used in rural, municipal and industrial spheres. Basic principles of construction and functioning of pumping and ventilation equipment, their calculation and bases of operation. Design, calculation and management of hot and cold water supply networks, choice of water pump equipment, cost accounting and water supply regulation. Basic application packages for modeling complex water supply systems, their features and purpose.

**Fundamentals of Heat Mass Transfer processes.** The discipline studies the basic processes of heat transfer and mass transfer in technological processes and energy devices and apparatuses. Different mechanisms of heat transfer are considered, namely, thermal conductivity, convective heat transfer, radiation transport, heat exchange during boiling and condensation. The basic equations and methods of calculation of heat and mass transfer processes are presented. The main heat energy devices used in the agroindustrial complex are considered.

**Heat power installations and systems.** The purpose of discipline is to form students' knowledge of the bases of functioning and principles of construction of thermal power plants and systems used in the agro-industrial complex. Tasks that are considered in the studied discipline: familiarization with the basic concepts, terminology and definitions used in thermal power plants; study of the principles of operation of thermal power plants, boiler-houses and cogeneration units, assimilation of methods for calculating thermal power plants, studying their constructions and bases of exploitation. Familiarization with modern methods and installations for the development of thermal and electric energy at agricultural facilities.

As a result of studying the discipline, the student must know: the basics of the operation of heat and power plants and systems, energy management systems, methods of their calculation and bases of operation.

### **Compulsory components by decision of the Academic Council of the University**

**Safety and Life.** Legislative and normative base of Ukraine on labor protection. State management of labor protection and organization of labor protection at work. Explosion of production, explosion protection. Fire Security. Electrical safety. Labor Hygiene and Industrial Sanitation. State supervision and public control over labor protection. Providing First Aid to Victims of Accidents.

**Introduction to speciality.** The purpose of discipline is to study the main directions of training of heat energy specialists, the features of the future profession, the content and objectives of practical activities in the energy sector. The main disciplines studied during the preparation of bachelors are given and information on the necessary types of training of heat energy specialists is provided. Particular attention is paid to the current trends in the development of heat and power engineering, which affect energy saving and alternative energy sources. The discipline substantiates the formation of the primary knowledge of the main heat power engineering and ideas about the future work,

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the publication of the basic concept and terminology apparatus of heat power engineering and understanding of the ways of development of society.

### **Optional components EPP**

#### ***Optional components by specialty (block 1)***

**Heat Engineering.** The purpose of discipline is to form students knowledge of thermodynamic principles, methods and obtaining practical skills in the functioning and research of technological processes in heat and power systems and energy objects of agro-industrial production. When studying the discipline the student: acquaints with the state, the basic concepts and definitions of heat engineering, material flows and thermal energy; the main position of the operation of heat and power systems; analysis of typical (existing) technical solutions.

As a result of the study of the discipline, the student must know: the general principles of production, distribution and measurement of the cost of electric and thermal energy and material flows (gas, water, petroleum products, fuel resources); methods of formation and principles of saving of expenses of energy and material resources; the procedure for selecting technical means of automated control and accounting; construction and principles of the functioning of power systems and installations, management of distribution and consumption of energy and material resources;

The student should be able to: to identify the needs and normalize the energy and material resources, and select the technical means for the operation of power plants and systems and the consumption of energy and material resources.

**Generation and transportation of electricity at power station.** Electric power systems, their structure and operative management. The main types of power plants. TPP and HPP. Main electrical equipment of stations and substations. Electric networks. Loss of voltage and power. Operating modes of electrical networks. Short circuits in electric power systems and short-circuit currents. Switching devices. Measuring transformers. Sources of operational current. Main circuits of connections of electric power stations and substations.

**Gas supply.** Discipline gives an opportunity to gain knowledge: in the field of gas supply to the agro-industrial complex, gas supply systems; gasification of rural settlements with natural gas; gasification of rural settlements by liquefied gas; the composition of gaseous fuel, its main characteristics of the basics of combustion of gaseous fuels. In addition, issues concerning gas supply of biogas plants, technologies and equipment for its receipt are considered.

As a result of studying the discipline, energy engineers should be prepared to solve the problems of development and reconstruction of the material and technical base of agricultural production and social development of the village in the field of gas supply to the agro-industrial complex.

**Diagnosis and maintenance of power equipment.** Normative and legislative basis of the energy service. System of maintenance and repair of electrical equipment. Diagnosing and maintenance of synchronous generators. Determination of the technical state and operation of electric power transmission devices: air and cable lines of power transmission, transformers, switchgears. Switching devices with voltage up to 1000 V. Exploitation and diagnostics of the electric drive. Organization and conducting of acceptance testing of electrical equipment.

**Renewable sources of electric energy.** The discipline is an important subject discipline, the main purpose of which is the students' awareness of the role of power systems using renewable sources of electrical power generation; assimilation of the complex of questions concerning the substantiation of the type and methods of selecting

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renewable power sources, their design features, electrical parameters; study of schemes and features of work of power plants. Lecture material includes: Scientific-organizational principles and directions for the implementation of power stations with renewable energy sources. Classification and basic technical and economic indicators. Investigation of the efficiency of the transformation of the intensity of the light flux into electricity by a photoelectric converter. Study of power supply circuits with photoelectric converters. Selection and substantiation of the parameters of the wind power and solar power station. Substantiation and calculation of hydroelectric power.

**Accumulation of thermal and electric energy.** The discipline in which accumulated knowledge of students obtained in the courses of physics, electrical engineering, surface physics, solid state physics, semiconductor electronics, micro and nanoelectronics and heat engineering. During the study of the discipline students learn about the basic physical phenomena, which are the basis of the work of different types of energy batteries, master the approaches to measure their working parameters, the skills of using modern software environments to analyze the results of measurements.

**Electrical Technologies in Agriculture.** Electrical and magnetic fields Electrical circuits. Calculation of direct current electrical circuits Multi-poles network. Nonlinear circuits. Calculation of circuits at alternative currents and voltage. Transients in linear circles and their calculation. Calculations of nonlinear circuits. Transients in nonlinear circuits.

**Modeling of heat transfer processes and hydrodynamics.** In the discipline are considered the basic principles of mathematical modeling of heat and mass transfer processes occurring in heat and power equipment, agricultural and industrial objects. The basic equations describing the processes of heat and mass transfer and methods of their solution are considered. The bases of numerical calculation of integro-differential equations and their computer calculations are presented. The information on the main packages of applied programs for the calculation of thermal physical processes and the practical skills of working with such packages are given.

**Fundamentals of Scientific Research.** Methodological foundations of scientific research organization. The specificity of research activities. Total research methodology. Principles of scientific information. General requirements for the design and writing scientific works.

**Energy audit of objects of electric and heat consumption.** Basic provisions of energy audit. Technologies and equipment used in conducting energy audits. Methodology and procedure for conducting energy audits of heat and power consumption objects. Making a report on energy audit. Development and substantiation of energy saving measures at the enterprise.

**Basics of Business, Management and Marketing.** HR management system in the organization. Analysis and quality of staff turnover. Plan of personnel. Methods of recruitment and selection, assessment of motivation and professional development.

**Heat supply, heating and ventilation systems.** The purpose of the discipline is to study heat supply, heating and ventilation systems for residential, public and industrial buildings. Systems of supply of heat to buildings, their distribution and methods of control of thermal conditions of premises, design of heating devices are studied. In addition, the basic principles of construction of ventilation and air conditioning systems for buildings and objects of various purposes are considered. The methods of calculation of heating and ventilation of buildings are given. Modern methods of energy saving for heating and ventilation of buildings are presented.

**Accounting and regulation of energy costs.** Accounting for active and reactive electricity. Multi-tariff electricity accounting. Devices for recording and controlling the flow of heat-carrier. Automated systems for monitoring and accounting of energy costs.

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**Alternative sources of thermal energy.** Discipline involves studying the possibilities of using non-traditional and renewable sources of thermal energy in power supply systems of industrial enterprises; systems of transformation of solar radiation into thermal energy; possibilities of using biomass and solid household wastes for the production of electric and thermal energy. The discipline creates students' knowledge in the field of renewable energy sources, the principles of constructing converters of various types of energy from renewable sources to heat energy, mastering the skills of calculating the main parameters of renewable energy converters, familiarizing with the modern world achievements in the development and implementation of renewable energy sources.

**Fundamentals of maintenance and service of power equipment.** Preparing students to work independently, making qualified decisions for the efficient operation of thermal power units and systems.

Formation of theoretical knowledge of the rules of operation of boiler plants, autonomous sources of thermal energy, thermal networks and gas economy; normative documents of technical operation of heat and power equipment, systems of heat and gas supply.

Providing students with practical skills to ensure the trouble-free operation of heat and power equipment and networks of heat and gas supply; taking appropriate measures in case of malfunctions in equipment operation, as well as in emergencies; solving issues of organization of repair works of boiler equipment and systems of heat and gas supply taking into account the requirements of ecology and rational nature management.

**Design of systems of electric and heat supply of objects of agrarian and industrial complex.** The main objective of the discipline is to develop knowledge and skills of specialists in the design of energy objects and systems, development of project documentation for network objects of electric and thermal power engineering and electric power stations, studying and calculation of parameters of schemes of electric and heat supply of consumers, studying of calculation methods for designing power objects, study of the state normative base necessary for execution and approval of the project documentation.

**Bachelor**  
**field of knowledge "AUTOMATION AND INSTRUMENTATION"**  
**in specialty «AUTOMATION AND COMPUTER INTEGRATED TECHNOLOGIES»**  
**Educational-professional Program**  
**«Automation and Computer Integrated Technologies»**

Form of Training:	Licensed number of persons:
– Full-time	50
– Part-time	50
Duration of Training	4 years
Credits	240 ECTS
Language of Teaching	Ukrainian
Qualification	Junior Engineer Automation and Computer Technologies

### **Concept of training**

The educational process is based on a systems approach and interdisciplinary training principles to foster students' broadmindedness non-standard thinking, the ability to solve overhead and socio-economic problems and meet the needs of modern production and the labor market.

### **Practical training**

Practical training is carried out in educational and research facilities of the university and the leading enterprises like poultry "Ukraine", "Kiev", "Havrylivski" Greenhouse "Pusha Vodytsya".

### **Proposed Topics for Bachelor theses**

1. Development of automatic control of temperature in the installation for the production of milk.
2. Development of automatic control of temperature in a pigsty, the mother liquor.
3. Development of automatic control of temperature in the greenhouse.

**Academic rights of Graduates:** graduates can apply for Master's Degree Specialties and Educational (Educational-professional or Educational-scientific) programs specified in Table 1.2 Section 1.3 this Catalog.

### **Employment of Graduates**

Activities are subject to generalized systems of automation and computer-integrated technologies. Professionals trained to work in the following sectors: - Engineer with automated production management, Manager - informant - techniques of configuring computer systems.

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**Bachelor`s Program and Curriculum in Specialty  
"Automation and Computer Integrated Technologies"  
Educational Program «Automation and Computer Integrated Technologies»**

Code n/a	Components of the educational and professional program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits ECTS	The final control
1	2	3	4
<b>1. GENERAL TRAINING CYCLE</b>			
<b>Compulsory components EPP</b>			
CC 1.	Ecology	3,0	exam
CC 2.	High Maths	18,0	exam
CC 3.	Numerical Methods	5,0	exam
CC 4.	Physics	10,0	exam
CC 5.	Chemistry	3,0	exam
<b>Compulsory components EPP by decision of the Academic Council of the University</b>			
CCU 1.	History of Ukraine and Ethnocultural	4,0	exam
CCU.2.	Ukrainian Language (for professional purposes)	4,0	exam
CCU 3.	Philosophy	4,0	exam
CCU 4.	Foreign Language	5,0	exam
CCU.5.	Physical Education	10,0	test
<b>2. SPECIAL (PROFESSIONAL) TRAINING CYCLE</b>			
<b>Compulsory components EPP</b>			
CC 6.	Engineering Graphics	4,0	exam
CC 7.	Computer Technologies and Programming	10,0	exam
CC 8.	Electrical Engineering and Electromechanics	10,0	exam
CC 9.	Electronics and Microprocessor Technics	10,0	exam
CC 10.	Automation Systems Design	8,0	exam
CC 11.	Theory of automatic Control	10,0	exam
CC 12.	Technical Means of Automation	8,0	exam
CC 13.	Metrology, Measurement Technology and Instruments	10,0	exam
CC 14.	Identification and Modeling of Technological Objects	8,0	exam
CC 15.	Automation of Technological Processes and Productions	7,0	exam
CC 16.	Microprocessor Devices Control	3,0	exam
CC 17.	Automated Control Systems	3,0	exam
CC 18.	Computer Integrated Technologies	7,0	exam
CC 19.	Information and Measuring Systems	3,0	exam
CC 20.	Optimization of Control Systems Modelling	3,0	exam
<b>The total amount of Compulsory components</b>		<b>160</b>	
<b>Optional components EPP</b>			
<b>Optional components by specialty</b>			
OB 1.1.	Safety and Life	4,0	exam
OB 1.2.	Law	3,0	exam
OB 1.3.	Computer Equipment, Networks and Systems	4,0	exam
OB 1.4.	Computer Graphics	4,0	exam
OB 1.5.	Fundamentals of Systems Analysis	4,0	exam
OB 1.6.	Theory of Information	4,0	exam
OB 1.7.	Technology of Production, Storage and Processing of Agricultural Products	4,0	exam
OB 1.8.	Theoretical and Applied Mechanics	3,0	exam
OB 1.9.	Electrical Technologies in Agriculture	4,0	exam
OB 1.10.	Heat Engineering and Hydraulics	3,0	exam
OB 1.11.	Basics Technical Operation of Automation Systems	4,0	exam
OB 1.12.	Executive Mechanisms of Control Systems	4,0	exam
OB 1.13.	Fundamentals of Scientific Research	3,0	exam
OB 1.14.	Politology and Sociology	3,0	exam
OB 1.15.	Economy of Automated Production in Agriculture	3,0	exam
<b>Total</b>		<b>54</b>	

<i>Optional components by Student's Choice</i>			
OB 2.1.	<i>Selective discipline 1</i>	3,0	exam
OB 2.2.	<i>Selective discipline 2</i>	3,0	exam
<b>Total</b>		<b>6</b>	
<b>3. OTHER TYPES OF TRAINING</b>			
Educational Practice		10,0	exam
Industrial Practice		5,0	exam
Diploma Project		5,0	Protection of qualification work
<b>THE TOTAL AMOUNT OF EPP (without military training)</b>		<b>240</b>	

## Annotations of Components in the curriculum

### 1. GENERAL TRAINING CYCLE

#### Compulsory components

**Ecology.** Legal and organizational questions of natural environment protection. Theoretical bases of ecology. Global problems of ecology: problems of the population, power resources exhausting, the physical contents of " Greenhouse effect ", the physical contents of formation Ozone gaps. Concept of toxic substances. Hydrosphere protection. Atmosphere protection. Ecological monitoring systems. The agricultural production and its influence on the environment. Economic and legal aspects of rational wildlife management. Power and its influence on the environment. Bases of without waste technologies. Ecological examination of projects and technologies. Economic efficiency of nature protection actions.

**High Maths.** Elements of linear, vector algebra and analytical geometry. Differential calculus of function of one and several variables. Complex numbers. Transformation Laplas, numbers on orthogonal system, conformity between operations above originals and images. Integral calculus of function of one and several variables. Differential equations, differential equations systems. Numerical and functional numbers. The harmonious analysis.

**Numerical Methods.** linear system of algebraic equations. Elementary transformation system. The algorithm of Gauss method and its application. Harmonic analysis. Methods of data processing.

**Physics.** Physical foundations of classical mechanics. Foundations of molecular physics and thermodynamics. Electricity and Magnetism. Physics of oscillations and waves. Optics. Basics of Atomic physics and Quantum mechanics. Principles of solid state physics. Theory of relativity. Basics of nuclear physics and nuclear energy.

**Chemistry.** Structure of atoms, molecules, substances, their modular condition. Chemical reactions. Solutions of electrolytes and non-electrolytes. Corrosion and protection of materials and alloys. Concept PH. Electrochemical processes.

#### Compulsory components by decision of the Academic Council of the University

Annotations of components: «History of Ukraine and Ethnocultural», «Ukrainian Language (for professional purposes)», «Philosophy», «Foreign Language», «Physical Education». see Section 2.1.

## 2. SPECIAL (PROFESSIONAL) TRAINING CYCLE

### Compulsory components

**Engineering Graphics.** Projective drawing. Views, cuts and intersects. Sketches and working drawings. Assembly drawing. Detail drawing. The drawing by means of AutoCAD system.

**Electrical Engineering and Electromechanics.** Electrical and magnetic fields Electrical circuits. Calculation of direct current electrical circuits Multi-poles network. Nonlinear circuits. Calculation of circuits at alternative currents and voltage. Transients in linear circles and their calculation. Calculations of nonlinear circuits. Transients in nonlinear circuits.

**Automation Systems Design.** Automation circuits, choice of methods for complex technical automation facility during designing and automation system analysis.

**Metrology, Measurement Technology and Instruments.** The legislative and normative acts in metrology. General problems of measurement and errors. The theory and practice of measurement precision and measurement systems. Analogue measuring apparatuses. Measuring mechanisms. Registering devices. Digital devices. Measuring of electrical and magnetic magnitude.

**Identification and Modeling of Technological Objects.** The classification of technological and manufacturing processes as objects of automatic control. Construction of static and dynamic objects of agricultural technological processes and production.

**Automation of Technological Processes and Productions.** Classification and structure of the modern atomic technological processes; the basic automatic characteristics of standard technological processes; automation problems in standard technological processes; automation of specific standard technological processes.

**Computer Technologies and Programming.** Algorithmic languages and methods of programming. Application of algorithmic languages. Bases of programming low -level and high.- level languages Application of programming in engineering activity.

**Automated Control Systems.** Classification and structure of modern ACS; types of supply of ACS; ACS of specific objects and production processes in animal-husbandry, plant-growing and fodder production; the functional automation schemes; formulation of problems of ACS.

**Computer Integrated Technologies.** Project of systems on the basis of personal digital computers and reference to the object, projection automation systems of programmed logical controllers, computer-aided design and modeling of the electronic chips.

### Optional components

#### *Optional components by specialty*

**Safety and Life.** Safety in system „ a person-technic-environment ". The concept of the human factor. General provisions of the analysis and risks estimation. Logic construction of events. Quality – the safety category. Means and actions of safety. The passport of substance, materials safety. The passport of object risk.

**Theory of Information.** Entropy as indeterminate system status. Entropy and information. Methods of coding information. Information and code length, that provides desired reliability under designed noise level. Computation of channels capacity and control.

**Fundamentals of Scientific Research.** The content and principles of scientific researches. The program and research methods. The scientific report. Introduction of researches into production.

**Economy of Automated Productions in Agriculture.** Basic and turnover funds. Material and technical supply of AIC. Profit and profitability. Inter-economic planning. Organization of designing, mounting and operation of power engineering objects. Rate setting, wages and salary.

**Electrical Technologies in Agriculture.** Electrical and magnetic fields Electrical circuits. Calculation of direct current electrical circuits Multi-poles network. Nonlinear circuits. Calculation of circuits at alternative currents and voltage. Transients in linear circles and their calculation. Calculations of nonlinear circuits. Transients in nonlinear circuits.

**Heat Engineering and Hydraulics.** Thermal and state parameters. Thermal and dynamic processes. Thermodynamic processes. The first and second principle of thermodynamics. Humid air. Cycles of heat engines and refrigerator machines. Heat exchange theory. Heat conduction, Convection. Thermal radiation. Heat exchange devices. Thermal energy sources. Boiler plant. Heat generators. Physic of heat of agricultural buildings. Heating, ventilating, conditioning. Thermal product treatment. Renewable energy sources: solar energy, wind energy, biogas, energy conservation technologies.

**Computer Equipment, Networks and Systems.** Scope PCs and computer technology, the basics of the software, database management systems. Working in a computer network. Scan. Computer drawing among AutoCAD. Programming Languages.

**Fundamentals of System Analysis.** The basic concepts and definition of systems analysis. The basic methods, procedures, stages. Indication of management systems. Structural analysis of control systems. Subsystems and optimization of structure. Information characteristics of systems. Decision making.

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## 2.11. FACULTY OF LAND MANAGEMENT

**Dean** – Ph.D., Associate Professor **Taras Ievsiukov**

Tel.: (044) 258-05-25 (24) E-mail: [ievsiukov\\_t@nubip.edu.ua](mailto:ievsiukov_t@nubip.edu.ua)

Location: Building № 6, Room 219

The faculty organizes and coordinates the educational process of bachelors in the following specialty:

### ***193 Geodesy and Land Management***

Educational-professional Program «**Geodesy and Land Management**»

Guarantor of the Program – Doctor of geographical, Professor Kovalchuk Ivan Platonovych

Tel.: (044) 258-05-25 E-mail: [kovalchukip@ukr.net](mailto:kovalchukip@ukr.net)

Graduating departments:

Geodesy and Cartography

Tel.: (044) 258-05-25 E-mail: [kovalchukip@ukr.net](mailto:kovalchukip@ukr.net)

Head of Department – Doctor of geographical, Professor Kovalchuk Ivan Platonovych

Land Resources Administration Management

Tel.: (044) 258-05-25 E-mail: [Uzr\\_k@ukr.net](mailto:Uzr_k@ukr.net)

Head of Department – Doctor of Economics, Professor Dorosh Ol'ha Stepanivna

Land-use Planning

Tel.: (044) 258-05-25 E-mail: [martyn@nubip.edu.ua](mailto:martyn@nubip.edu.ua)

Head of Department – Doctor of Economics, Professor Martyn Andriy Hennadiyovych

Land cadastre

Tel.: (044) 258-05-25 E-mail: [v\\_zayats@ukr.net](mailto:v_zayats@ukr.net)

Head of Department – Doctor of Economics, Professor Zayats Viktor Mefodiyovych

Geoinformatics and Aerospace Research of the Earth

Tel.: (044) 258-05-25 E-mail: [kokhan\\_s@nubip.edu.ua](mailto:kokhan_s@nubip.edu.ua)

Head of Department – Doctor of technical, Professor Kohan Svitlana Stanislavivna

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**Bachelor**  
**Field of Knowledge "Architecture and building"**  
**in Specialty "GEODESY AND LAND MANAGEMENT"**  
**Educational-professional program «Geodesy and Land Management»**

Form of Training:	Licensed number of persons:
– Full-time	90 persons
– Part-time	85 persons
Duration of Training	4 years
Credits ECTS	240
Language of Teaching	Ukrainian, English
Qualification	Bachelor in Geodesy and Land Management

### **The concept of training**

The concept of training specialists in the field of geodesy and land management, consists in the formation of systematic knowledge on topography, geodesy, photogrammetry, cartography, land management, geoinformation technologies. In the process of learning, students learn how to create a variety of cartographic materials: cadastral and topographical plans and maps, creating and filling databases for various geographic information systems, and also studying land-use planning, land cadastre and land law.

### **Practical training**

Curriculum of training on direction 193 - "Geodesy and Land Management" includes educational-practical training on: computer science and programming, topography, surveying, agriculture, photogrammetry and remote sensing, surveying for land management, and practical training in land management and land cadastre. The aim of the trainings is to provide skills of practical knowledge of students with modern methods, forms of organization and tools in their future profession, forming their professional skills to make their own professional decisions for work in the real world, education needs to systematically supplement their knowledge and apply them in their practice activity.

**Academic rights for graduates:** graduates can apply for Master's Degree Specialties and Educational (Educational-professional or Educational-scientific) programs specified in Table 1.2 Section 1.3 this Catalog.

### **Employment of Graduates**

Surveying for the compilation of topographic maps and plans, surveying work related to cadastre, mapping work and data collection, including the use of remote sensing, surveying work in industry and civil engineering, monitoring, economics and legal assessment of land and property.

The specialist may hold primary positions as technician or junior engineer.

**Bachelor`s Program and Curriculum  
in Specialty «Geodesy and Land Management»  
Educational-professional program «Geodesy and Land Management»**

Code n/a	Components of the educational and professional program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits ECTS	The final control
1	2	3	4
<b>1. GENERAL TRAINING CYCLE</b>			
<b>Compulsory components EPP</b>			
CC 1	Higher Mathematics	11	exam, test, exam
CC 2	Physics	10	exam, exam
CC 3	Geoinformatics, Computer Science and Programming	9	test, test, exam
CC 4	Geology and Geomorphology	4	test
CC 5	Electronic Surveying Instruments	4	exam
CC 6	Economic theory	3	exam
CC 7	Land Law	3	test
CC 8	Mathematical Methods and Models	3	exam
<b>Compulsory components EPP by decision of the Academic Council of the University</b>			
CCU 1.1	History of Ukrainian statehood	3	exam
CCU 1.2	Philosophy	4	exam
CCU 1.3	Ukrainian Language for Professional Purpose	4	exam
CCU 1.4	Foreign Language (English, German, French, Spanish)	5	test, exam
CCU 1.5	Physical Education	4	test, test, test, test
CCU 1.6	Labour and life safety	4	test
CCU 1.7	Legal culture of personality	3	test
CCU 1.8	Ethnocultural Studies	3	test
<b>2. SPECIAL (PROFESSIONAL) TRAINING CYCLE</b>			
<b>Compulsory components EPP</b>			
CC 9	Topography	12	exam, exam
CC 10	Topographic and Land Surveying Drawing	4	test, test
CC 11	History of land Relations and Land Management	4	test
CC 12	Geodesy	10	exam, exam, course project
CC 13	Mathematical Processing of Geodetic Measurements	4	exam
CC 14	GIS and Databases	7	exam
CC 15	Photogrammetry and Remote Sensing	9	test, exam
CC 16	Higher Geodesy	6	exam
CC 17	Satellite Geodesy and Spherical Astronomy	6	test
CC 18	Land Cadastre	13	exam, exam, exam, course project
CC 19	Land Planning	16	test, exam, exam, exam, exam
CC 20	Remote Monitoring of Land Resources	3	test
CC 21	Cartography	6	exam
<b>The total amount of Compulsory components</b>		<b>177</b>	
<b>Optional components EPP</b>			
<b>Optional components by specialty (block 1)</b>			
OB 2.1.1	Soil Science and the Basics of Agrochemistry	4	exam
OB 2.1.2	Planning of Local Roads	4	test, course project
OB 2.1.3	Statistical Methods in Land Management	3	test
OB 2.1.4	Fundamentals of Ecology	3	test
OB 2.1.5	Fundamentals of Agriculture and Plant Science	3	exam
OB 2.1.6	Engineering Infrastructure of Territory	3	exam
OB 2.1.7	Psychology	3	test
OB 2.1.8	Geodetic Works in Land-Use Planning	4	test, exam, course project
OB 2.1.9	Land Resources Management	3	exam
OB 2.1.10	Digital Maps and Plans	3	test

**CURRICULA AND PROGRAMS OF BACHELOR DEGREE**

OB 2.1.11	Automated Land Cadastral System	3	test
OB 2.1.12	Rational Use and Conservation of Land	3	test
OB 2.1.13	Technologies of Land Productivity Restoration	3	test
OB 2.1.14	Town-Planning Cadastre	3	exam
OB 2.1.15	Planning Residential Areas	3	exam, course project
OB 2.1.16	Agroforestry Amelioration	3	test
OB 2.1.17	Investment Analysis	3	exam
<b>Optional components by specialty (block 2)</b>			
OB 2.2.1	Soil Science and the Basics of Geobotany	4	exam
OB 2.2.2	Fundamentals of engineering geodesy	4	test, course project
OB 2.2.3	Statistical Methods in Land Management	3	test
OB 2.2.4	Fundamentals of Ecology	3	test
OB 2.2.5	Fundamentals of Agriculture and Plant Science	3	exam
OB 2.2.6	Engineering Infrastructure of Territory	3	exam
OB 2.2.7	Psychology	3	test
OB 2.2.8	Topographic and Geodetic Supply for Land-cadastral Works	4	test, exam, course project
OB 2.2.9	GNSS observations applied problems of geodesy	3	exam
OB 2.2.10	Digital Maps and Plans	3	test
OB 2.2.11	Automated Land Cadastral System	3	test
OB 2.2.12	Rational Use and Conservation of Land	3	test
OB 2.2.13	Regional Geoecology Monitoring	3	test
OB 2.2.14	Town-Planning Cadastre	3	exam
OB 2.2.15	Planning Residential Areas	3	exam, course project
OB 2.2.16	Agroforestry Amelioration	3	test
OB 2.2.17	Thematic Land Mapping	3	exam
<b>Optional components by specialty (block 3)</b>			
OB 2.3.1	Soil Science and the Basics of Agrochemistry	4	exam
OB 2.3.2	Algorithms and Data Structures	4	test, course project
OB 2.3.3	Statistical Methods in Land Management	3	test
OB 2.3.4	Fundamentals of Ecology	3	test
OB 2.3.5	Fundamentals of Agriculture and Plant Science	3	exam
OB 2.3.6	Engineering Infrastructure of Territory	3	exam
OB 2.3.7	Psychology	3	test
OB 2.3.8	Geoinformation Technologies	4	test, exam, course project
OB 2.3.9	Web Applications Development	3	exam
OB 2.3.10	Digital Maps and Plans	3	test
OB 2.3.11	Automated Land Cadastral System	3	test
OB 2.3.12	Rational Use and Conservation of Land	3	test
OB 2.3.13	Managing of IT infrastructure monitoring systems	3	test
OB 2.3.14	Town-Planning Cadastre	3	exam
OB 2.3.15	Planning Residential Areas	3	exam, course project
OB 2.3.16	Agroforestry Amelioration	3	test
OB 2.3.17	Spatial Organization of Crop Rotations	3	exam
<b>Optional components by Student's Choice</b>			
OS 1	Optional subject 1	3	test
OS 2	Optional subject 2	3	test
<b>The total amount of Optional components</b>		<b>60</b>	
<b>3. OTHER TYPES OF TRAINING</b>			
CC 21	Military training course	29	
CC 22	Academic Practice	6	test
CC 23	Academic Practice	1,5	test
CC 24	Academic Practice	3	test
CC 25	Academic Practice	1,5	test
CC 26	Academic Practice	6	test

CC 27	Academic Practice	3	test
CC 28	Academic Practice	1,5	test
CC 29	Academic Practice	3	test
CC 30	Academic Practice	3	test
CC 31	Production Practice	6	test
CC 32	State Attestation	3	
<b>THE TOTAL AMOUNT OF EPP (without military training)</b>		<b>240</b>	

## Annotations of components in the curriculum

### 1. GENERAL TRAINING CYCLE

#### Compulsory components of EPP

**Higher mathematics.** As a fundamental mathematical discipline, it learns the basics of mathematical analysis, linear algebra and linear programming. It contains mathematical tools for a thorough study courses: Mathematical Statistics, Risk Theory, Econometrics and Macroeconomics; it reviews integral calculus, theory of numbers. It is aimed at mastering basic mathematical techniques necessary to study biology, ecology, chemistry and physics, as well as special courses in subject areas.

**Physics.** The aim of the course is to show students a scientific view of the physical processes in the world, in the theoretical foundations of classical mechanics and molecular physics is based. Main methods of experimental study of the characteristics of mechanical motion, the theoretical basis of molecular physics are reviewed.

**Geoinformatics, Computer Science and Programming.** Discipline provides the theoretical knowledge and skills in using computer technologies by future surveyors in their practice. The structure of computers and principles of computer capabilities of operating systems, hardware, software, computers, Internet basics, HTML and create Web-pages, and basic techniques of office software package MS Office are reviewed.

**Geology and Geomorphology.** The discipline is a basic discipline that forms a comprehensive understanding of the peculiarities of the genesis, evolution and current state of geological environment within which there are individual organisms and populations. Course Objective: to form an idea of the geological features of the Earth's environment, the laws of its development, dynamics and stability in relation to human impact.

**Electronic Surveying Instruments.** The purpose of teaching "Electronic surveying instruments" is to obtain basic knowledge of complex physical phenomena and processes that underlie the operation of geodetic electronic devices and computers. The aim of the course is to develop the student theoretical and practical training for working with electronic devices that are used to determine the coordinates and heights of points the earth's surface, as well as other engineering surveying and cadastral works.

**Economics theory.** The object of discipline is to study the economic laws of social production, the rationale for the choice of entities optimal use of scarce resources in order to most fully meet the growing needs of people. The aim of the course is to develop knowledge systems of economic relations in society, issues of efficient use of limited resources, the operation of the main components of the economic system, the development of students' economic thinking.

**Land Law.** Purpose of the discipline: the formation of future bachelors mastering a set of knowledge in the legal regulation of land relations knowledge and ability to analyze legal acts that regulate the possession, use and disposal of land by individuals and legal entities. The task of the study: to be able to apply the acquired theoretical knowledge in the field of land relations in the performance of production activities, practical tasks, specific professional situations in the possession, use and disposal of land.

**Mathematical methods and models.** Economic-mathematical modeling techniques in land is a special discipline in the training of engineers, surveyors, which aims to explore the theoretical principles and practical skills processing large volumes of information and adoption of science-based land management decisions on the use of economic-mathematical modeling methods and tools electronic computers. Students acquire the skills of self-modeling of economic processes related to the organization of rational land use in the development schemes and land management projects, and learn specialized software.

### **Compulsory components by decision of the Academic Council of the University**

Annotations of disciplines “History of Ukrainian Statehood”, “Philosophy”, “Ukrainian for Professional Purposes”, “Foreign Language (English, German, French, Spanish)”, “Physical Training”, “Labour and Life Safety”, “Legal Personal Culture”, “Ethnocultural” see Section 2.1.

## **2. SPECIAL (PROFESSIONAL) TRAINING CYCLE**

### **Compulsory components EPP**

**Topography.** Objectives of the course is to build knowledge about the history of the formation and discipline contribute outstanding domestic and foreign scientists in the development of geodetic science and practice, the current understanding of the shape and size of the Earth, the coordinate system used in geodesy, modern surveying instruments for measuring angles, lengths of lines, calibration, organizing and conducting topographic survey of objectives for land use, land-cadastral use, data preparation techniques for the agricultural purposes, methods for making and fixing areas of design points and lines.

**Topographic and Land Surveying Drawing** study the linear and dashed graphics elements and techniques of drawing, fonts for land management projects, plans and maps, symbols (codes) for graphic design topographic, cadastral surveying and materials, graphic design materials and land cadastre, GIS technology of maps and plans; technology design projects land management plans and land use map in class graphics editors.

**History of land Relations and Land Management.** The discipline involves the study of the formation of land relations - from primitive society to modern socio-historical formations. Students learn the features of land relations and land use in the ancient world, in feudal times. The features of the formation of land market relations. Details the features of land surveying work performed at the time of the Russian Empire, the Soviet Union and the independence of Ukraine.

**Geodesy.** Objectives of the course is to build knowledge about and outstanding contribution to domestic and foreign scientists in the development of geodetic science and practice, the current understanding of the shape and size of the Earth, the coordinate system used in geodesy, modern surveying instruments for measuring angles, conducting topographic surveys during land management, execution of cadastral and other works, techniques for data preparation makes the nature of objects agricultural purposes, methods for making and fixing areas of design points and lines.

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**Mathematical Processing of Geodetic Measurements.** The main purpose of discipline is to provide students with the necessary knowledge and skills needed to perform geodetic measurements and calculations, including during surveying work. Study subjects gives a theoretical knowledge and practical skills in the processing and resolution of surveying tasks to handle as a single value, and for the joint processing of many interconnected geodetic values.

**GIS and databases** consider the basic theory of GIS and database professionals surveyors. Discipline gives a basic theory of databases, the use of modern GIS and relational database systems in land, acquiring skills automated, storage, display, analysis, modeling spatially coordinated the design and content of databases, GIS for land management, particularly for the introduction and use of data from the state land cadastre.

**Photogrammetry and Remote Sensing.** Examines the nature and methods of remote sensing, the theoretical and practical issues related to the use of aerial and satellite imagery, as well as the essence of photogrammetric processes. In the study subjects, students receive the necessary knowledge of analytical and digital photogrammetry, image processing technology study in order to obtain certain products (cards, directories coordinates, etc.).

**Higher Geodesy.** Discipline "Higher Geodesy" examines modern methods for solving basic problems of geodesy based on the joint use of data of higher geodesy, astronomy, gravimetry and satellite geodesy. It consists of two main sections: "Spheroid geodesy" and "Physical Geodesy". The first deals with the solution of geometric problems on the surface of the ellipsoid, the theory of separate images of the surface of an ellipsoid on a plane and solve problems associated with the use of flat rectangular coordinates to geodetic works. The second examines questions that refer to the study of the figure of the Earth, its gravitational field and processing astronomical and geodetic networks.

**Satellite Geodesy and Spherical Astronomy.** It examines current methods for solving scientific and practical problems of geodesy, based on the use of data of space geodesy, astronomy, the theory of the gravitational field and satellite observations in solving the land. We study methods for processing photographic and radar surveys received satellites. We consider the issue using different coordinate systems needed to meet the challenges of satellite geodesy. Attention is paid to the study of satellite motion in the gravitational field of the Earth, including consideration of the impact changes in the physical characteristics of the planets and the outer (space) factors. We study the theory and practice of solving geometric and dynamic problems of satellite geodesy.

**Land Cadastre.** Purpose of the discipline is mastering the theoretical foundations of the land cadastre, composition and content of its components, the procedures for obtaining the necessary information and documents about the legal status of the land, their distribution by category and among land owners and land users, the organization of accounting quantity and quality of land, establishing comparative national economic value of land, the introduction of procedures for cadastral information during the project work, special surveys, study the legal, methodological, technical, organizational and practical aspects of the State Land Cadastre.

**Land Planning.** This discipline plays a leading role in training bachelor students on specialty "Geodesy Cartography and Land Management." Methodology and methods of rational use and protection of land, formation of different types of land use, delineation of political subdivisions, planning areas. We consider the territorial organization of agricultural and industrial production in the regions and ownership of land are studied. The course covers the overview of the requirements for land use at the national, regional and local levels.

**Remote Monitoring of land resources** includes the study of the preprocessing and thematic processing of remote sensing (RS), the possibility of using remote sensing data for monitoring and management of land resources.

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**Cartography.** This discipline reveals the nature and properties of maps as models of the environment, their mathematical basis, methods of imaging, the issue of generalization, conclusion of maps and atlases, their classification, cartographic method of research, technology mapping. It generates students' ability to create works of various cartographic scale, scope and purpose of their use in teaching, research and practice.

### **Optional components EPP**

#### ***Optional components by specialty (block 1)***

**Soil Science and the Basics of Agrochemistry** reviews the science of soils, their formation, structure, properties, patterns of distribution, formation and development of the main properties - fertility, the most rational of use of soil. It examines the soil as a natural body, as a means of production, the subject of human labor and its product.

**Planning of Local Roads.** Aim of the discipline - to give students knowledge that will allow them to find optimal solutions to problems related to the rational use of land resources in the planning and design of road network to meet the requirements of an effective area of farms, efficient implementation of production processes and land use, perform economic assessment placement of road network into account logistics movement and make technical design of local roads of lower categories.

**Statistical Methods in Land Management** - the fundamentals of using mathematical and statistical methods of land management and cadastre data using computer technology are reviewed.

**Fundamentals of Ecology.** The course introduces students to the main sections of modern ecological science: fundamental ecology, and environmental socioecology. Probable study biotic relationships between individual organisms and their populations, their interaction with the environment are shown. We consider the theory of the biosphere and ecosystems, problems and sources of energy flows in ecosystems, the problem of interaction between man and the environment, environmental ethics.

**Fundamentals of Agriculture and Plant Science.** Explores the theoretical and practical problems most rational use of arable land, agricultural landscapes, how to develop physical, chemical, biological and mechanical methods and techniques to improve soil fertility, crop yields and stability of agroecosystems. Crop science deals with the study of new varieties and hybrids of cultivated crops and wild plant species to the action of biotic, abiotic and anthropogenic factors of the environment, develops cultivation technology for yields with consistently high quality based on intensification, energy saving and environmental safety.

**Ingeneering Infrastructure of Territory.** The discipline involves the examination of placement within certain territories set of objects and structures, utilities and components contour reclamation of territory and internal organization of agricultural enterprises. The principles of rational distribution of elements of artificial arrangement, taking into account the economic needs. Students learn to develop design solutions aimed at the rational use and protection of land, increasing the efficiency and productivity of land resources.

**Psychology** - the course is aimed at making future specialist could feel confident, stepping into a profession. Knowledge about the features, principles and patterns of training and education of individual psychological characteristics of its formation and development of individual psychological characteristics that lead to specific behavior of the individual, its activities and communication, help to understand the deeper motives of human actions, to regulate their relations with these and other problems are the focus of the course.

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**Geodetic Works in Land-Use Planning.** Students learn the features of the existing geodetic materials that include significant examination of a particular area; work with involving geodetic surveying marks, topographical survey of existing underground utilities, and processing of the results.

**Land Resources Management** is a special discipline in the training of engineers and surveyors aims to know the nature and patterns of land management, research methods and management mechanisms. Each mode of social production, the level of productive forces and relations of production correspond to a definite system of land management, due to the dominant form of ownership of land and other means of production, as well as the inherent forms of land use. To properly understand the nature and basic ways of land management, to justify its maintenance and reveal patterns of changes in the specific conditions of the land system, it is necessary to trace the historical relationship management with other phenomena and specific historical experience.

**Digital Maps and Plans** cover the basics of digital mapping and the possibility of using GIS in digital maps. The compilation of digital maps and plans using ArcGIS 9.x is taught.

**Automated Land Cadastral Systems.** The discipline studying the basics of automated cadastral systems associated with information support of the State Land Cadastre (SLC). The elements SLC automated through the use of GIS technology.

**Rational Use and Conservation of Land.** Purpose of the discipline - the formation of skills independently analyze the state of land use, evaluate options for optimization, predict the development of degradation processes, develop measures to prevent, capture the general principles of management of land resources on specific soil and climatic conditions.

**Technologies of Land Productivity Restoration.** Purpose of the discipline - the formation of skills to analyze independently the quality of soil, to predict its changes under the influence of economic activity, to develop measures for optimizing the main parameters of soil fertility, the general principles of self-mastery and regain productivity of land in various natural and agricultural areas.

**Town-Planning Cadastre.** The aim of the course is to explore theoretical issues of inventory settlements and practical application of these issues in the conduct of basic and current land records in order to explore the land fund all towns - villages, towns, cities, reporting the presence and distribution of land settlement, located owned and providing for the use, preparation of a report on the availability and distribution of buildings (structures) settlement by the number of floors, wall material, technical equipment, for reasons of unsuitability for use; report on street road network location, network engineering settlement, carrying monetary value of the land settlements: functional zoning settlements, compiling balance of land settlements.

**Planning Residential Areas** gives knowledge about the basic objectives and planning of routes and reconstruction of villages, skills in drafting and planning of residential and industrial development zones, to use normative and methodological literature on the development of urban planning and apply their knowledge in drafting land use to set or change the boundaries of the settlement, the monetary evaluation of land settlements.

**Agroforestry Amelioration.** The discipline aims on study of steppe massive afforestation, creation of shelter forest belts, combating soil erosion, consolidation and development of the sands, mountain afforestation.

**Investment Analysis.** The content and methodological support of the discipline are aimed at developing students' knowledge and practical skills in analysis methods efficiency investment projects (primarily real investments) and implementation of agricultural enterprises investment strategies.

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***Optional components by specialty (block 2)***

**Soil Science and the Basics of Geobotany.** The science of soils, their formation, composition, properties, patterns of distribution, formation and development of the main property - fertility, the most rational use of soil. The discipline describes the basic patterns of the structure and dynamics of natural and anthropogenic phytocoenoses, their classification and transformation, and various types of lands, as well as the coenotic phytoremediation of Ukraine in conjunction with the influence of abiotic and anthropogenic factors.

**Fundamentals of engineering geodesy.** The course is focused on obtaining the necessary knowledge on special engineering and geodetic works; development of reference plans-high geodetic networks, networks of the substantiation of shooting, distribution networks; topographic, special, executive removable when searching, building, exploitation and reconstruction of various objects; breakdown works and geodetic control of the construction of plane engineering structures and linear objects; high-precision take-off in a variety of projects using modern electronic equipment.

**Statistical Methods in Land Management** - the fundamentals of using mathematical and statistical methods of land management and cadastre data using computer technology are reviewed.

**Fundamentals of Ecology.** The course introduces students to the main sections of modern ecological science: fundamental ecology, and environmental socioecology. Probable study biotic relationships between individual organisms and their populations, their interaction with the environment are shown. We consider the theory of the biosphere and ecosystems, problems and sources of energy flows in ecosystems, the problem of interaction between man and the environment, environmental ethics.

**Fundamentals of Agriculture and Plant Science.** Explores the theoretical and practical problems most rational use of arable land, agricultural landscapes, how to develop physical, chemical, biological and mechanical methods and techniques to improve soil fertility, crop yields and stability of agroecosystems. Crop science deals with the study of new varieties and hybrids of cultivated crops and wild plant species to the action of biotic, abiotic and anthropogenic factors of the environment, develops cultivation technology for yields with consistently high quality based on intensification, energy saving and environmental safety.

**Ingeneering Infrastructure of Territory.** The discipline involves the examination of placement within certain territories set of objects and structures, utilities and components contour reclamation of territory and internal organization of agricultural enterprises. The principles of rational distribution of elements of artificial arrangement, taking into account the economic needs. Students learn to develop design solutions aimed at the rational use and protection of land, increasing the efficiency and productivity of land resources.

**Psychology** - the course is aimed at making future specialist could feel confident, stepping into a profession. Knowledge about the features, principles and patterns of training and education of individual psychological characteristics of its formation and development of individual psychological characteristics that lead to specific behavior of the individual, its activities and communication, help to understand the deeper motives of human actions, to regulate their relations with these and other problems are the focus of the course.

**Topographic and Geodetic Supply for Land-cadastral Works.** Topographic and geodesic which support land management is a special discipline in preparation for the master program "geodesic-mapping technology land management." In the process of mastering masters consider the following issues: the nature topographic surveying providing land and its components; surveying materials, their types; land drainage projects; surveying and topographical work for the needs of land use; engineering and

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surveying work for accounting and registration of land plots; Modern technologies of inventory of land; surveying the lands of environmental, health, recreational, historical and cultural significance; geodesic support sustainable water and forest management, planning and construction work.

**GNSS observations applied problems of geodesy.** The discipline of the application of satellite observations in solving applied surveying tasks, modern satellite methods for determining the coordinates of points, the general principles of the method of differential GNSS, factors affecting the accuracy of observation, construction and development of the state geodetic network using satellite navigation systems. The review also reference coordinate system used in satellite positioning techniques.

**Digital Maps and Plans** cover the basics of digital mapping and the possibility of using GIS in digital maps. The compilation of digital maps and plans using ArcGIS 9.x is taught.

**Automated Land Cadastral Systems.** The discipline studying the basics of automated cadastral systems associated with information support of the State Land Cadastre (SLC). The elements SLC automated through the use of GIS technology.

**Rational Use and Conservation of Land.** Purpose of the discipline - the formation of skills independently analyze the state of land use, evaluate options for optimization, predict the development of degradation processes, develop measures to prevent, capture the general principles of management of land resources on specific soil and climatic conditions.

**Regional Geoecology Monitoring.** The course covers the nature and scientific bases of regional geoecological monitoring and problems solved during monitoring research. Levels and functional structure of geoecological monitoring are characterized; the principles and implementation of algorithms geoecological monitoring of the environment are revealed. The expediency of using the results of previous geo-ecological research in the planning, selection and implementation monitoring objects monitoring studies is discussed. Methods of geoecological monitoring, observed parameters of the environment, especially the use of monitoring data in solving the environmental management and land management, land protection are characterized.

**Town-Planning Cadastre.** The aim of the course is to explore theoretical issues of inventory settlements and practical application of these issues in the conduct of basic and current land records in order to explore the land fund all towns - villages, towns, cities, reporting the presence and distribution of land settlement, located owned and providing for the use, preparation of a report on the availability and distribution of buildings (structures) settlement by the number of floors, wall material, technical equipment, for reasons of unsuitability for use; report on street road network location, network engineering settlement, carrying monetary value of the land settlements: functional zoning settlements, compiling balance of land settlements.

**Planning Residential Areas** gives knowledge about the basic objectives and planning of routes and reconstruction of villages, skills in drafting and planning of residential and industrial development zones, to use normative and methodological literature on the development of urban planning and apply their knowledge in drafting land use to set or change the boundaries of the settlement, the monetary evaluation of land settlements.

**Agroforestry Amelioration.** The discipline aims on study of steppe massive afforestation, creation of shelter forest belts, combating soil erosion, consolidation and development of the sands, mountain afforestation.

**Thematic Land Mapping.** The discipline deals with content and object of thematic mapping, especially thematic content of maps of land resources, use of thematic maps in land management activities, as well as issues relating to the application of thematic maps, atlases and cartograms in agricultural practice and during geodetic and cartographic

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works. Theoretical knowledge is reinforced by practical skills in electronic map editing using QGIS software.

### ***Optional components by specialty (block 3)***

**Soil Science and the Basics of Agrochemistry** reviews the science of soils, their formation, structure, properties, patterns of distribution, formation and development of the main properties - fertility, the most rational of use of soil. It examines the soil as a natural body, as a means of production, the subject of human labor and its product.

**Algorithms and Data Structures.** The aim of the course "Algorithms and Data Structures" is forming ideas about basic data structures and basic algorithms for processing geospatial data. The course is focused on the formation of students' skills: working with static and dynamic data structures, mastering the techniques of formalizing logic and computational tasks; the ability to create and explore the effectiveness of algorithms and decision on the application algorithms for searching and sorting data.

**Statistical Methods in Land Management** - the fundamentals of using mathematical and statistical methods of land management and cadastre data using computer technology are reviewed.

**Fundamentals of Ecology.** The course introduces students to the main sections of modern ecological science: fundamental ecology, and environmental socioecology. Probable study biotic relationships between individual organisms and their populations, their interaction with the environment are shown. We consider the theory of the biosphere and ecosystems, problems and sources of energy flows in ecosystems, the problem of interaction between man and the environment, environmental ethics.

**Fundamentals of Agriculture and Plant Science.** Explores the theoretical and practical problems most rational use of arable land, agricultural landscapes, how to develop physical, chemical, biological and mechanical methods and techniques to improve soil fertility, crop yields and stability of agroecosystems. Crop science deals with the study of new varieties and hybrids of cultivated crops and wild plant species to the action of biotic, abiotic and anthropogenic factors of the environment, develops cultivation technology for yields with consistently high quality based on intensification, energy saving and environmental safety.

**Ingeneering Infrastructure of Territory.** The discipline involves the examination of placement within certain territories set of objects and structures, utilities and components contour reclamation of territory and internal organization of agricultural enterprises. The principles of rational distribution of elements of artificial arrangement, taking into account the economic needs. Students learn to develop design solutions aimed at the rational use and protection of land, increasing the efficiency and productivity of land resources.

**Psychology** - the course is aimed at making future specialist could feel confident, stepping into a profession. Knowledge about the features, principles and patterns of training and education of individual psychological characteristics of its formation and development of individual psychological characteristics that lead to specific behavior of the individual, its activities and communication, help to understand the deeper motives of human actions, to regulate their relations with these and other problems are the focus of the course.

**Geoinformation Technologies.** The aim of the course "GIS technology" is forming ideas about the foundations of the collection, storage, processing and distribution of geographic or spatially referenced information. The course is focused on the formation of students' skills: gathering geospatial data using different data sources, processing, analysis and visualization of geospatial data to make good decisions.

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**Web Applications Development.** The aim of the course "Developing Web applications" is to develop knowledge for creation geographic information systems for the Internet. The course is focused on the formation of students' skills: design, development and support of WEB-applications on the Internet with the help of modern technology.

**Digital Maps and Plans** cover the basics of digital mapping and the possibility of using GIS in digital maps. The compilation of digital maps and plans using ArcGIS 9.x is taught.

**Automated Land Cadastral Systems.** The discipline studying the basics of automated cadastral systems associated with information support of the State Land Cadastre (SLC). The elements SLC automated through the use of GIS technology.

**Rational Use and Conservation of Land.** Purpose of the discipline - the formation of skills independently analyze the state of land use, evaluate options for optimization, predict the development of degradation processes, develop measures to prevent, capture the general principles of management of land resources on specific soil and climatic conditions.

**Managing of IT infrastructure monitoring systems.** The course includes study of theoretical knowledge in the development and management of IT infrastructure monitoring systems, as well as practical skills that enable to identify and minimize the costs of creating such systems. The structure, composition, objectives and importance of IT infrastructure monitoring systems as well as key processes of IT infrastructure are studied. There is methodology of building and managing IT infrastructure of monitoring systems.

**Town-Planning Cadastre.** The aim of the course is to explore theoretical issues of inventory settlements and practical application of these issues in the conduct of basic and current land records in order to explore the land fund all towns - villages, towns, cities, reporting the presence and distribution of land settlement, located owned and providing for the use, preparation of a report on the availability and distribution of buildings (structures) settlement by the number of floors, wall material, technical equipment, for reasons of unsuitability for use; report on street road network location, network engineering settlement, carrying monetary value of the land settlements: functional zoning settlements, compiling balance of land settlements.

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**Agroforestry Amelioration.** The discipline aims on study of steppe massive afforestation, creation of shelter forest belts, combating soil erosion, consolidation and development of the sands, mountain afforestation.

**Spatial Organization of Crop Rotations.** The discipline observes means and measures to model the types and kinds of crop rotations, their spatial organization with GIS technology. The use of GIS for automation of processes based on surveying at the local level on the example of projects that provide environmental and economic assessment of crop rotation as well as land management are observed. The principles and stages of project development are shown in order to provide ecological and economic assessment of crop rotation and land management based on GIS

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## 2.12. LAW FACULTY

**Dean** – Candidate of Science in Law, Associate professor **Olena Yara**

Tel.: (044) 259-97-25

E-mail: lawyer\_dean@twin.nubip.edu.ua

Location: building № 6, room 231

The faculty organizes and coordinates the educational process of bachelors in the following specialties:

### **081 Law**

Educational-professional Program "**Law**"

Graduating departments:

Theori and History of State and Law Tel: (044) 259-97-25

E-mail: historylaw\_chair @twin.nubip.edu.ua

Head of the department – Candidate of Science in Law, Associate professor, Kachur Vira Olegivna

Civil and Economic Law Tel: (044) 259-97-25

E-mail: civillaw\_chair@twin.nubip.edu.ua

Head of the department – Doctor of Law, Associate professor, Pidubnyi Oleksiy Yuriyovych

The Department of Administrative and Finance Law: Tel.: (044) 259-97-25

E-mail: adminlaw@twin.nauu.kiev.ua

Head of the Department – Doctor of Law, Professor Kurylo Volodymyr Ivanovych

Agrarian, land and environmental law named after V.Z.Yanchuk

Tel.: (044) 259-97-25

E-mail: agrolaw\_chair @twin.nubip.edu.ua

Head of the Department – Doctor of Law, professor Yermolenko Volodymyr Mykhaylovych

The Department of International Law and Comparative Law: Tel.: (044) 259-97-

25E-mail: interlaw\_chair @twin.nubip.edu.ua

Head of the Department – Doctor of Law, Professor Ladychenko Viktor Valerijovych

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**Bachelor  
Field of Knowledge "Law"  
in Specialty "Law"  
Educational-professional program "Law"**

Form of Training:	Licensed number of persons:
– Full-time	160
– Part-time	90
Duration of Training	4 years
Credits ECTS	240
Language of Teaching	Ukrainian
Qualification	Bachelor of Laws

### **Concept of training**

Training of the qualified specialists in the field of law, who work for the establishment of supremacy of law in society and development of legal consciousness and legal culture of citizens. Education of the professional lawyer who can decide the issues of legal support of various spheres of public activities with a focus on agrarian, land and ecological relationship.

### **Practical training**

During the training students fix and deepen the theoretical knowledge received in the process of studying of the fundamental and professional legal educational subjects and get skills of practical law enforcement. During the practical and production training students become participants of practical activities on the application of legal norms, observe and analyze various aspects of the lawyers-experts activity, learn how to take actions related to protection of rights and legal interests of physical and legal entities.

**Academic rights of Graduates:** graduates can apply for Master's Degree Specialties and Educational (Educational-professional or Educational-scientific) programs specified in Table 1.2 Section 1.3 this Catalog.

### **Employment of Graduates**

The associate lawyers prepared within the programme have the possibility to work by profession in the authorities of public administration of Ukraine (public and local authorities), as well as at the enterprises, institutions and organizations as all-legal area of focus, and those that operate in different spheres of public life.

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**Bachelor`s Program and Curriculum  
in Specialty «Law»  
Educational-professional program «Law»**

Code n/a	Components of the educational-professional program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits ECTS	The final control
1	2	3	4
<b>1. GENERAL TRAINING CYCLE</b>			
<b>Compulsory components</b>			
CC 1	Judicial and law enforcement authorities of Ukraine	4	exam
CC 2	Legal ethics	3	exam
CC 3	Theory of state and law	6	exam
CC 4	History of state and law of foreign countries	6	exam
CC 5	History of state and law of Ukraine	6	exam
CC 6	Basics of Roman Law (Latin)	4	exam
CC 7	Logic	3	exam
CC 8	History of doctrines about state and law	4	exam
CC 9	Comparative law	4	exam
<b>Compulsory components EPP by decision of the Academic Council of the University</b>			
OB 1.1	Philosophy	4	exam
OB 1.2	Ukrainian for professional purposes	4	exam
OB 1.3	Foreign language (English, German, French, Spanish)	5	exam
OB 1.4	Physical training	4	exam
OB 1.5	Labour and life safety	3	exam
OB 1.6	Ethnocultural	3	exam
OB 1.7	Information technologies	3	exam
<b>2. SPECIAL (PROFESSIONAL) TRAINING CYCLE</b>			
<b>Compulsory components</b>			
CC 1	Constitutional law of Ukraine	7	exam
CC 2	Criminal law	8	exam
CC 3	Civil and family law of Ukraine	7	exam
CC 4	Administrative law of Ukraine	9	exam
CC 5	Criminal procedure	4	exam
CC 6	Economic law	4	exam
CC 7	Employment law	4	exam
CC 8	Land law	4	exam
CC 9	Economic procedure	4	exam
CC 10	Civil procedure	4	exam
CC 11	Environmental law	4	exam
CC 12	International law	4	exam
CC 13	Administrative procedure	4	exam
CC 14	Financial law of Ukraine	4	exam
CC 15	Agrarian law	4	exam
CC 16	Criminalistics	4	exam
CC 17	Criminology	3	exam
CC 18	Practice of European Court on Human Rights	4	exam
<b>Optional components</b>			
<b>Optional Block 1. by choice in specialty</b>			
OB 1.1	Discipline 1	6	exam
OB 1.2	Discipline 2	6	exam
OB 1.3	Discipline 3	6	exam
<b>Optional Block 2. by choice in specialty</b>			
OB 2.1	Discipline 1	6	exam
OB 2.2	Discipline 2	6	exam
OB 2.3	Discipline 3	6	exam
<b>Optional Block 3 by choice in specialty</b>			
OB 3.1.	Discipline 1	6	exam
OB 3.2.	Discipline 2	6	exam
OB 3.3.	Discipline 3	6	exam

<b>Optional Block 4 (Student's Choice)</b>			
OB 4.1.	Discipline 1	3	exam
OB 4.2.	Discipline 2	3	exam
<b>The total amount of required components</b>		<b>161</b>	
<b>The total amount of sample components</b>		<b>60</b>	
<b>3. OTHER TYPES OF TRAINING</b>			
CC 1	Academic Practice	<b>8</b>	
CC 2	Production Practice	<b>10</b>	
CC3	State Attestation	<b>1</b>	
<b>THE TOTAL AMOUNT OF EPP</b>		<b>240</b>	

## Annotations of Components in the curriculum

### 1. GENERAL TRAINING CYCLE

#### Compulsory components

**Judicial and law enforcement authorities of Ukraine.** The educational subject "Judicial and law enforcement authorities of Ukraine" gives general background information about public and private authorities engaged in law enforcement activities. In essence the educational subject is basic, as it gives knowledge, without which it is impossible to learn the material of the following legal educational subjects. Learning of this knowledge allows to understand more deeply the specifics of the activity of law enforcement authorities during the study of civil, criminal, economic and administrative procedures.

**Legal ethics.** Juridical deontology is a philosophical - legal science and academic discipline that reveals basic aspects of legal activity (scientific, academic and practical ). Course "Legal ethics" enables students to gain basic knowledge of the requirements for professional and personal qualities of lawyers, as well as help shape the outlook lawyer. Particular attention is paid to the official and corporate ethics of lawyers in different specializations.

**Theory of state and law.** The theory of state and law is a social science of theoretic and legal character. It investigates the theoretic nature of functioning of such social phenomena as the state and law, and thus is a fundamental professional discipline which belongs to the basic training courses on getting higher legal education. The training program includes the legal concepts and categories relating to the theory of state and law. The purpose of this academic discipline is mastery by the students of a system of the general-purpose modern knowledge on regularities of emergence, development and functioning of state and legal phenomena at large.

**History of state and law of foreign countries.** The reform of modern Ukrainian society, fundamental changes in state legal institutions which occurred and are occurring, as well as other factors and factors that determine and will determine the necessity of increasing interest in the study of international reform experience, and solid approaches to the codification of the legislation. Academic discipline "History of state and law of foreign countries" will help students learn the facts and to identify patterns of emergence, development, decline, or death of various types of state and law in the specific historical conditions.

**History of state and law of Ukraine.**

History of state and law of Ukraine is a compulsory educational subject in all higher education institutions and faculties of our country. Study of historical and legal heritage of the past generations gives an opportunity to understand more deeply the modern processes of state and legal construction, understand general regularities, main directions and prospects of development of state and legal institutions in the future. History of state and law of Ukraine aims to familiarize students with state and legal development of Ukrainian nation from ancient times to the present, including the historical types and forms of state and law, political institutions and legal institutions in their historical development, it considers also the role of the state and law in society.

**Basics of Roman law (Latin).** The education subject "the Basics of Roman law" is a compulsory subject in the curriculum of all higher educational institutions. The historical significance of Roman law for Ukraine is based on the fact that for a long time it in its classic and Greco - Roman (Byzantine) variants had influence on the the formation and development of the Ukrainian law and continues to influence the formation of the concept of law in Ukraine today. The goal of the course is to acquaint students with the legal culture of Ancient Rome, with the basic institutions of the Roman public and private law, and also show the influence of Roman private law on the development of modern global civil law and civil law of the Ukraine in particular.

**Logic.** The study of the science of logic provides the familiarization of the students with the logical theory of thinking and mastering the skills of logical analysis received in the process of study of the political knowledge and interpretation of the formalized language of the science of logic in the sphere of politics; identification of logic errors in reasoning with political content; development of political knowledge; proving of the political knowledge on the truth or refutation on the false.

**History of doctrines of state and law.** Formation of legal philosophy based on knowledge of different approaches and concepts to specific public-legal institutions of law in general. This is a subject of study discipline "History of doctrines of state and law". Discipline "History of doctrines of state and law" will allow students to explore the history of formation and development of ideas of law, the law of the state, the main public-legal institutions in the process of human civilization.

**Comparative law.** One of the major trends of modern law is intensification of integration processes, increasing of the international law influence. This encourages the active involvement of comparative law research. Comparative law as a branch of legal science has specific subject and method of scientific research: goal, objects, functions, structure, theoretical and methodological data. Its General part contains a basis of comparative law analysis of the modern law systems of the world as the main object of study. And a Special part shows the possibility of using a comparative law method in various fields of jurisprudence and legislation.

**Compulsory components by decision of the Academic Council of the University**

Annotations of components "Ukrainian for Professional Purposes", "History of Ukrainian Statehood", "Foreign language", "Philosophy", "Physical Training", "Labour and Life Safety", "Ethnocultural" see Section 2.1.

**Information technologies.** The purpose of the discipline - formation of knowledge of students on the use of modern information technology for the successful implementation of information and communication in the management, which involves the mastery of knowledge and skills to work with applications running Windows, word processing, spreadsheet processors, the construction and administration of databases, create presentations.

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## 2. SPECIAL (PROFESSIONAL) TRAINING CYCLE

### Compulsory components

**Constitutional law of Ukraine.** Constitutional law of Ukraine is the leading branch and science of national law system in Ukraine. As a branch of the national law, it establishes and regulates, and as a science, it studies the fundamental social relations regarding the political-territorial organization of the country, its operation, the socio-economic system. This means that it formulates the scientific bases of establishment of Ukraine as a state, without which the latter cannot be optimally predictable.

**Criminal law.** The purpose of the criminal law studying is mastering by the students of knowledge of criminal law objectives, functions and principles; knowledge of the general conceptual framework of criminal law of Ukraine; ability to systematize and locate criminal legal norms; skills of the proper application of the common criminal law institutions in solving practical tasks; skills of the identification of crime signs in the committed act, the delimitation of crimes from other infractions; the ability to define the grounds and forms of criminal responsibility and the grounds of application of other measures of criminal-legal influence; the ability to perform a search and critical analysis of the materials of law-enforcement activities in solving specific practical problems; the ability to understanding the general directions of the criminal policy in Ukraine.

**Civil and family law of Ukraine.** Civil and family relations are the wide layer of public relations, which every human is constantly facing throughout life from birth every day. Participation in these relations is implemented through the ability to have and exercise civil and family rights and responsibilities. However, knowledge of own rights and responsibilities is not enough. We should know not only how to exercise them in everyday life, but also how to protect them against invasion. While studying this course the student acquires knowledge not only of the civil and family legislation system, but also the relevant theoretical provisions, without which it is impossible to thoroughly understand and interpret the civil, family and legal categories.

**Administrative law of Ukraine.** Educational subject, which includes the mastery of specific tools of administrative law science, the study of the essence, forms and methods of state government, the Executive power system and its functions, problems of administrative enforcement in the state administration and the responsibility, the state economic management, the management of social and cultural development, administrative-political activity and cross-sector state governance.

**Criminal procedure.** As an educational subject, criminal procedure is based on the science of criminal procedural law and practice of its application by the courts, prosecutors, investigators, bodies of inquiry, lawyers. The aim of teaching the course «Criminal criminal procedure of Ukraine» is the disclosure of its importance for the protection of rights and legitimate interests of physical and legal persons during criminal proceedings, for consolidation of legality and law order, protection of interests of society and state.

**Economic law.** Economic law is taught to students of the third course, that is why the subject includes the study of economic law legal institutions, based on already obtained knowledge of state and law theory, constitutional, administrative, financial, civil laws and other methodological recommendations are to be used to help in acquisition of subject knowledge and to achieve the aims of the course study. The purpose of course is formation of the system of knowledge about legal regulation of economic activity, legal regulation of economy business in various specific fields of national economy.

**Employment law.** Employment law is one of the leading braches that constitute the law system of Ukraine, as it regulates one of the most important spheres of social relations — labour relations between employees and employers.

**Land law.** Land law studies the social relations between the subjects as to the realization of property right to land, and as to the issues of ownership, usage and disposal of the land. The purpose of the land law is the regulation of the land dealing relations between the subjects. According to the land law system, there are land dealing institutions, they are primarily the property right to land, forms of land uses, land servitudes, neighbourliness, security of property right to land, responsibility for violation of land legislation, the legal regimes of the land of Ukraine in accordance with their categories etc.

**Economic procedure.** Economic procedure studies the basic concepts, institutions, principles and sources of the economic procedural law, the provisions regarding organization and functioning of the economic courts of Ukraine; peculiarities of consideration of economic disputes; teaches to use the acquired knowledge in practice and make corresponding procedural documents. The aim of the course "Economic procedure" is to form a system of theoretical knowledge and practical skills of application of the procedural law norms with the rules of substantive law during the consideration of disputes subject to the jurisdiction of the economic courts.

**Civil procedure.** Discipline «Civil procedure» is based on the system and the provisions of the Civil Procedure Code of Ukraine. This discipline studies the general provisions of the legal regulation of the procedure for consideration and disposition of civil cases, institutes of civil procedural law, that constitute its system, including civil legal procedural jural relationship, evidence and proof, the development of civil procedure as to stages and procedures, the procedural issues of execution of judicial awards.

**Environmental law.** Environmental law is aimed at creating most favorable conditions for life, work and recreation of citizens. This is life saving and protecting branch of law, its importance for human life and activity and for the whole society is hard to overestimate. The highest goal of the social policy of our state is to take care of the life and health of a person - this sector has the potential to implement it. Environmental relations are established between society and nature, between people and the environment. The objects of ecological relations are the natural wealth of the land, its minerals, waters, forests, air, wildlife, etc.

**International law.** International law plays an important role in the regulation of the relations between states, helps to maintain their stability. The science of international law develops the ability to assess and reasonably predict the development of international policy and relations. Study of this science allows to predict changes in the system of international relations, to simulate the behavior of subjects of international law, and to predict the effects of their proposed solutions. Study of this system of law and educational subject offers a future lawyer the opportunity to understand the processes of implementation and regulation of international cooperation. Course has theoretical and practical and legal value.

**Administrative procedure.** The purpose of the course «Administrative procedure» is the deep study of legal forms and methods, constitutional and legislative framework and human rights protection methods. Because it is the rules of administrative procedure, which provide recognition of the rights, duties and interests of natural or legal persons in the public sphere and their protection using management, installation and judicial means. The provisions of administrative procedure law of Ukraine define the procedure, conditions and measures for consideration and solution of specific administrative cases.

**Financial law of Ukraine.** Today, social, legal and political reforms are being implemented in Ukraine. In terms of the radical changes in the life of our country, the content of the financial relations are changing significantly, their legal regulation is improving, and thus the role of the financial law significantly increases. The objective of this course is formation of knowledge about the legal regulation of financial activity of the state and basic skills of application of financial legislation.

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**Agrarian law.** The study of the current agrarian legislation and legal issues arising during the formation, activity and termination of economic operator in agriculture complex, definition of the legal regime for the property of such enterprises, acquaintance with the specifics of their management; study of the relations of the reforming of property and land of non-state agricultural enterprises, ways of protection of the peasants rights in the process of reforming, the peculiarities of the legal regime of agricultural purpose lands .

**Criminalistics.** Transition of Ukraine to the new socio-economic structure and process of the development of the operative democratic state and a truly civil society, as well as the necessity of building of the effective modern law enforcement system needs active usage of rich armory of science against criminality. The science of criminal law is important discipline in the system of scientific knowledge, it is enhancing the enforcement activities. The discipline « Criminalistics» plays the special role in the long process of training of high profile, modern lawyer.

**Criminology.** While studying the subject the listener learns such knowledge as theoretical material with regard to the concept, the subject, the method of criminology as an education subject, subject, tasks of criminology as a science, legislation, which regulates the prevention of crime as whole and its separate types.

**Practice of European Court on Human Rights.** The practice of the European court shows that the number of violations of human rights in Ukraine is only a little over 1% of the total number of human rights violations, recorded by European court in other countries. For example, from 8.5 thousand decisions of European court, only 120 in European court found a violation of rights by Ukraine. Very rarely, cases against Ukraine were satisfied by the court in full, and often not in the part of the claim, which appeared as a defining. Thus, a certain practice was formed in Ukraine as to appeals to the European court of human rights and passing judgment, which requires its study and analysis for a more effective recourse to the Court.

### **Optional components**

#### ***Optional Block 1 by choice in specialty***

**Basics of the economic theory.** The main task of the course “Basics of the economic theory” is formation of deep economic knowledge of students, logic of modern economic thinking and economic culture, adequate conditions of transition of the country to market relations, teaching of students the basic methods of analysis of economic processes, and the ability to take informed decisions about economic problems.

**Basics of Business Design.** The course provides to the students theoretical training on management: - the nature of the basic concepts and categories of management and administration; - principles and functions of management; - systems management methods; - content management processes and technologies; - modern management theories and evolution of specific management functions under the influence of scientific and technological progress; - key features as subject in management, its interaction with the environment, organization and team; - Theory and practice of decision-making, implementation manager main functions of planning, organization, motivation and control; - The phenomenon of leadership and its use for effective regulation of subordinates actions; - Information support of the management and investigation of influence on this process communications systems; - Ethics and responsibility in management; - Management efficiency. The purpose and objectives of discipline: learning basic knowledge of the marketing. Study: general methodological foundations of marketing theory and practice of marketing research, the mechanism of influence on the competitive position of firms in the market, set of basic elements and tools of marketing, marketing management.

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**Religion studies.** The aim of the course is to study history of the formation and evolution of religious systems, the nature and genesis of dissent, contemporary religious situation in the world and in Ukraine, reveal the nature of religion as a social and cultural phenomenon, philosophical and spiritual - moral preparation of students for their self-orientation in terms of free choice, knowledge of social and cultural characteristics of different countries and people.

**Juridical psychology.** The main tasks of legal psychology is to study the psychological patterns of the impact of law and law enforcement on individuals, groups, collectives, and the development of scientific recommendations in order to improve the effectiveness of law enforcement, strict compliance with the law, successful solution of problems of justice and the rehabilitation of persons who have committed a crime.

**The Psychology of Management.** The study of psychological patterns of management, problems of communication and interaction between people in different social structures and analysis of psychological conditions and characteristics of management activities in order to increase the effectiveness and quality of work in the management system.

**Conflictology.** Conflictology - a system of knowledge about patterns and mechanisms of emergence and development of conflicts, as well as principles and technologies of their management. The main task is to develop students' skills and abilities to identify main content of the notion of conflicts, constructively resolve conflicts and to prevent conflicts in professional activities.

**Juvenile law.** Juvenile law studies the legal regulation of social relations in which children and youth participate, the legal provision of life, proper development, social adaptation of adolescents. Two categories of minors: those who have broken the law and those who find themselves in a difficult life situation. Creating special (individual) conditions for children during criminal proceedings; additional specialization of lawyers, as well as judicial institutions; providing sufficient conditions for children's adaptation to modern society; prevention of problems with the law in children and adolescents.

**Legal thought in Ukraine.** State Process in Ukraine is largely based on the achievements of the national legal thought. Educational Discipline "Legal thought in Ukraine" will allow students to explore and analyze how motivated these or other approaches, concepts formed the constitutional institutions of Ukraine at different periods of our country.

**Sports Law.** The purpose of the discipline «Sports Law» is to provide students with special theoretical knowledge on the problems of formation of sports law, features of legal regulation of sports relations, study the content of basic legal categories of sports law, mastering practical skills to represent and protect the rights of sports.

**Tourist law.** The purpose of the discipline "Tourist Law" is to provide students with theoretical knowledge in the field of legal regulation of tourism, study the content of basic legal categories of tourism law, mastering practical skills in the application of legal instruments in tourism.

**Town Planning Law.** Discipline aimed at developing students theoretical knowledge in the field of regulation of urban development, including building relationships with area planning, zoning, construction works and putting into operation of construction and practical skills in the approval procedures for construction permits and the basic agreements concluded in construction.

**Anti-corruption legislation.** The purpose of the course "Anti-corruption legislation" is forming among the students a set of professional knowledge on the theoretical foundations of modern legal regulation of relations in the field of preventing and combating corruption; awareness of the essence of the main regulations in the field of anti-corruption activities; understanding of the system of anti-corruption bodies, their tasks, functions and delimitation of powers; knowledge of basic

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**Information Law.** The purpose of studying the subject "Information Law" is to provide students with comprehensive knowledge of the theory and practice of information law. The following subject were studied: the current legislation of Ukraine, which regulates information on human rights actions and effectiveness in this area of information, should be explained and complied with; to determine the system of governing bodies in the field of information legal relations; highlight the features of legal regulation of certain institutions of information law, such as state secrets, information security, media, personal data, etc.; to defend their information rights and freedoms; identify and adequately respond to violations of existing national and international legal acts governing information relations; to conduct scientific and legal research on the problems of information law; adhere to academic integrity.

**Transport law.** The discipline "Transport Law" is studied in the system of educational disciplines for educational and professional programs "Transport Technologies" and "Law". The purpose of teaching the discipline is to teach students to find effective tools and methods for solving practical problems in the field of legal regulation of transport services, legal organization of transport and logistics activities, national and international transport.

**Notary in Ukraine.** Notary in Ukraine is a system of bodies and officials entrusted with the duty to certify the law and facts, which have having value, and perform other notary actions, prescribed by the law, with the purpose of giving them legal validity. Study of subject "Notary in Ukraine" is the important and integral part of higher education of students who chose the profession of a lawyer, because their responsibilities will include not only knowledge of laws and regulations, but also to application and explanation of them to others.

**Intellectual property law.** Intellectual property issues in the modern world took a prominent place and became not just a legal or commercial, but because of the general intellectualization of modern economy, these problems, the solution of which requires complex strategic approaches, are becoming more political, that is why the role of the country in the protection of the owner rights in the conditions of deepening market reforms increases.

**Family Law.** The purpose of discipline «Family Law» is to acquire knowledge about the legal regulation of property and personal relations of family nature. The program involves teaching the discipline study of family law, practice of legal regulation in the sphere of family relations and newest theoretical developments on this issue.

**International defence of human rights.** The course is aimed at confirmation of the right as the art of goodness and justice through the promotion of a positive attitude towards the protection and observation of human rights and fundamental freedoms. It provides an overview of the basic ideas, concepts, principles of human rights, which are reflected in the theoretical writings and practice of the European Court of Human Rights and it contain information about legal activities in the field of human rights, forms, ways of legal protection and human rights observation.

**European law.** Ukraine, which is located in the centre of European continent, should take its proper place and contribute to new perspectives of development of European and transatlantic relations, basing on unconditional respect for the norms of a democratic civil society, supremacy of law, development of market relations on the principles of free competition. European law is a branched complex international and supranational legal norms relating to different branches of law and are in a state of rapid development.

**Constitutional process.** Elective discipline is designed to acquaint students with constitutional procedural rights. In the process of studying this discipline students on the basis of knowledge of "Constitutional Law of Ukraine" will be able to systematize in more detail the normative, theoretical and practical material in the constitutional process, learn

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to work with such new sources for the domestic legal system. issues relevant to the implementation of constitutional law. Also, students will develop skills of practical work with the Constitution of Ukraine (which has direct effect) and with the constitutional and constitutional-procedural legislation. In particular, students will be trained in drafting procedural documents (constitutional submissions and constitutional appeals to the Constitutional Court of Ukraine, individual and collective appeals to public authorities and local governments, applications, petitions and other documents in cases of citizenship, refugees, etc.).

### ***Optional Block 2***

**Human-centered approach in law.** Human-centered approach in law focuses on the general legal trends of human development, as well as determines the diversity of legal cultures, as evidenced by the pluralism of law and order, arising in specific historical conditions. The discipline examines the formation of human legal existence, features of the legal status of the individual in traditional societies, in the system of European law, in the international legal dimension, as well as legal problems of human existence in the context of globalization challenges.

**Legal sociology.** The course is aimed at deepening knowledge of socio-legal phenomena and processes, ways of organizing socio-legal relations, social conditionality and value of law, relationships and interaction of social and legal reality, as well as contribute to the acquisition of skills for analysis and forecasting socio-legal processes, conditions for the formation of an active social and legal position of legal entities, ensuring the social efficiency of legal activities.

**Legal writing and documentation.** The purpose of this educational discipline is achieving a comprehensive deep understanding of the concept by students the role and importance of legal documents and also their areas of application, formation of theoretical ideas about the document and documentary activities, about the rules, methods, ways to create and systematize legal documents, preparation for practical legal activity, formation of creative personality of future lawyers

**Law of social security.** Discipline involves the formation of student knowledge system of legal regulation of security and social relations in Ukraine, acquaintance with the basic concepts and principles of social security law, the study of current legislation on social security, legal problems arising in the course of its application, the definition of the legal status characteristics subjects of social security, study grounds and conditions of, modification and termination of security and social relations, learning methods of regulating security and social relations and protection of the rights of specific social security law.

**Climate Law.** The purpose of the discipline "Climate Law" is to form a system of theoretical knowledge on the legal regulation of relations in the field of climate protection and use, as well as practical skills in analyzing, interpreting and correctly applying legislation on climate protection, general and special climate use, climate monitoring and inventory. , protection of the ozone layer, as well as protection from the harmful effects of climate.

**Energy law.** Within the framework of the work program of the discipline "Energy Law" students learn new knowledge in the field of legal regulation of energy (energy law) under current legislation of Ukraine and EU law, which includes the legal basis of state policy in the field of energy, legal framework for public administration production and transportation of electricity, legal support for the functioning of the electricity market, legal regulation of energy use and energy saving tion. It is also envisaged to study the features of legal regulation of public relations in the field of natural resources for energy production, legal regulation of alternative energy sources, legal principles of "green" energy and environmental protection in the production and use of energy resources.

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**Advocacy Ukraine.** Advocacy is the integral factor in the legal system and the main non-state Institute of protection of the individual, his / her rights and freedoms in civilized democratic countries. Almost all international human rights acts, ranging from the Common declaration and finishing with the Main provisions about the role of lawyers, consider the right to receive professional legal assistance as one of the most important rights of each person.

**Prosecutor's Office of Ukraine.** Discipline "prosecutor's supervision" - an integral part of a complete legal education. Knowledge of the organization and activities of the prosecution, its capabilities in protecting the interests of individuals, society and the state, its place and role in the Ukrainian legal system needed not only to graduates of higher educational institutions, who decided to choose the location of their future prosecution. At least this knowledge need lawyers who work in the bodies of representative and executive bodies, courts, banks, commercial structures, ie wherever needed highly qualified specialists.

**Administrative and legal protection of computer programs.** The discipline "Administrative and legal protection of computer programs" is studied in the system of academic disciplines in the educational and professional programs "Software of information systems" and "Law". The purpose of teaching the discipline is to teach students to find effective tools and methods for solving practical problems in the field of administrative and legal protection of intellectual property rights to computer programs.

**Inheritance Law.** The proposed course «Inheritance Law» is designed for law students and aims to prepare future expert in law, which could to analyze scientific literature and to how the legislation through the prism of their practical application and conduct independent research. The task of the discipline is to familiarize with the basic provisions of inheritance law and its individual institutions; analysis and generalization of judicial practice in the field of inheritance law; self-help skills development of practical situations.

**Business Law.** The purpose of the course "Business Law" is to form a system of knowledge about the legal regulation and forms of entrepreneurial activity, the procedure of legalization of business activities. The issue of termination of activity and application of the bankruptcy procedure of business entities. Features of contractual relations in the field of entrepreneurship. Contracts of sale, rental, leasing, insurance, franchise, concessions etc. Legal regulation of financial activity of business entities. The responsibility for businesses to provide quality goods and services to consumers.

**Legal status of Social Enterprises.** The course "Legal status of Social Enterprises" is devoted to current theoretical and practical problems of activities of Social Enterprises.

Students will be introduced to the types of Social Enterprises and their place in the system of legal entities of Ukraine, will acquire knowledge about the legal status, establishment, management and liquidation of Social Enterprises, about rights and obligations of participants of such legal entities.

**European law.** Ukraine, which is located in the centre of European continent, should take its proper place and contribute to new perspectives of development of European and transatlantic relations, basing on unconditional respect for the norms of a democratic civil society, supremacy of law, development of market relations on the principles of free competition. European law is a branched complex international and supranational legal norms relating to different branches of law and are in a state of rapid development.

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**Practical bases of mediation.** The elective course is designed to acquaint students with the basics of such a separate institution as alternative dispute resolution. This knowledge will help the future lawyer to identify the conflict in a timely manner, understand its nature and mechanism, find different approaches to its settlement, which will help to increase efficiency in professional activities and to establish relationships in everyday life.

**Fundamentals of legal practice.** The elective course is designed to acquaint students with practical skills in identifying legal facts and their formalization in the form of procedural evidence, drafting legal documents, providing legal advice to clients by advising them and taking certain legally significant actions in their favor free of charge. Also, the acquisition of practical skills will allow students to determine the factual basis of a legal case, to carry out legal analysis of legislation and case law, to formulate a legal position in the case, to have skills in representation in courts, public authorities and local governments.

### ***Optional Block 3***

**Conflict in law.** The purpose of the course is to clarify the theoretical and legal nature of the conflict. Discipline allows to find out the content and features of social conflicts; determine the legal nature of legal conflicts, reveal their main properties and structure; to study different types of legal conflicts; characterizes ways to prevent and resolve legal conflicts. This contributes to the development of skills for timely detection of conflict situations in law and their adequate resolution.

**Legal thinking.** The course is aimed at forming and improving the culture of thinking of law students by developing skills for thinking in legal concepts and performing logical operations with them, analysis of legal terminology, evidential, consistent, critical legal thinking in practical situations, abstract thinking, logical construction of their judgments and correct formulation, proof and refutation of legal information.

**Fundamentals of legal discourse.** The course aims to deepen students' knowledge of legal communication, models of legal discourse (subjects, object, results, etc.), the dependence of legal discourse on objective and subjective conditions, as well as developing skills to combine verbal and nonverbal communications, achieving maximum compliance of abstract rules of discourse with their verbal embodiment, conducting a legal monologue and legal dialogue to obtain legal understanding or legal consensus.

**State registration of land rights.** The purpose of the discipline «State registration of land rights» is to form students special theoretical knowledge on the legal aspects of state registration of land rights, acquisition by students of practical skills on the application of land legislation in this part in order to solve legal problems that arise during the acquisition and implementation of land rights.

**Biotechnology law.** The purpose of the discipline is to form a system of knowledge on the legal regulation of public relations in the field of biotechnology, the use of which is extremely relevant for a wide range of industries, such as agriculture, medicine, energy, food industry and more.

The discipline involves the study of legislation governing: the application of biotechnology in food production; use of biotechnology in health care; consideration of types of legal liability for offenses in the field of biotechnology, etc.

**Environmental proceedings.** The purpose of studying the discipline "Environmental proceedings" in curriculum educational degree "Bachelor" is the need to form knowledge of scientific approaches, legislative provisions, as well as the practice of their implementation in the field of judicial protection of environmental rights for further work, education of legal culture of future professionals.

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**Customs Law.** The purpose of the discipline "Customs Law" is the mastering of complex knowledge and skills regarding the essence of Customs Service of Ukraine; the legal basis for activities of the Customs Service of Ukraine.

**Medical jurisprudence and forensic psychiatry.** The aim of the course "Forensic medicine and psychiatry" is mastering general theoretical knowledge and practical skills necessary for the proper and timely appointment of forensic psychiatric examination for the correct formulation of its goals, providing all the necessary data on the subject person competent interpretation of examination findings.

**Administrative and legal protection of computer programs.** The discipline "Administrative and legal protection of computer programs" is studied in the system of academic disciplines in the educational and professional programs "Software of information systems" and "Law". The purpose of teaching the discipline is to teach students to find effective tools and methods for solving practical problems in the field of administrative and legal protection of intellectual property rights to computer programs.

**Medical Law.** The discipline (academic subject) "Medical Law" is important for obtaining and systematizing the theoretical knowledge of future professionals regarding to the specifics of the medical activities' legal regulation, ethical and legal issues in the field of health care. It also contributes to the students' practical skills development for future professional activities forming regarding to the provision of the legal assistance in medical law.

**Copyright law.** The purpose of discipline «Copyright law» is the formation of student's knowledge about the concepts and the grounds of protecting the rights and interests of authors. The objectives of the course are: theoretical study of the necessary provisions on copyright protection; mastering basic regulations, treaties in copyright law; study design and procedures for protecting the rights of authors.

**Civil Procedure Documents.** The study of the discipline "Civil Procedure Documents" will form students' knowledge of the practical writing of various procedural documents in marital and family relations, inheritance, housing, copyright protection, honor, dignity and business reputation, establishing facts of legal significance, documents for representation in civil law relations and other documents for the protection of civil rights.

**Educational litigation: in-depth practical course.** The elective course is designed to acquaint students with legal practice. Students in the process of studying this discipline will study the facts and laws of the case, develop skills in the study of writing and oral presentation, increase their self-esteem and master the sense of the legal profession. In the process of study, students will conduct modeling of court proceedings, participate in court debates and national competitions in various lawsuits.

**Practical aspects of appeals to the European Court of Human Rights.** The elective course is designed to acquaint students with legal activities in the field of the European Convention for the Protection of Human Rights and Fundamental Freedoms and the protocols to the Convention based on the case law of the European Court of Human Rights. Students have the opportunity to master the practical significance of the basics of human rights theory; to study the forms and models of legal activity in the field of human rights; understand the mechanisms of application of the European Convention; master the main rules on the admissibility of applications to the ECtHR; to analyze the case law of the European Court of Human Rights in Ukraine; learn to analyze legal issues in the field of protection of human rights and fundamental freedoms in Ukraine, to determine and apply to them the relevant legal norms.

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**Legal regulation of the association between Ukraine and the European Union.**

The elective course is designed to acquaint students with the legal framework of the EU's external competence and the main types of association agreements between the EU and other countries. Within the framework of this discipline the following is studied in detail: the structure and content of the Association Agreement between Ukraine and the EU; legal principles of free trade; implementation of European standards of economic cooperation; cooperation in the field of justice, freedom and security; basic acts of legislation and instruments of policy development in Ukraine; cross-border cooperation between Ukraine and the EU; cooperation between Ukraine and the EU in the field of energy efficiency.

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## 2.13. ECONOMIC FACULTY

**Dean** – Professor, Doctor of Economics **Anatolii Dibrova**

Tel.: (044) 527-85-40 E-mail: [dibrova@nubip.edu.ua](mailto:dibrova@nubip.edu.ua)

Location: Building № 10, Room 301

The faculty organizes and coordinates Bachelor training in the following specialties:

### **051 Economics**

Educational and professional program «**Economics enterprises**»

Guarantor of the program – Professor, Doctor of Economics Svitlana M. Rogach

Tel.: (044) 527-81-01 E-mail: [dibrova@nubip.edu.ua](mailto:dibrova@nubip.edu.ua)

Graduating departments:

Enterprise economics named after prof. I.V.Romanenko, Tel.: (044) 527-81-01

E-mail: [dibrova@nubip.edu.ua](mailto:dibrova@nubip.edu.ua)

Head of Department – Professor, Doctor of Economics Svitlana M. Rogach

Organization of business and exchange activities, Tel.: (044) 527-86-60

E-mail: [dibrova@nubip.edu.ua](mailto:dibrova@nubip.edu.ua)

Head of Department – Professor, Doctor of Economics Mykola M. Ilchuk

Labour Economics and Social Development, Tel. :( 044) 527-82-69

E-mail: [dibrova@nubip.edu.ua](mailto:dibrova@nubip.edu.ua)

Head of Department – Professor, Doctor of Economics Oleksandr Yu. Yermakov

Global Economy, Tel.:(044) 527-86-48 E-mail: [dibrova@nubip.edu.ua](mailto:dibrova@nubip.edu.ua)

Head of Department – Professor, Doctor of Economics Natalia M. Vdovenko

### **071 Accounting and Taxation**

Educational and professional program "**Accounting and Audit**"

Guarantor of the program – Professor, Doctor of Economics  
Inna D. Lazaryshyna

Tel.: (044) 527-82-36 E-mail: [statistics\\_chair@nubip.edu.ua](mailto:statistics_chair@nubip.edu.ua)

Graduating departments:

Accounting and Taxation, Tel.:(044) \_527-83-61

E-mail: [book-keep\\_chair@nubip.edu.ua](mailto:book-keep_chair@nubip.edu.ua)

Head of Department – Professor, Doctor of Economics, Ievheniia V. Kaliuga

Statistics and economic analysis, Tel.:(044) 527-82-36

E-mail: [statistics\\_chair@nubip.edu.ua](mailto:statistics_chair@nubip.edu.ua)

Head of Department – Professor, Doctor of Economics Inna D. Lazaryshyna

### **072 Finance, Banking and Insurance**

Educational and professional program «Finance, Banking and Insurance»

Guarantor of the program – Associate Professor, Ph.D. in Economics,  
Yuliia V. Nehoda

Tel.: (044) 527 88 90 E-mail: [kafedfin@ukr.net](mailto:kafedfin@ukr.net)

Graduating departments:

Finance Tel.:(044) 527 88 90 E-mail: [kafedfin@ukr.net](mailto:kafedfin@ukr.net)

Head of Department – Professor, Doctor of Economics Nadiia M. Davidenko

Banking and insurance Tel.:(044) 527 88 90 E-mail: [banking\\_chair@nubip.edu.ua](mailto:banking_chair@nubip.edu.ua)

Head of Department – Professor, Doctor of Economics Lybov M. Khudoliy

### **076 Entrepreneurship, Trade and Exchange Activities**

Educational program "**Entrepreneurship, Trade and Exchange Activities**"

Guarantor of the program – Associate Professor, Ph.D. in Economics  
Valentyna O. Yavorska

Tel.: (044) 527-86-60 E-mail: [organizing\\_chair@nubip.edu.ua](mailto:organizing_chair@nubip.edu.ua)

Graduating department:

Organization of business and exchange activities, Tel.: (044) 527-86-60

E-mail: [organizing\\_chair@nubip.edu.ua](mailto:organizing_chair@nubip.edu.ua)

Head of Department – Professor, Doctor of Economics Mykola M. Ilchuk

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**Bachelor**  
**field of knowledge "Social and Behavioral Sciences"**  
**in specialty "ECONOMICS"**  
**Educational and professional program «Economics enterprises»**

Learning:	Licensed amount of persons:
- day	100
- extra	80
Training period	3 years 10 months
ECTS credits	240
Language teaching	Ukrainian, English
Qualification of graduates	Bachelor of Economics

### **The concept of training**

Specialty "Economics" are trained professionals who can provide a high-level scientific, economic and organizational activities of the company. To be able to develop measures to improve productivity, efficiency and profitability, product quality, reduce costs, ensure productivity growth, achieving effective results in terms of rational cost of material, labor and financial resources and organize their implementation. To be able to draw up business plans, term plans of the company in a market economy and competition with necessary justifications and calculations, organizational and technical measures to improve the economic mechanism, management structure, economic activity, identification and use of production reserves. To ensure sustainable development of the primary forms of planning, accounting and reporting documentation, which is used in the enterprise, and also participates in the implementation of automated control systems and computer technology for economic calculation in planning, accounting and business analysis.

### **Practical training**

Practical training is an integral part of the educational process of training specialists of different educational levels in economics. Entry professional practical skills of highly qualified specialists is possible only if direct participation in industrial manufacturing processes at the agricultural enterprises of different ownership units and research institutions.

### **Proposed Topics for Bachelor theses**

1. Efficiency of inputs farms
2. Analysis of the effectiveness of innovative development company
3. The intensification of grain production and ways to improve its economic efficiency
4. The economic efficiency of sunflowers and ways to improve
5. Organizational-economic substantiation of crop production program

**Academic rights of Graduates:** graduates can apply for Master's Degree Specialties and Educational programs specified in Table 1.2 Section 1.3 this Catalog.

### **Employment of Graduates**

Chief Economist; Chief economist of planning and finance department; chief economist department of labor and wages, chief economist department of labor and wages, Head of Laboratory scientific management and production management, Economist, Economist, Planning, economist contractual claims work, an economist at financial work, managers and assistant economic departments companies, associations, firms serving areas APK different ownership and so on

**Bachelor`s Program and Curriculum  
in specialty "Economics"  
Educational and professional program «Economics enterprises»**

Code n/a	Components of the educational and professional program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits ECTS	The final control
1	2	3	4
<b>1. GENERAL TRAINING CYCLE</b>			
<b>Compulsory components EPP</b>			
CC 1	Political Economy	5	exam
CC 2	Economics	5	exam
CC 3	Mathematics for Economists	5	exam
CC 4	Economic-mathematical methods and models	5	exam
CC 5	Econometrics	5	exam
CC 6	Information systems and technologies in economy	5	exam
CC 7	Management	5	exam
CC 8	Marketing	5	exam
CC 9	Statistics	5	exam
CC 10	Science of law	5	exam
<b>Total</b>		<b>50</b>	
<b>Compulsory components EPP by decision of the Academic Council of the University</b>			
CCU 1	Philosophy	5	exam
CCU 2	Foreign Language	10	exam
CCU 3	Technology of the industry I, II	10	exam
CCU 4	Labour and Life Safety	5	exam
CCU 5	Physical Training	5	test
CCU 6	University education and social communication	2	exam
<b>Total</b>		<b>37</b>	
<b>2. SPECIAL (PROFESSIONAL) TRAINING CYCLE</b>			
<b>Compulsory components EPP</b>			
CC 11	Evaluation and development of the enterprise	5	exam
CC 12	Planning, strategy and control of the enterprise	10	exam
CC 13	Organization of production	5	exam
CC 14	Economic analysis	5	exam
CC 15	Economics of Enterprise	10	exam
CC 16	Labor Economics and Labor Relations	5	exam
CC 17	Justification economic decisions and assessing risks	5	exam
CC 18	Cost management	5	exam
CC 19	Environmental Economics	5	exam
CC 20	Leadership and career management	5	exam
CC 21	Distribution of productive forces	5	exam
CC 22	Finance	5	exam
CC 23	Accounting	5	exam
CC 24	International Economics	5	exam
CC 25	Project Analysis	5	exam
CC 26	State regulation of Economy	5	exam
CC 27	Educational practice	4	test
CC 28	Internship	6	exam
CC 29	Graduate design	1	exam
CC 30	State attestation	1	exam
<b>Total</b>		<b>102</b>	
<b>The total amount of Compulsory components</b>		<b>189</b>	
<b>Optional components EPP</b>			
<b>Optional components by general training (block 1)</b>			
OB 1.1	History of Ukrainian Statehood	5	exam
OB 1.2	Ethno-cultural studies	5	exam
OB 1.3	Political science	5	exam
OB 1.4	Sociology	5	exam

**CURRICULA AND PROGRAMS OF BACHELOR DEGREE**

OB 1.5	Religious Science	5	exam
OB 1.6	Logic	5	exam
OB 1.7	Psychology and Pedagogics	5	exam
OB 1.8	Ethics and aesthetics	5	exam
OB 1.9	The basics of rhetoric	5	exam
<b>Total</b>		<b>5</b>	
<b><i>Optional components by Student's Choice</i></b>			
OS 1	Discipline 1 (from the general university list)	3	exam
OS 2	Discipline 2 (from the general university list)	3	exam
<b>Total</b>		<b>6</b>	
<b><i>Optional components by specialty (block 1)</i></b>			
OB 1.1	Insurance	5	exam
OB 1.2	Insurance services	5	exam
<b>Total</b>		<b>5</b>	
<b><i>Optional components by specialty (block 2)</i></b>			
OB 2.1	The economy of rural communities	5	exam
OB 2.2	Basic scientific research in economics	5	exam
<b>Total</b>		<b>5</b>	
<b><i>Optional components by specialty (block 3)</i></b>			
OB 3.1	Accounting in applied software solutions	5	exam
OB 3.2	Databases and Database	5	exam
<b>Total</b>		<b>5</b>	
<b><i>Optional components by specialty (block 4)</i></b>			
OB 4.1	The tax system	5	exam
OB 4.2	Taxation of individuals and legal entities	5	exam
<b>Total</b>		<b>5</b>	
<b><i>Optional components by specialty (block 5)</i></b>			
OB 5.1	Price and pricing	5	exam
OB 5.2	Fundamentals of stock	5	exam
<b>Total</b>		<b>5</b>	
<b><i>Optional components by specialty (block 6)</i></b>			
OB 6.1	Enterprises Reporting	5	exam
OB 6.2	Audit	5	exam
<b>Total</b>		<b>5</b>	
<b><i>Optional components by specialty (block 7)</i></b>			
OB 7.1	Finance companies	5	exam
OB 7.2	Investment	5	exam
<b>Total</b>		<b>5</b>	
<b><i>Optional components by specialty (block 8)</i></b>			
OB 8.1	Rationing and payment of labor	5	exam
OB 8.2	Sociology of Labor	5	exam
<b>Total</b>		<b>5</b>	
<b>The total amount of Optional components</b>		<b>40</b>	
<b>3. OTHER TYPES OF TRAINING</b>			
CC ...			
<b>THE TOTAL AMOUNT OF EPP (without military training)</b>		<b>240</b>	

## Annotations of Components in the curriculum

### 1. GENERAL TRAINING CYCLE

#### Compulsory components

**Political Economy.** The purpose of discipline is learning future specialists fundamental economic knowledge, forming their logic of economic thinking and economic culture, teaching them the basic knowledge and methods of analysis of economic processes, the ability to make informed decisions about economic problems related to their future practitioners.

Objective: acquisition of appropriate skills of rational economic behavior, based on the conceptual foundations of a market economy, the modern understanding of the functioning of markets and pricing for the services of labor, capital, natural resources according to the type of market structure; skills analysis aggregates, determining factors and the effects of macroeconomic development of business systems and capacity of the state to correct this development in accordance with the objectives and priorities of economic policy.

**Economics (Micro- Macroeconomics)** - The aim of the teaching of the discipline is to develop market-oriented economic outlook, knowledge and skills regarding clarification of the mechanisms establishing and rebalancing microsystems and efficiency of economic entities. To achieve this goal the following tasks: learning motives, basic laws and methodological principles of behavior of economic agents in the market conditions at the micro level; universal mastering tools for self-analysis and study of optimal economic decisions in conditions of limited funds and the availability of alternatives. Also provide students deep theoretical knowledge on the economy - important sphere of human activity, the objective economic laws, familiarity with the methods and conditions of effective management and systematic holistic picture of macroeconomic theory and policy. Logic and structure of the course "Macroeconomics" will allow students to learn the necessary amount of knowledge that makes it possible to achieve a high level of professional competence and economic future professionals. Task. The main objectives of the course is to study issues such as methods for measuring the dynamics of domestic production; forming conditions and consequences of violation of macroeconomic equilibrium; the impact of inflation on unemployment and economic development; methods of state fiscal control; State instruments of monetary policy.

**Mathematics for Economists** - The purpose of higher mathematics is the formation of individual students develop their intelligence and ability to logical and algorithmic thinking. The main tasks of the course is to master the basics of mathematical tools necessary for solving theoretical and practical economic problems; ability to independently discover, learn and apply the scientific literature and other information sources and resources on higher mathematics; working out mathematical skills in research applications, such as the ability to transfer specific economic problems in mathematical language with the following construction of a mathematical model.

**Economic-mathematical methods and models** - of educational discipline aimed at mastering the methods for solving optimization problems of financial and farm management. The object of study - economic, organizational and management systems. Knowledge of the "Optimization models and methods" required students to write a bachelor's and master's theses and research.

**Econometrics** - The purpose of discipline "Econometrics" is of students' knowledge about the quantitative evaluation of economic performance relationships for different sets of economic information, the latter resorting to testing on compliance of certain preconditions. The objectives of the discipline that must be solved in the course of the

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study are: help students master the methods of construction and implementation of econometric models using a personal computer; gain knowledge about the use of econometric models in economic research; acquiring skills students summarizing the results of statistical analysis and development of appropriate management decisions.

**Information systems and technologies in economy-** object develops knowledge of the principles of construction and operation of computers, organization of computing processes on personal computers and their algorithmization, PC software and computer networks, and effective use of modern information and communication technologies in professional activity. The main objectives of the course is to study the theoretical foundations of computer science and applied skills using economic data processing systems; of programming for the PC; Computer networks in the study of social and economic systems and solving problems of professional orientation. Provides meaningful study four modules: the architecture of the modern computer, advanced software processing of textual information, work with a spreadsheet software MS Excel and modern software processing graphic data.

**Management.** The purpose of discipline is to give students a comprehensive system of knowledge about nature management in enterprises and organizations and agribusiness management skills of production processes in them; conditions for performance of business structures; diagnosis and designing system of agricultural management, appropriate goals and objectives of market economy in agriculture. The objective of the discipline is to train future professionals able to streamline the organizational structure and management system to create enterprise (organization), maintain stability and capacity, ensure the dynamic development and competitiveness, which precedes theoretical preparation of students for the administration and management of the agricultural sector.

**Marketing.** The purpose of discipline "Marketing" is learning and mastering theoretical knowledge and practical skills on the application, the use of tools AMP; organization, planning, implementation, management agromarket activities of agricultural enterprises for the effective functioning of the markets for agricultural products and foodstuffs in Ukraine and abroad, and further development. The task of discipline "Marketing" is to get the students' knowledge in the field of agricultural marketing; marketing research markets for agricultural products and foodstuffs; forecasting market conditions; inventory management products agricultural enterprises and their quality; pricing; distribution system and marketing of agricultural and food products; promotion of food products in domestic and foreign markets; and gain knowledge in planning agricultural marketing, management and control of agro market.

**Statistics** - The purpose of discipline "Statistics" is to develop basic knowledge of students, including mastering their professional knowledge and practical skills in methods and forms, types and methods of statistical monitoring of agricultural production, development and analysis of statistical data, promotion of economic thought adapted to the requirements of the market economy.

The task of discipline that must be solved in the course of the study: understanding the challenges set before the statistical service of Ukraine in the current market conditions; mastering theoretical positions and mastering practical skills to use statistical methods of analyzing mass social and economic phenomena and processes; skills summarizing the results of statistical analysis and development of appropriate management decisions.

**Science of law.** Purpose: to provide basic training of students in the field of formation of student's basic knowledge of the theory of law, mastering the system of basic concepts of jurisprudence, mastering the most important provisions of certain legal branches and developing skills in their application in practice.

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## **Compulsory components by decision of the Academic Council of the University**

Annotations of components "Philosophy", "Foreign Language (English, German, French, and Spanish)", "Physical Training", "Labour and Life Safety", see Section 2.1.

**Technology of the industry I, II** - Scientific bases of crop production. Modern agricultural technologies. Technological maps of growing crops. The concept of the programmable growing crops. The concept of the technology of storage, processing of various types of crop production. Also the current state of the livestock industry. Forage. The impact of standardized feeding, breeding, means the animals on their level of performance. Milk, meat, eggs, wool etc.

**University education and social communication.** The purpose of teaching this discipline is to summarize: the vision of students of higher education as a subsystem of the educational area and socio-cultural environment, mastery of knowledge, abilities and skills necessary to understand its potential, knowledge of basic principles, principles, practices and perspectives of the Bologna process. The objectives of the study subjects are: knowledge and understanding of the students of the place and role of higher education in the structure of the educational system, the mastery of experience analyzing the theoretical foundations of the functioning of modern Higher Education; major trends, factors and forms; creating an understanding of integration processes in education, basic principles, results and prospects of the Bologna process.

## **2. SPECIAL (PROFESSIONAL) TRAINING CYCLE**

### **Compulsory components**

**Evaluation and development of the enterprise** - The purpose: of mastering the conceptual apparatus of discipline, methodology and assessment tools applied market value potential of the company and its structural elements; acquisition of knowledge of the laws, principles and features of the formation, growth, competitiveness-building potential of the company as a balanced integrated education. Objective: Learn the latest means of effective capacity building enterprise, ensuring its competitiveness; knowledge and practical skills assessment activities as part of management development potential of the company.

**Planning, strategy and control of the enterprise** - The purpose of discipline is to develop the students' knowledge of system development methodologies prospective and current plans of the company and monitoring their implementation. Tasks of the course: mastering forms, methods and process planning and control; study of the structure and technology development of model plans for economic and social development enterprise of indicators and methods of their calculation, optimization of production program.

**Organization of production.** The purpose of studying is formation of theoretical knowledge and skills of rational organization of production and use of methods to increase the efficiency of the company. Objective: To study the theoretical principles of rational organization of agricultural production units; practical skills on rational organization of production and use of methods to increase the efficiency of the company.

**Economic analysis** The purpose of discipline study course "Economic Analysis" is to develop knowledge about methods of systematic evaluation of agricultural enterprises, identify internal reserves rational use of material, labor and financial resources. The logic and structure of the course "Economic Analysis" will allow students to learn the necessary amount of knowledge that makes it possible to achieve a high level of professional competence and economic future professionals. Task. On the methodological principles of civilizational paradigm of society form the modern economic thinking and outlook of

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students to ensure their mastery of knowledge and methods of analysis of economic laws and processes.

**Economics of Enterprise.** The economic mechanism of functioning of the company, its development and use of resource potential in order to optimize economic performance.

**Labor Economics and Labor Relations.** Academic discipline involves the study of issues related to the work as a leading factor of production, the development of labor potential of society, the formation and functioning of the system of industrial relations, labor market regulation. The main sections of the course is the organization, rationing and wages, particularly in agriculture. The problems of employment and social protection, international experience of regulation of social and labor relations and more.

**Justification economic decisions and assessing risks.** The purpose of teaching this discipline is to develop knowledge and skills regarding substantiation of economic decisions with varying degrees of uncertainty and risk. To achieve this goal the following tasks: learning the basic principles of different types of substantiation of economic decisions, methodical approach to risk analysis and management; self-mastery skills of analysis, identification and risk assessment using computer technology and software and mathematical systems.

**Cost management.** The purpose of the discipline is to acquire knowledge and skills on the laws of formation expenses by type, responsibility centers and carriers to minimize their level and justification of optimal economic decisions. Tasks of the course is to expand the classification and cost structure, their characteristics; the essence of domestic and foreign systems and methods of cost accounting for production and content assessment of their impact on the cost management; method of management of certain types of expenses as productive and unproductive nature; method of calculation of the planned cost of goods, works and services costing indirect costs; new approaches to the management of operations, including modern technologies in production and operations management.

**Environmental Economics.** Ecology and modern agriculture. Ecological agriculture and crop production. Environmental issues of the livestock concentration. Environmental expertise, assessment, monitoring and forecasting with the use of mathematical modeling. Environmental law, legislative support. Interaction between environmental and economic factors, maintaining proper environmental quality, resource conservation. Indicators of ecological, economic and social efficiency of environmental measures, changes of psychological conditions and socio-hygienic condition.

**Leadership and Career Management** - We address the issues of professional and social competencies necessary for effective career building, leadership assessment and self-development, issues of work motivation and management of mini-groups, building our own careers and organizing effective team development, positioning a young specialist in the labor market, current trends of professional development are analyzed.

**Placement of productive forces** - The task of studying the discipline is to master the theory of the location of productive forces, regional economy and regional development, scientific foundations of regional economic policy; mastering knowledge about the territorial and sectoral structure of the economic complex of Ukraine and its economic regions, etc. The purpose of studying the discipline is to form knowledge about the theoretical and practical foundations of the territorial organization of the productive forces of Ukraine, the current state and directions of regional economic development.

**Finance.** The purpose of discipline "Finance" is to develop basic knowledge of finance theory, learning patterns of their operation at the macro and micro levels as the theoretical basis of financial policy and financial system. The educational goal of the discipline involves the acquisition of knowledge in all areas of operation of the financial mechanism, namely form students of finance conceptual apparatus for use in practice;

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provide information on finances, the financial system of the state and its role in the functioning of the economy; learn to apply their knowledge in practice, make informed decisions and to solve the problem.

**Accounting** - The goal of teaching "Accounting" is to develop the system of knowledge of the theory and practice of accounting in the company. The main objectives of the discipline "Accounting" is the study of methods and rational organization and accounting in enterprises based on the use of progressive forms and national standards; study skills and use of accounting information in management.

**International Economics.** The purpose of teaching "International Economy" is to develop a system of theoretical and applied knowledge of modern role, functional content and tools of international economics in a highly competitive environment, the laws of the modern global economy. The main objectives of the discipline is to develop in students a holistic idea about the specifics of international business; mastering categorical apparatus used in the commission of international trade; forming a system of knowledge about the theoretical foundations international environment analysis and evaluation of its attractiveness for foreign business.

**Project Analysis.** The purpose of discipline is to form a system of knowledge assessment methodology to design solutions; development and study projects to meet social and personal needs with limited resources. The main tasks of project analysis are: learning the basic concepts, concepts, methods and approaches used in the world in the analysis of design decisions; skills using tools of project analysis, mastering procedures of analysis, comparison and justification of the selection of projects, project evaluation on marketing technology, environmental, social and institutional viability, financial and economic attractiveness.

**State regulation of Economy.** Studies the theoretical aspects of the formation, functioning and development of the system of state regulation of the Ukrainian economy, reveals the methodology, methodology and organizational basis of state regulation, presents a systematic presentation of theoretical and applied issues related to the substantiation of the economic policy of the state, as well as the mechanisms of its implementation in terms of formation and functioning of the mixed economy, reflects the achievements of modern theory and practice of state regulation of the economy.

### **Optional components**

#### ***Optional components by general training (block 1)***

Annotations of components "History of Ukrainian Statehood", "Ethno-cultural studies", see Section 2.1.

**Political science** - Laws, structure and functions of political science. Power and power relations. The political system of society, the place and role in it of the state. Political consciousness and political culture. Politics and national relations. Politics and ecology. National-state development of Ukraine.

**Sociology** - Essence of Sociology. Formation of human behavior in the workplace and place of activity in the process of motivation system and means of social control. The role of labor and small groups in achieving production purposes.

**Religious Science.** This is a complex area of human cognition that studies patterns of emergence, history and general characteristics of religious beliefs. It explores social and historical nature of religion, its mechanism of social ties with the spiritual, political and economic systems of society

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**Logic** Objective: To provide students basic training in the fields of system knowledge of basic laws and forms of logical thinking, forming conscious attitude to the process of right thinking through scientific concepts and terms to familiarize students with the theory of logical thinking. The task of discipline is shaping students' skills of correct logical thinking for making good decisions in the future professional work, to participate in discussions and business communication, information processing, for logical and correct substantiation arguments and beliefs opponents; familiarizing students and methodological assistance in mastering a certain amount of knowledge about the means of intellectual activity, its shape and laws, understanding and assimilation of features forms and laws of thought; providing logical and methodological level studies while training.

**Psychology and Pedagogics** - Formation of knowledge about the psyche of the individual as the highest value of society; awareness of the nature of the mechanisms of mental processes, states, personality traits as the foundation of its formation in the process of education and training. The acquisition of key terms and concepts of psychology and pedagogy at their reproduction and interpretation; gaining basic skills to apply them in practice to improve competitiveness in professional social and psychological sphere.

**Ethics and aesthetics.** Gives knowledge about the peculiarities and characteristics of the moral and artistic relation of man and the world, mastering the basic functions performed by ethics and aesthetics in the knowledge of all spheres of human existence, the structure of these spheres, the content of the main categories and the significance of such knowledge for work in different areas of human activity.

**Basics of Rhetoric.** Subject of rhetoric, the essence of the concepts and all sections of classical rhetoric. Modern science: style, poetics, pragmatics, theory of communication etc.

### ***Selective components of professional training***

#### ***Optional components by specialty (block 1)***

**Insurance** Purpose: formation of students' knowledge of the preparation and implementation of management decisions that ensure the efficient formation and use of the capacity of insurance companies and the harmonization of the financial interests of insurance consumers, owners and staff of insurance companies, intermediaries and the state. Objective: sustainable knowledge acquisition by the students of the theory and practice of management of the insurance company; insurance services; risk assessment; settlement of insurance claims.

**Insurance services** principles and role of insurance services. Classification of insurance, insurance risks and their evaluation. Insurance market and its characteristics, insurance companies, government regulation of insurance. Personal insurance. Property insurance companies and individuals.

#### ***Optional components by specialty (block 2)***

**The economy of rural communities** aim of the course is to deepen knowledge about the structure and of the functioning of the rural sector in Ukraine, instill skills analysis of the current state and identify disparities in the development of its components and the development of measures to overcome them; help students get acquainted with legal regulations and research on the status and prospects of socio-economic development of settlements, rural employment, establishment of new forms of economic activity in rural areas and others. The objectives of the course are: to form a future expert, able to assess the economic, social, demographic and ecological situation in every region, district, village

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in the formation of a social market economy, learn to identify priorities and substantiate effective instruments and mechanisms for solving problems overcoming depression village areas to diversify their economic base and creating a socially attractive and environmentally safe living conditions for the rural population; skills to analyze cause and effect of the rural sector and the impact of internal and external factors;

**Basic scientific research in economics.** The purpose of this discipline is to highlight theoretical foundations, methodology, methodology, technology and organization of research activities in the economy, that is, the theoretical and practical grounds for the effective conducting of scientific research by students of economic specialties. The objectives of the course are to: Form students theoretical knowledge and practical skills in methodology, methodology, technology and organization of research activities in the economy with the wide use of teaching methodological and additional scientific literature.

### ***Optional components by specialty (block 3)***

**Accounting in applied software solutions.** Acquaintance with the possibilities of computer technologies in the management of the enterprise, getting them a clear understanding of methods and methods of accounting with the help of computer technology - to master and master the methods and techniques of organization and practical use of automated information systems in accounting.

**Databases and Database** Course objective - to obtain knowledge of the theoretical foundations of databases, database management, learning basic principles and methods of database (DB) and database management systems (DBMS). Objectives of the course: to master the basic concepts of information database requirements put forward to them the principles of their construction and composition; database development "Access"; practical skills in using databases "Access" to solve economic problems.

### ***Optional components by specialty (block 4)***

**The tax system** Objective: To ascertain the economic nature of taxes, their nature, functions, objectivity in market conditions; disclosure of the contents of tax policy, tax system, tax mechanisms and their components, learning practical mechanism for the application of certain taxes and duties, development of requirements to fill tax returns and tax calculation mechanism. Objective: To study the theoretical and organizational bases of tax calculation methodology and manner of payment of taxes and obligatory payments of businesses and individuals.

**Taxation of individuals and legal entities.** studying the concept, system, principles, mechanism and role of taxation of individuals and legal entities; types of taxes paid by individuals; types of taxation of legal entities; tax conditions.

### ***Optional components by specialty (block 5)***

**Price and pricing.** Theories of pricing, the method of pricing. Limit value of the price, methodological atypical formation of prices in the conditions of inflation, ensuring the equivalence of accounting and prices in the agro-industrial complex.

**Fundamentals of stock** Discipline "Fundamentals of stock activity" is studying the mechanism of implementation and technology exchange activities of commodity exchanges in the country and in emerging economies. The purpose of the study course - the formation of future specialist theoretical foundations and practical skills of the exchange activity and effective use of exchange operations in its future activities. Course description: Formation at students knowledge on the organization of exchange activities; acquisition of practical skills: organization of trade on the exchange of goods, securities,

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currencies; of relationships with brokers; exchange information for use of high-efficiency production and marketing of agricultural products.

### ***Optional components by specialty (block 6)***

**Audit.** The application of elements of the organization registers of synthetic and analytical accounting. Accounting for funds, payments, inventory, fixed assets, intangible assets, remuneration systems, variants of production costs, the definition of production costs. Functions of the audit: validation of the balance sheet and recording of profit and loss, analysis of accounting, its compliance with the law; respect for the equality of shareholders rights during the distribution of dividends and voting.

**Enterprises Reporting.** General reporting requirements. Balance sheet. Income statement. Statement of cash flows. Statement of changes in equity. Errors correction and changes in the financial statements. Overall and consolidated reporting. Financial report of a small business. Tax reporting. Statistical and special reports.

### ***Optional components by specialty (block 7)***

**Finance companies** The purpose of teaching the course "Business Finance": the provision and deepen students' knowledge of the theory and practice of financial relations business entities. Tasks of the course: clarify the nature of the financial resources of enterprises, methods and sources of their formation of financial activity; gaining skills settlements of receipts, income, its distribution, the impact of taxation on the use of profits; determine the need for working capital, sources of financing reproduction of fixed assets and their efficient use; mastering methods of assessing the financial condition of sanitation companies.

**Investment.** Methodological bases of investment. Forms, objects and areas of investment. Investment risks. Financial support of investment. Budgeting of project management and investment process.

### ***Optional components by specialty (block 8)***

**Rationing and payment of labor.** Within the discipline the theoretical, methodological and applied questions related to the standardization and organization of remuneration in the process of activity of modern enterprises are taught. The main objective of the discipline is to formulate in future specialists an understanding of the conceptual foundations of labor standardization in modern conditions, the use of modern forms and systems of remuneration in the activities of enterprises. The subject of study is the general laws and peculiarities of standardization and remuneration of personnel of organizations. General patterns and peculiarities of organization and payment of personnel. Establishment of conditions (norms) of wages, establishment of labor duties of the employee, definition of the accounting system for payment of individual and collective results of labor; the procedure for making changes in the organization of remuneration. The main purpose of teaching discipline is to form a complex of theoretical knowledge and skills in the development and implementation of a rational organization of work of staff, rationing and remuneration, which would ensure the high efficiency of personnel.

**Sociology of Labor.** The essence, content, nature and function of labor. Formation of human behavior in the workplace activity. The role of labor and small groups in achieving production goals. Optimization of socio-psychological climate in the team.

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**Bachelor**  
**field of knowledge "Management and Administration"**  
**in specialty "FINANCE, BANKING AND INSURANCE"**  
**Educational and professional program «Finance, banking and insurance»**

Learning:	Licensed amount of persons:
- day	130
- extra	90
Training period	3 years 10 months
ECTS credits	240
Language teaching	Ukrainian, English
Qualification of graduates	Bachelor of Finance, Banking and Insurance

### **The concept of training**

"Finance, Banking and Insurance" are trained professionals who are at a high level can provide maintenance and financial accounting at the company. Ensure the preparation of financial statements. Take measures to determine the financial condition of the company and increase its effectiveness. Monitor the conduct cash transactions, rational and efficient use of material, labor and financial resources. To be able to apply the theoretical and practical knowledge for effective management of the enterprise financial accounting. To be able to develop proposals to improve financial. Accounting and Economics at the company.

### **Practical training**

Practical training is an integral part of the educational process of training specialists of different educational levels in economics. Entry professional practical skills of highly qualified specialists is possible only if direct participation in industrial manufacturing processes at the agricultural enterprises of different ownership units and research institutions.

### **Proposed Topics for Bachelor theses**

1. Financial support for farms
2. Mechanism of regulation of the financial market in Ukraine
3. The development of credit market in Ukraine
4. Systema taxation of businesses and ways to reform
5. The development of the life insurance market in Ukraine

**Academic rights of Graduates:** graduates can apply for Master's Degree Specialties and Educational (Educational-professional or Educational-scientific) programs specified in Table 1.2 Section 1.3 this Catalog.

### **Employment of Graduates**

Financier; Economist Planning and Finance Department; Head of the Laboratory of Scientific and Production Management, Economist, Economist, Planning, economist at the contract work claims, an economist at financial work, assistant managers and financial departments of companies, associations, firms serving areas APK different ownership and so on.

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**Bachelor`s Program and Curriculum  
in Specialty "Finance, Banking and Insurance"  
Educational and professional program «Finance, banking and insurance»**

Code n/a	Components of the educational and professional program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits ECTS	The final control
1	2	3	4
<b>1. GENERAL TRAINING CYCLE</b>			
<b>Compulsory components EPP</b>			
CC 1	Political Economy	5	exam
CC 2	Economics	5	exam
CC 3	Mathematics for Economists	5	exam
CC 4	Economic-mathematical methods and models	5	exam
CC 5	Econometrics	5	exam
CC 6	Information systems and technologies in economy	5	exam
CC 7	Management	5	exam
CC 8	Marketing	5	exam
CC 9	Statistics	5	exam
CC 10	Science of law	5	exam
<b>Total</b>		<b>50</b>	
<b>Compulsory components EPP by decision of the Academic Council of the University</b>			
CCU 1	Philosophy	5	exam
CCU 2	Foreign Language	10	exam
CCU 3	Technology of the industry I, II	10	exam
CCU 4	Labour and Life Safety	5	exam
CCU 5	Physical Training	5	test
CCU 6	University education and social communication	2	exam
<b>Total</b>		<b>37</b>	
<b>2. SPECIAL (PROFESSIONAL) TRAINING CYCLE</b>			
<b>Compulsory components EPP</b>			
CC 11	Money and Credit	5	exam
CC 12	Finance	10	exam
CC 13	The tax system	5	exam
CC 14	Finance companies	5	exam
CC 15	Insurance	10	exam
CC 16	Public finance	5	exam
CC 17	Investment	5	exam
CC 18	The banking system	5	exam
CC 19	Financial market	5	exam
CC 20	Treasury case	5	exam
CC 21	Economics of Enterprise	5	exam
CC 22	Labor Economics and Labor Relations	5	exam
CC 23	Accounting	5	exam
CC 24	International Economics	5	exam
CC 25	Organization and planning of business activities	5	exam
CC 26	Financial activities of business entities	5	exam
CC 27	Educational practice	4	test
CC 28	Internship	6	exam
CC 29	Graduate design	1	exam
CC 30	State attestation	1	exam
<b>Total</b>		<b>102</b>	
<b>The total amount of Compulsory components</b>		<b>189</b>	
<b>Optional components EPP</b>			
<b>Optional components by general training (block 1)</b>			
OB 1.1	History of Ukrainian Statehood	5	exam
OB 1.2	Ethno-cultural studies	5	exam
OB 1.3	Political science	5	exam
OB 1.4	Sociology	5	exam

**CURRICULA AND PROGRAMS OF BACHELOR DEGREE**

OB 1.5	Religious Science	5	exam
OB 1.6	Logic	5	exam
OB 1.7	Psychology and Pedagogics	5	exam
OB 1.8	Ethics and aesthetics	5	exam
OB 1.9	The basics of rhetoric		
OB 1.10	Basic scientific research	5	exam
<b>Total</b>		<b>5</b>	
<b><i>Optional components by Student's Choice</i></b>			
OS 1	Discipline 1 (from the general university list)	3	exam
OS 2	Discipline 2 (from the general university list)	3	exam
<b>Total</b>		<b>6</b>	
<b><i>Optional components by specialty (block 1)</i></b>			
OB 1.1	Financial risks	5	exam
OB 1.2	Financial Controlling	5	exam
<b>Total</b>		<b>5</b>	
<b><i>Optional components by specialty (block 2)</i></b>			
OB 2.1	International Finance	5	exam
OB 2.2	Financial and credit systems of foreign countries	5	exam
<b>Total</b>		<b>5</b>	
<b><i>Optional components by specialty (block 3)</i></b>			
OB 3.1	Securities Transactions	5	exam
OB 3.2	Currency - Credit and Settlement Banking Transactions	5	exam
<b>Total</b>		<b>5</b>	
<b><i>Optional components by specialty (block 4)</i></b>			
OB 4.1	State regulation of Economy	5	exam
OB 4.2	National Economy	5	exam
<b>Total</b>		<b>5</b>	
<b><i>Optional components by specialty (block 5)</i></b>			
OB 5.1	Enterprise reporting	5	exam
OB 5.2	Audit	5	exam
<b>Total</b>		<b>5</b>	
<b><i>Optional components by specialty (block 6)</i></b>			
OB 6.1	Economic analysis	5	exam
OB 6.2	Financial analysis	5	exam
<b>Total</b>		<b>5</b>	
<b><i>Optional components by specialty (block 7)</i></b>			
OB 7.1	Price and pricing	5	exam
OB 7.2	Fundamentals of stock	5	exam
<b>Total</b>		<b>5</b>	
<b><i>Optional components by specialty (block 8)</i></b>			
OB 8.1	Leadership and Career Management	5	exam
OB 8.2	Social responsibility of business	5	exam
OB 8.3	Sustainability	5	exam
<b>Total</b>		<b>5</b>	
<b>The total amount of Optional components</b>		<b>40</b>	
<b>3. OTHER TYPES OF TRAINING</b>			
CC ...			
<b>THE TOTAL AMOUNT OF EPP (without military training)</b>		<b>240</b>	

## Annotations of Components in the curriculum

### 1. GENERAL TRAINING CYCLE

#### Compulsory components

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**Econometrics** - The purpose of discipline "Econometrics" is of students' knowledge about the quantitative evaluation of economic performance relationships for different sets of economic information, the latter resorting to testing on compliance of certain preconditions. The objectives of the discipline that must be solved in the course of the

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study are: help students master the methods of construction and implementation of econometric models using a personal computer; gain knowledge about the use of econometric models in economic research; acquiring skills students summarizing the results of statistical analysis and development of appropriate management decisions.

**Information systems and technologies in economy-** object develops knowledge of the principles of construction and operation of computers, organization of computing processes on personal computers and their algorithmization, PC software and computer networks, and effective use of modern information and communication technologies in professional activity. The main objectives of the course is to study the theoretical foundations of computer science and applied skills using economic data processing systems; of programming for the PC; Computer networks in the study of social and economic systems and solving problems of professional orientation. Provides meaningful study four modules: the architecture of the modern computer, advanced software processing of textual information, work with a spreadsheet software MS Excel and modern software processing graphic data.

**Management.** The purpose of discipline is to give students a comprehensive system of knowledge about nature management in enterprises and organizations and agribusiness management skills of production processes in them; conditions for performance of business structures; diagnosis and designing system of agricultural management, appropriate goals and objectives of market economy in agriculture. The objective of the discipline is to train future professionals able to streamline the organizational structure and management system to create enterprise (organization), maintain stability and capacity, ensure the dynamic development and competitiveness, which precedes theoretical preparation of students for the administration and management of the agricultural sector.

**Marketing.** The purpose of discipline "Marketing" is learning and mastering theoretical knowledge and practical skills on the application, the use of tools AMP; organization, planning, implementation, management agro market activities of agricultural enterprises for the effective functioning of the markets for agricultural products and foodstuffs in Ukraine and abroad, and further development. The task of discipline "Marketing" is to get the students' knowledge in the field of agricultural marketing; marketing research markets for agricultural products and foodstuffs; forecasting market conditions; inventory management products agricultural enterprises and their quality; pricing; distribution system and marketing of agricultural and food products; promotion of food products in domestic and foreign markets; and gain knowledge in planning agricultural marketing, management and control of agro market.

**Statistics** - The purpose of discipline "Statistics" is to develop basic knowledge of students, including mastering their professional knowledge and practical skills in methods and forms, types and methods of statistical monitoring of agricultural production, development and analysis of statistical data, promotion of economic thought adapted to the requirements of the market economy.

The task of discipline that must be solved in the course of the study: understanding the challenges set before the statistical service of Ukraine in the current market conditions; mastering theoretical positions and mastering practical skills to use statistical methods of analyzing mass social and economic phenomena and processes; skills summarizing the results of statistical analysis and development of appropriate management decisions.

**Science of law.** Purpose: to provide basic training of students in the field of formation of students basic knowledge of the theory of law, mastering the system of basic concepts of jurisprudence, mastering the most important provisions of certain legal branches and developing skills in their application in practice.

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## Compulsory components by decision of the Academic Council of the University

Annotations of components "Philosophy", "Foreign Language (English, German, French, Spanish)", "Physical Training", "Labour and Life Safety", see Section 2.1.

**Technology of the industry I, II** - Scientific bases of crop production. Modern agricultural technologies. Technological maps of growing crops. The concept of the programmable growing crops. The concept of the technology of storage, processing of various types of crop production. Also the current state of the livestock industry. Forage. The impact of standardized feeding, breeding, means the animals on their level of performance. Milk, meat, eggs, wool etc.

**University education and social communication.** The purpose of teaching this discipline is to summarize: the vision of students of higher education as a subsystem of the educational area and socio-cultural environment, mastery of knowledge, abilities and skills necessary to understand its potential systemoformuyuchoho; knowledge of basic principles, principles, practices and perspectives of the Bologna process. The objectives of the study subjects are: knowledge and understanding of the students of the place and role of higher education in the structure of the educational system, the mastery of experience analyzing the theoretical foundations of the functioning of modern Higher Education; major trends, factors and forms; creating an understanding of integration processes in education, basic principles, results and prospects of the Bologna process.

## 2. SPECIAL (PROFESSIONAL) TRAINING CYCLE

### Compulsory components

**Money and Credit** The purpose of the course the course "Money and credit" is to give students theoretical and practical knowledge for the management of the organization cash flow (cash flows), to form the students a theoretical basis for the subsequent mastering the practice of using monetary tools in the system of economic regulation Ukraine . It is important is to study economic relations with a turnover of money, including as a means of circulation of credit relations in modern economy.

**Finance.** The purpose of discipline "Finance" is to develop basic knowledge of finance theory, learning patterns of their operation at the macro and micro levels as the theoretical basis of financial policy and financial system. The educational goal of the discipline involves the acquisition of knowledge in all areas of operation of the financial mechanism, namely form students of finance conceptual apparatus for use in practice; provide information on finances, the financial system of the state and its role in the functioning of the economy; learn to apply their knowledge in practice, make informed decisions and to solve the problem.

**The tax system** Objective: To ascertain the economic nature of taxes, their nature, functions, objectivity in market conditions; disclosure of the contents of tax policy, tax system, tax mechanisms and their components, learning practical mechanism for the application of certain taxes and duties, development of requirements to fill tax returns and tax calculation mechanism.

Objective: To study the theoretical and organizational bases of tax calculation methodology and manner of payment of taxes and obligatory payments of businesses and individuals.

**Finance companies** The purpose of teaching the course "Business Finance": the provision and deepen students' knowledge of the theory and practice of financial relations business entities. Tasks of the course: clarify the nature of the financial resources of enterprises, methods and sources of their formation of financial activity; gaining skills

settlements of receipts, income, its distribution, the impact of taxation on the use of profits; determine the need for working capital, sources of financing reproduction of fixed assets and their efficient use; mastering methods of assessing the financial condition of sanitation companies.

**Insurance** Purpose: formation of students' knowledge of the preparation and implementation of management decisions that ensure the efficient formation and use of the capacity of insurance companies and the harmonization of the financial interests of insurance consumers, owners and staff of insurance companies, intermediaries and the state. Objective: sustainable knowledge acquisition by the students of the theory and practice of management of the insurance company; insurance services; risk assessment; settlement of insurance claims. The conditions of personal, property and liability insurance, reinsurance positions with national and international experience; examines features and ways to improve the financial activities of insurers.

**Public finance** - purpose of the discipline - formation of knowledge on the organization and functioning of the budget system and its role in the socio-economic development. As a result of the discipline the student should know: the role and place of budget redistribution relations of society; general principles of the budget system and principles of the budget system; nature, functionality and features of the structure of the main elements of the budget system (consolidated budget, the state budget, local budgets); objectives, principles and methods of budget planning; basic techniques and sources of revenues, directions and forms of financing costs; common methodology for determining the volume of public spending to ensure the implementation of relevant state functions; basic principles and forms of credit, technology strategy and debt management. Proper understanding of the laws in the field of financial relations of the state, local authorities, economy and population; to discover ways of applying these laws in the practice of financial work; identify a set of measures that ensure the use of finance as one of the levers of economic policy of local governments.

**Investment** Objective discipline - form students about the importance of a comprehensive concept of project analysis for business development prospects, possible alternative approaches and implementing market study projects to meet social needs. The main objectives of the course are: consideration of the theoretical foundations of project analysis, object, purpose and basic concepts and principles of project analysis, project life cycle; study places the concept of cost-benefit analysis of the project, explicit and implicit benefits and costs, opportunity cost concept as a key project analysis; study the impact of changes in the value of money over time, concepts and methodological tools of evaluation time value of money and its use in financial calculations, determine the future and the present value of money in financing arrangements; substantiation standard financial criteria and informal decision-study method of calculation of integrated indicators, comparing projects using different criteria.

**The banking system** Educational-methodical complex of discipline "Banking system" provides understanding of the fundamentals of the banking system, the aggregate banking operations and their characteristics, the basic principles of relationship banking institutions, order preparation and content of financial reporting, development of students theoretical problems and practical skills of self-realization transactions in the current economic conditions. The purpose of discipline "Banking system" is mastering basic principles of banking operations at a level that after training they can best navigate the issues of the banking system will continue to adapt new knowledge in the process of the specialty.

**Financial Markets** purpose of discipline is to enhance the knowledge and skills students about the deepening of the financial market operations, the mechanism of their characteristics and development of global stock, the policy of Portfolio Investment. Tasks of the course - to submit the required extent theoretical material, which includes research

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and development of domestic and foreign scientists; give structural understanding of the principles in the financial relations between issuers, investors, professional participants, regulators and self-regulatory organizations; define a set of measures to ensure optimum risk in the financial market and establish a broad and correct idea of the relationship of students the course "Financial Markets" with other professional disciplines.

**Treasury case.** Subject of the course: financial relations related to the formation, distribution and use of public financial resources necessary for public authorities to fulfill their tasks and powers. The purpose of the discipline is to broaden and deepen the theoretical and practical knowledge of students in the field of public finance management at the macro level and to ensure the implementation of the State Budget of Ukraine, the formation and implementation of the state budget, composition, structure, sources of formation, purpose and role of finance in ensuring the performance of public authorities. The objective of the discipline is to form a comprehensive system of knowledge about the treasury system of execution of the state budget and the peculiarities of the functioning of public finances in modern conditions.

**Economics of Enterprise.** The economic mechanism of functioning of the company, its development and use of resource potential in order to optimize economic performance.

**Labor Economics and Labor Relations.** Academic discipline involves the study of issues related to the work as a leading factor of production, the development of labor potential of society, the formation and functioning of the system of industrial relations, labor market regulation. The main sections of the course is the organization, rationing and wages, particularly in agriculture. The problems of employment and social protection, international experience of regulation of social and labor relations and more.

**Accounting.** The goal of teaching "Accounting" is to develop the system of knowledge of the theory and practice of accounting in the company. The main objectives of the discipline "Accounting" is the study of methods and rational organization and accounting in enterprises based on the use of progressive forms and national standards; study skills and use of accounting information in management.

**International Economics.** The purpose of teaching "International Economy" is to develop a system of theoretical and applied knowledge of modern role, functional content and tools of international economics in a highly competitive environment, the laws of the modern global economy. The main objectives of the discipline is to develop in students a holistic idea about the specifics of international business; mastering categorical apparatus used in the commission of international trade; forming a system of knowledge about the theoretical foundations international environment analysis and evaluation of its attractiveness for foreign business.

**Organization and planning of business activities** - Objectives: to provide students with knowledge of the theory and practice of functioning of organizations and planning in the changing conditions of the modern market socio-economic environment, to regulate the processes that they take in relation to the external environment, etc .; mastering the basic methodological approaches of analysis of internal and external environment of organizations; acquisition of skills of building organizational structures of organizations of different types; acquisition of transformation skills, creation of image and culture of organizations. Entrepreneurship and business in the agrarian sphere: essence, tasks, advantages. Characteristics of business structures. Drawing up business plans. Creating your own business. It examines the topics that are necessary to successfully create your own business, including: thinking, ideation, planning, action and strategy. Instead of just considering the theoretical course, the lessons will focus on the whole process of actually creating your own business. The course includes lectures, practicals, discussions, cases, etc.

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**Financial activities of business entities** purpose of the course - is to provide students with theoretical knowledge about the development and implementation of integrated entities methods of money management, financial planning by traditional technology and budgeting, analysis of the internal and external environment, which forms the economic strategies of enterprises of different ownership and organizational - legal forms. The task of discipline - to form a theoretical understanding of financial concepts and practical methods and tools of processing financial information to be used for decision-making in the field of financial needs of the company and determine the optimal proportions in the assets and liabilities of the company. The object of the course is the financial organization of enterprises of all forms of ownership and organizational forms, key areas of financial management companies in the domestic and foreign markets.

### **Optional components**

#### ***Optional components by general training (block 1)***

Annotations of components "History of Ukrainian Statehood", "Ethno-cultural studies", see Section 2.1.

**Political science** - Laws, structure and functions of political science. Power and power relations. The political system of society, the place and role in it of the state. Political consciousness and political culture. Politics and national relations. Politics and ecology. National-state development of Ukraine.

**Sociology** - Essence of Sociology. Formation of human behavior in the workplace and place of activity in the process of motivation system and means of social control. The role of labor and small groups in achieving production purposes.

**Religious Science.** This is a complex area of human cognition that studies patterns of emergence, history and general characteristics of religious beliefs. It explores social and historical nature of religion, its mechanism of social ties with the spiritual, political and economic systems of society

**Logic** Objective: To provide students basic training in the fields of system knowledge of basic laws and forms of logical thinking, forming conscious attitude to the process of right thinking through scientific concepts and terms to familiarize students with the theory of logical thinking. The task of discipline is shaping students' skills of correct logical thinking for making good decisions in the future professional work, to participate in discussions and business communication, information processing, for logical and correct substantiation arguments and beliefs opponents; familiarizing students and methodological assistance in mastering a certain amount of knowledge about the means of intellectual activity, its shape and laws, understanding and assimilation of features forms and laws of thought; providing logical and methodological level studies while training.

**Psychology and Pedagogy** - Formation of knowledge about the psyche of the individual as the highest value of society; awareness of the nature of the mechanisms of mental processes, states, personality traits as the foundation of its formation in the process of education and training. The acquisition of key terms and concepts of psychology and pedagogy at their reproduction and interpretation; gaining basic skills to apply them in practice to improve competitiveness in professional social and psychological sphere.

**Ethics and aesthetics.** Gives knowledge about the peculiarities and characteristics of the moral and artistic relation of man and the world, mastering the basic functions performed by ethics and aesthetics in the knowledge of all spheres of human existence, the structure of these spheres, the content of the main categories and the significance of such knowledge for work in different areas of human activity.

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**Basics of Rhetoric.** Subject of rhetoric, the essence of the concepts and all sections of classical rhetoric. Modern science: neorhetoric, style, poetics, pragmatics, theory of communication etc.

**Basic scientific research** - The purpose of this discipline is to highlight theoretical foundations, methodology, methodology, technology and organization of research activities in the economy, that is, the theoretical and practical grounds for the effective conducting of scientific research by students of economic specialties. The objectives of the course are to: Form students theoretical knowledge and practical skills in methodology, methodology, technology and organization of research activities in the economy with the wide use of teaching methodological and additional scientific literature.

### ***Optional components of professional training***

#### ***Optional components by specialty (block 1)***

**Financial risks** - purpose of discipline is mastering theoretical knowledge of students' practical skills in the mechanism of determining the sources and causes of risk, stages and activities, under which there is a risk, definition of risks that could threaten the efficient financing of the company, and use of skills in the risk management and economic security. Tasks of the course: to master the content, the nature, importance and role of risk management and economic security of business structures in the modern economy; master the basic principles defining risk factors external and internal environment of functioning entities; master the basic methods of risk assessment in business entities; master the basic forms and methods of system design to minimize risks of business entities; master the basic techniques and methods to identify and address the causes of the factors that contribute to the risk of business entities; learn methods of effective risk management in the activity of economic entities; form students the skills and knowledge necessary for decision-making under uncertainty, the implementation of a rational choice of a plurality of possible alternative options, the ability to take risks within reasonable limits.

**Financial Controlling** - Annotation of the discipline "Financial Controlling". Financial Controlling is a fundamentally new concept in enterprise management that is able to maintain the internal balance of the enterprise's economy and effectively develop it by generating objective information on costs and revenues, enabling optimal management decisions. It provides predictable business results and effective feedback, takes enterprise management to a completely new level, integrating and directing the activities of various departments and units of the enterprise to achieve the most important goals. Purpose of the course: formation of students theoretical knowledge and practical skills in financial control. Objectives of the course: study the nature, goals and principles of financial control, organization of financial control, mastering the implementation of operational and strategic control tools, setting up cost management systems and cost-oriented management, as well as modern methods of evaluating the performance and financial diagnostics of companies.

#### ***Optional components by specialty (block 2)***

**International Finance.** The system of international finance, the evolution of the global monetary system, international financial market and its structure, foreign exchange and foreign exchange transactions, bank loans international market, especially the functioning of the European market.

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**Financial and credit systems of foreign countries.** The rule of law and the main stages of evolution, the principles of the construction and the peculiarities of the forms of organization of monetary and credit systems of foreign countries in the conditions of the existence of developed financial markets and an extensive system of credit and financial institutions.

### ***Optional components by specialty (block 3)***

**Securities Transactions.** The work program of the academic discipline "Securities Transactions" will help students to understand the specifics of the stock market activity, especially the implementation of issuing and investment operations of banks, to understand the differences in securities portfolios, to know the essence of accounting and analysis of securities in the portfolios of the bank, the content of the risks of investment activities of banks on the securities market, understand the content of securities listing organization in the world and in Ukraine, and also know the functions of banks as underwriters, dealers and brokers. Particular attention is paid to the methodical principles of the activity of trading in securities, as well as issues of securities trading.

**Currency - Credit and Settlement Banking Transactions.** The aim is to form future specialists with specialist knowledge on the organization of work of credit institutions and the principles of functioning of the system of foreign exchange markets and the system of international lending in general. The discipline's task consists in mastering students theoretical knowledge and acquiring practical skills in performing credit-settlement and currency transactions, carried out in servicing foreign economic activity of exporters and importers.

### ***Optional components by specialty (block 4)***

**State regulation of Economy.** Studies the theoretical aspects of the formation, functioning and development of the system of state regulation of the Ukrainian economy, reveals the methodology, methodology and organizational basis of state regulation, presents a systematic presentation of theoretical and applied issues related to the substantiation of the economic policy of the state, as well as the mechanisms of its implementation in terms of formation and functioning of the mixed economy, reflects the achievements of modern theory and practice of state regulation of the economy.

**National Economy.** The theoretical and organizational framework for regulating the national economy. Forecasting, macroeconomic planning and programming in the regulation of the national economy. Methods of state regulation of the economy.

### ***Optional components by specialty (block 5)***

**Enterprises Reporting.** General reporting requirements. Balance sheet. Income statement. Statement of cash flows. Statement of changes in equity. Errors correction and changes in the financial statements. Overall and consolidated reporting. Financial report of a small business. Tax reporting. Statistical and special reports.

**Audit.** The application of elements of the organization registers of synthetic and analytical accounting. Accounting for funds, payments, inventory, fixed assets, intangible assets, remuneration systems, variants of production costs, the definition of production costs. Functions of the audit: validation of the balance sheet and recording of profit and loss, analysis of accounting, its compliance with the law; respect for the equality of shareholders rights during the distribution of dividends and voting.

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***Optional components by specialty (block 6)***

**Economic analysis** The purpose of discipline study course "Economic Analysis" is to develop knowledge about methods of systematic evaluation of agricultural enterprises, identify internal reserves rational use of material, labor and financial resources. The logic and structure of the course "Economic Analysis" will allow students to learn the necessary amount of knowledge that makes it possible to achieve a high level of professional competence and economic future professionals. Task. On the methodological principles of civilizational paradigm of society form the modern economic thinking and outlook of students to ensure their mastery of knowledge and methods of analysis of economic laws and processes.

**Financial Analysis** The purpose of discipline "Financial Analysis" is to develop in students the modern economic thinking and system expertise in the theory and methodology of financial analysis, a clear idea of the content of financial and economic activity in a market economy, the causal relationship between economic phenomena and financial processes, structure information supply management; skills of management decisions to address the financial situation; mastery of skills and financial analysis. The objectives of the discipline that must be solved in the course of the study are: formation of students of modern economic thinking and system expertise in the theory and methodology of financial analysis, a clear understanding of the content of financial and economic activity in a market economy, the causal correlation bandages economic phenomena and processes financial structure with information of management; skills of management decisions to address the financial situation; mastery of skills and financial analysis.

***Optional components by specialty (block 7)***

**Price and pricing.** Theories of pricing, the method of pricing. Limit value of the price, methodological atypical formation of prices in the conditions of inflation, ensuring the equivalence of accounting and prices in the agro-industrial complex.

**Fundamentals exchange** Discipline "Fundamentals of stock activity" is studying the mechanism of implementation and technology exchange activities of commodity exchanges in the country and in emerging economies. The purpose of the study course - the formation of future specialist theoretical foundations and practical skills of the exchange activity and effective use of exchange operations in its future activities. Course description: Formation at students knowledge on the organization of exchange activities; acquisition of practical skills: organization of trade on the exchange of goods, securities, currencies; of relationships with brokers; exchange information for use of high-efficiency production and marketing of agricultural products.

***Optional components by specialty (block 8)***

**Leadership and Career Management.** We are working on questions of professional and social competences for effective career development, assessment of leadership and self-development, issues of labour motivation and management of mini-groups, building of career and organization of effective team development, young specialist in the labour market, modern professional development trends are analysed.

**Social responsibility of business.** Formation of fundamental knowledge of the theory and practice of social responsibility of professional competences, study of theoretical positions and practice of interaction of the state, business, society and the person in the field of social responsibility.

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**Sustainability** - The concept of system and development. Principles of systems formation. Mechanisms of system stability. Fundamental principles of functioning and development of economic systems. Dynamics of economic processes. Feedback action. Harmonized influence of information emergent and synergetic factors on the development of economic systems.

**Bachelor**  
**field of knowledge "Management and Administration"**  
**in specialty "ACCOUNTING AND TAXATION"**  
**Educational-professional program «Accounting and Taxation»**

Form of Training:	Licensed number of persons:
– Full-time	150
– Part-time	140
Duration of Training	4 years
Credits	240 ECTS
Language of Teaching	Ukrainian, English
Qualification	Bachelor in Accounting and Taxation

### Concept of training

The specialty "Accounting and Taxation" trains specialists aimed at in-depth study of the theory and practice of accounting, auditing and taxation in the agricultural sector of the economy. An important direction of such training is the orientation of students on independent work, the development of creative activity of finding effective solutions to the problems studied, acquiring skills by the study of scientific literature, current legislation and the ability to meet international standards and critically evaluate the process of analysis, auditing and taxation in specific enterprises, to develop effective proposals for the accounting and management improvement in general.

Graduates have the right to occupy the positions of chief accountant; accountant in the agricultural sector, SMEs, trade; auditor, auditor-diagnostician, accountant, specialist of tax and controlling and auditing services, financial, bank and budgetary institutions.

### Practical training

Practical training is carried out at the following enterprises:

- PS RF "O.M. Muzychenko Velykosnitynske" of the NULES of Ukraine (Kyiv region)
- "Agronomic Research Station" of the NULES of Ukraine (Kyiv region)
- Training and Research Farm "Vorzel" of the NULES of Ukraine (Kyiv region)
- Other bases of practical training of students of the University from among leading institutions, enterprises, organizations of any ownership pattern in Ukraine and abroad, with appropriate conditions for the practice of students in accordance with the requirements of education and professional training programs.

### Proposed Topics for Bachelor theses

1. Accounting and audit of the financial results.
2. Accounting and cost analysis of grain production.
3. Accounting and audit of fixed assets and intangible assets depreciation
4. Accounting and audit of Income tax payments to the budget
5. Accounting and audit of payments to suppliers and contractors

**Academic rights of Graduates:** graduates can apply for Master's Degree Specialties and Educational (Educational-professional or Educational-scientific) programs specified in Table 1.2 Section 1.3 this Catalog.

## **Employment of Graduates**

Chief accountant; deputy chief accountant; senior accountant; chief cashier; accountant of I category; accountant of ii category; accountant; auditor; assistant auditor; senior accountant-auditor; accountant-auditor of I category; accountant-auditor of II category; accountant-auditor; accountant-expert; expert-accountant; chief auditor; head cashier, etc.

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**Bachelor`s Program and Curriculum  
in Specialty «Accounting and Taxation»  
Educational-professional program «Accounting and Taxation»**

Code n/a	Components of the educational and professional program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits ECTS	The final control
1	2	3	4
<b>1. GENERAL TRAINING CYCLE</b>			
<b>Compulsory components EPP</b>			
CC 1	Political Economy	5	exam
CC 2	Economics	5	exam
CC 3	Mathematics for Economists	5	exam
CC 4	Economic-mathematical methods and models	5	exam
CC 5	Econometrics	5	exam
CC 6	Information systems and technologies in economy	5	exam
CC 7	Management	5	exam
CC 8	Marketing	5	exam
CC 9	Statistics	5	exam
CC 10	Science of law	5	exam
<b>Total</b>		<b>50</b>	
<b>Compulsory components EPP by decision of the Academic Council of the University</b>			
CCU 1	Philosophy	5	exam
CCU 2	Foreign Language	10	exam
CCU 3	Technology of the industry I, II	10	exam
CCU 4	Labour and Life Safety	5	exam
CCU 5	Physical Training	5	test
CCU 6	University education and social communication	2	exam
<b>Total</b>		<b>37</b>	
<b>2. SPECIAL (PROFESSIONAL) TRAINING CYCLE</b>			
<b>Compulsory components EPP</b>			
CC 11	Theory of Accounting	5	exam
CC 12	International Economy	5	exam
CC 13	Organization and Planning of Production in Agricultural	5	exam
CC 14	Taxation System	5	exam
CC 15	Economics of Enterprise	5	exam
CC 16	Finance	5	exam
CC 17	Analysis of Economic Activity	5	exam
CC 18	Financial Accounting	10	exam
CC 19	Managerial Accounting	5	exam
CC 20	Accounting in Banks	5	exam
CC 21	Accounting in the Public Sector	5	exam
CC 22	Reporting of the Enterprises	5	exam
CC 23	Audit	5	exam
CC 24	Internal and external control over the activities of agricultural formations	5	exam
CC 25	Risk analysis of economic activity	5	exam
CC 26	Labor Economics and Social and Labor Relations	5	exam
CC 27	Accounting and Reporting in Taxation		
CC 28	Educational practice	4	test
CC 29	Internship	6	exam
CC 30	Graduate design	1	exam
CC 31	State attestation	1	exam
<b>Total</b>		<b>102</b>	
<b>The total amount of Compulsory components</b>		<b>189</b>	

**CURRICULA AND PROGRAMS OF BACHELOR DEGREE**

<b>Optional components EPP</b>			
<b><i>Optional components by general training (block 1)</i></b>			
OB 1.1	History of Ukrainian Statehood	5	exam
OB 1.2	Ethno-cultural studies	5	exam
OB 1.3	Political science	5	exam
OB 1.4	Sociology	5	exam
OB 1.5	Religious Science	5	exam
OB 1.6	Logic	5	exam
OB 1.7	Psychology and Pedagogics	5	exam
OB 1.8	Ethics and aesthetics	5	exam
OB 1.9	The basics of rhetoric		exam
OB 1.10	Leadership and Career Management	5	exam
<b>Total</b>		<b>5</b>	
<b><i>Optional components by Student's Choice</i></b>			
OS 1	Discipline 1 (from the general university list)	<b>3</b>	exam
OS 2	Discipline 2 (from the general university list)	<b>3</b>	exam
<b>Total</b>		<b>6</b>	
<b><i>Optional components by specialty (block 1)</i></b>			
OB 1.1	Accounting in applied software solutions in the management of enterprises in the commercial sector	5	exam
OB 1.2	Accounting in applied software solutions in the management of public sector enterprises	5	exam
<b>Total</b>		<b>5</b>	
<b><i>Optional components by specialty (block 2)</i></b>			
OB 2.1	Sustainability	5	exam
OB 2.2	Environmental Economics	5	exam
OB 2.3	State regulation of Economy		exam
OB 2.4	National Economy		exam
<b>Total</b>		<b>5</b>	
<b><i>Optional components by specialty (block 3)</i></b>			
OB 3.1	Insurance	5	exam
OB 3.2	International Taxation	5	exam
OB 3.3	Mortgage Lending		exam
OB 3.4	Banking System		exam
OB 3.5	Financial Market		exam
OB 3.6	Finance of the Enterprise		exam
OB 3.7	Investment		exam
<b>Total</b>		<b>5</b>	
<b><i>Optional components by specialty (block 4)</i></b>			
OB 4.1	Accounting in industries	5	exam
OB 4.2	Accounting and reporting of small businesses	5	exam
<b>Total</b>		<b>5</b>	
<b><i>Optional components by specialty (block 5)</i></b>			
OB 5.1	Project Analysis	5	exam
OB 5.2	Models and Methods in Analysis and Audit	5	exam
OB 5.3	Digital Analysis		
<b>Total</b>		<b>5</b>	
<b><i>Optional components by specialty (block 6)</i></b>			
OB 6.1	Social responsibility	5	exam
OB 6.2	The Social Reporting	5	exam
OB 6.3	Cost management		exam
OB 6.4	Fundamentals of stock activities		exam
<b>Total</b>		<b>5</b>	
<b><i>Optional components by specialty (block 7)</i></b>			
OB 7.1	Economic legislation	5	exam
OB 7.2	Financial legislation	5	exam
<b>Total</b>		<b>5</b>	
<b><i>Optional components by specialty (block 8)</i></b>			
OB 8.1	Basics of the scientific research	5	exam
OB 8.2	Methods of analysis and research	5	exam

Total		5	
The total amount of Optional components		40	
<b>3. OTHER TYPES OF TRAINING</b>			
CC ...			
<b>THE TOTAL AMOUNT OF EPP (without military training)</b>		<b>240</b>	

## Annotations of components in the curriculum

### 1. GENERAL TRAINING CYCLE

#### Compulsory components

**Political Economy.** The purpose of discipline is learning future specialists fundamental economic knowledge, forming their logic of economic thinking and economic culture, teaching them the basic knowledge and methods of analysis of economic processes, the ability to make informed decisions about economic problems related to their future practitioners.

Objective: acquisition of appropriate skills of rational economic behavior, based on the conceptual foundations of a market economy, the modern understanding of the functioning of markets and pricing for the services of labor, capital, natural resources according to the type of market structure; skills analysis aggregates, determining factors and the effects of macroeconomic development of business systems and capacity of the state to correct this development in accordance with the objectives and priorities of economic policy.

**Economics (Micro- Macroeconomics)** - The aim of the teaching of the discipline is to develop market-oriented economic outlook, knowledge and skills regarding clarification of the mechanisms establishing and rebalancing microsystems and efficiency of economic entities. To achieve this goal the following tasks: learning motives, basic laws and methodological principles of behavior of economic agents in the market conditions at the micro level; universal mastering tools for self-analysis and study of optimal economic decisions in conditions of limited funds and the availability of alternatives. Also provide students deep theoretical knowledge on the economy - important sphere of human activity, the objective economic laws, familiarity with the methods and conditions of effective management and systematic holistic picture of macroeconomic theory and policy. Logic and structure of the course "Macroeconomics" will allow students to learn the necessary amount of knowledge that makes it possible to achieve a high level of professional competence and economic future professionals. Task. The main objectives of the course is to study issues such as methods for measuring the dynamics of domestic production; forming conditions and consequences of violation of macroeconomic equilibrium; the impact of inflation on unemployment and economic development; methods of state fiscal control; State instruments of monetary policy.

**Mathematics for Economists** - The purpose of higher mathematics is the formation of individual students develop their intelligence and ability to logical and algorithmic thinking. The main tasks of the course is to master the basics of mathematical tools necessary for solving theoretical and practical economic problems; ability to independently discover, learn and apply the scientific literature and other information sources and resources on higher mathematics; working out mathematical skills in research applications, such as the ability to transfer specific economic problems in mathematical language with the following construction of a mathematical model.

**Economic-mathematical methods and models** - of educational discipline aimed at mastering the methods for solving optimization problems of financial and farm management. The object of study - economic, organizational and management systems. Knowledge of the "Optimization models and methods" required students to write a bachelor's and master's theses and research.

**Econometrics** - The purpose of discipline "Econometrics" is of students' knowledge about the quantitative evaluation of economic performance relationships for different sets of economic information, the latter resorting to testing on compliance of certain preconditions. The objectives of the discipline that must be solved in the course of the study are: help students master the methods of construction and implementation of econometric models using a personal computer; gain knowledge about the use of econometric models in economic research; acquiring skills students summarizing the results of statistical analysis and development of appropriate management decisions.

**Information systems and technologies in economy**- object develops knowledge of the principles of construction and operation of computers, organization of computing processes on personal computers and their algorithmization, PC software and computer networks, and effective use of modern information and communication technologies in professional activity. The main objectives of the course is to study the theoretical foundations of computer science and applied skills using economic data processing systems; of programming for the PC; Computer networks in the study of social and economic systems and solving problems of professional orientation. Provides meaningful study four modules: the architecture of the modern computer, advanced software processing of textual information, work with a spreadsheet software MS Excel and modern software processing graphic data.

**Management.** The purpose of discipline is to give students a comprehensive system of knowledge about nature management in enterprises and organizations and agribusiness management skills of production processes in them; conditions for performance of business structures; diagnosis and designing system of agricultural management, appropriate goals and objectives of market economy in agriculture. The objective of the discipline is to train future professionals able to streamline the organizational structure and management system to create enterprise (organization), maintain stability and capacity, ensure the dynamic development and competitiveness, which precedes theoretical preparation of students for the administration and management of the agricultural sector.

**Marketing.** The purpose of discipline "Marketing" is learning and mastering theoretical knowledge and practical skills on the application, the use of tools AMP; organization, planning, implementation, management agro market activities of agricultural enterprises for the effective functioning of the markets for agricultural products and foodstuffs in Ukraine and abroad, and further development. The task of discipline "Marketing" is to get the students' knowledge in the field of agricultural marketing; marketing research markets for agricultural products and foodstuffs; forecasting market conditions; inventory management products agricultural enterprises and their quality; pricing; distribution system and marketing of agricultural and food products; promotion of food products in domestic and foreign markets; and gain knowledge in planning agricultural marketing, management and control of agro market.

**Statistics** - The purpose of discipline "Statistics" is to develop basic knowledge of students, including mastering their professional knowledge and practical skills in methods and forms, types and methods of statistical monitoring of agricultural production, development and analysis of statistical data, promotion of economic thought adapted to the requirements of the market economy.

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The task of discipline that must be solved in the course of the study: understanding the challenges set before the statistical service of Ukraine in the current market conditions; mastering theoretical positions and mastering practical skills to use statistical methods of analyzing mass social and economic phenomena and processes; skills summarizing the results of statistical analysis and development of appropriate management decisions.

**Science of law.** Purpose: to provide basic training of students in the field of formation of students basic knowledge of the theory of law, mastering the system of basic concepts of jurisprudence, mastering the most important provisions of certain legal branches and developing skills in their application in practice.

### **Compulsory components by decision of the Academic Council of the University**

Annotations of components “Philosophy”, “Foreign Language (English, German, French, Spanish)”, “Physical Training”, “Labour and Life Safety”, see Section 2.1.

**Technology of the industry I, II** - Scientific bases of crop production. Modern agricultural technologies. Technological maps of growing crops. The concept of the programmable growing crops. The concept of the technology of storage, processing of various types of crop production. Also the current state of the livestock industry. Forage. The impact of standardized feeding, breeding, means the animals on their level of performance. Milk, meat, eggs, wool etc.

**University education and social communication.** The purpose of teaching this discipline is to summarize: the vision of students of higher education as a subsystem of the educational area and socio-cultural environment, mastery of knowledge, abilities and skills necessary to understand its potential systemoformuyuchoho; knowledge of basic principles, principles, practices and perspectives of the Bologna process. The objectives of the study subjects are: knowledge and understanding of the students of the place and role of higher education in the structure of the educational system, the mastery of experience analyzing the theoretical foundations of the functioning of modern Higher Education; major trends, factors and forms; creating an understanding of integration processes in education, basic principles, results and prospects of the Bologna process.

## **2. SPECIAL (PROFESSIONAL) TRAINING CYCLE**

### **Compulsory components**

**Theory of Accounting.** Subject and method of accounting. Balance sheet. Documentation as part of the method of accounting system accounts. Methodology of accounting processes in business. Chart of Accounts. Registers and forms of accounting.

**International Economy.** Marketing in foreign economic activity. Export-import transactions of raw materials, industrial and agricultural goods. Joint business activities. Methods of foreign trade. State regulation of foreign economic relations.

**Organization and Planning of Production in Agricultural Enterprises.** The scientific basis for the organization, production planning, utilization of productive capacities in various spheres of agricultural enterprises, organization of industrial and economic relations in the AIC in market conditions.

**Taxation System.** The study of theoretical and organizational bases of taxation, calculation methodology and procedure for payment of taxes and obligatory payments of businesses and individuals.

**Economics of Enterprise.** The economic mechanism of functioning of the company, its development and use of resource potential in order to optimize economic performance.

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**Finance.** Essence, types and functions of agribusiness finance. Finance of the companies, formation and use of profit, working capital lending, financial support, reproduction of fixed assets, financial indicators and their evaluation.

**Analysis of Economic Activity.** Theoretical, methodological and organizational bases of economic activity analysis of economic entities. Analytical assessment of business processes of an economic entity and their resource support. Financial analysis of economic activity of an economic entity.

**Financial Accounting.** Methods and organizations of the financial accounting of assets at the enterprise using advanced forms of national standards. Methods and organizations of the financial accounting of the capital and obligations at the enterprise using advanced forms of national standards.

**Managerial Accounting.** Principles and methods of managerial accounting, its place and role in the management of the company; acquiring skills to apply appropriate methods and techniques in the cost accounting and calculation in order to make effective management decisions.

**Accounting in Banks.** General theoretical basis and principles of accounting; technical support and accounting software; accounting nomenclature and accounting information media; circulation of documents; accounting policies of the bank; organization of the accounting of the key banking operations.

**Accounting in the public sector.** Fundamentals of accounting in budgetary institutions. Revenue, expenditure and payment transactions. Accounting for non-current and current assets, equity.

**Reporting of the Enterprises.** General reporting requirements. Balance sheet. Income statement. Statement of cash flows. Statement of changes in equity. Errors correction and changes in the financial statements. Overall and consolidated reporting. Financial report of a small business. Tax reporting. Statistical and special reports.

**Audit.** The application of elements of the organization registers of synthetic and analytical accounting. Accounting for funds, payments, inventory, fixed assets, intangible assets, remuneration systems, variants of production costs, the definition of production costs. Functions of the audit: validation of the balance sheet and recording of profit and loss, analysis of accounting, its compliance with the law; respect for the equality of shareholders rights during the distribution of dividends and voting.

**Internal and external control over the activities of agricultural formations.** Control of financial and economic activities, control of equity and liabilities, control of income, expenses and financial results.

**Risk analysis of economic activity.** The aim of the discipline is to acquire future specialists in the field of accounting and taxation of basic knowledge and systematic skills in analyzing, modeling and managing business risk, strategy and tactics of crisis management of economic object in real market conditions, making optimal decisions in uncertainty and conflict.

**Labor Economics and Social and Labor Relations.** Examines the methodology and methods of analysis of internal labor market planning and employment indicators at the enterprise; skills for solving practical problems of labor economics.

**Accounting and Reporting in Taxation.** Accounting and reporting procedure for income tax, VAT, excise tax, personal income and local taxes and fees, property and resource payments and the accounting and reporting in the special tax regime.

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## Optional components

### *Optional components by general training (block 1)*

Annotations of components “History of Ukrainian Statehood”, “Ethno-cultural studies”, see Section 2.1.

**Political science** - Laws, structure and functions of political science. Power and power relations. The political system of society, the place and role in it of the state. Political consciousness and political culture. Politics and national relations. Politics and ecology. National-state development of Ukraine.

**Sociology** - Essence of Sociology. Formation of human behavior in the workplace and place of activity in the process of motivation system and means of social control. The role of labor and small groups in achieving production purposes.

**Religious Science.** This is a complex area of human cognition that studies patterns of emergence, history and general characteristics of religious beliefs. It explores social and historical nature of religion, its mechanism of social ties with the spiritual, political and economic systems of society

**Logic** Objective: To provide students basic training in the fields of system knowledge of basic laws and forms of logical thinking, forming conscious attitude to the process of right thinking through scientific concepts and terms to familiarize students with the theory of logical thinking. The task of discipline is shaping students' skills of correct logical thinking for making good decisions in the future professional work, to participate in discussions and business communication, information processing, for logical and correct substantiation arguments and beliefs opponents; familiarizing students and methodological assistance in mastering a certain amount of knowledge about the means of intellectual activity, its shape and laws, understanding and assimilation of features forms and laws of thought; providing logical and methodological level studies while training.

**Psychology and Pedagogics** - Formation of knowledge about the psyche of the individual as the highest value of society; awareness of the nature of the mechanisms of mental processes, states, personality traits as the foundation of its formation in the process of education and training. The acquisition of key terms and concepts of psychology and pedagogy at their reproduction and interpretation; gaining basic skills to apply them in practice to improve competitiveness in professional social and psychological sphere.

**Ethics and aesthetics.** Gives knowledge about the peculiarities and characteristics of the moral and artistic relation of man and the world, mastering the basic functions performed by ethics and aesthetics in the knowledge of all spheres of human existence, the structure of these spheres, the content of the main categories and the significance of such knowledge for work in different areas of human activity.

**Basics of Rhetoric.** Subject of rhetoric, the essence of the concepts and all sections of classical rhetoric. Modern science: neorhetoric, style, poetics, pragmatics, theory of communication etc.

**Leadership and Career Management** - We address the issues of professional and social competencies necessary for effective career building, leadership assessment and self-development, issues of work motivation and management of mini-groups, building our own careers and organizing effective team development, positioning a young specialist in the labor market, current trends of professional development are analyzed.

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***Optional components of professional training******Optional components by specialty (block 1)***

**Accounting in applied software solutions in the management of enterprises in the commercial sector.** Computer technology of accounting in agricultural enterprises.

**Accounting in applied software solutions in the management of public sector enterprises.** It is studied computer technology accounting in the public sector.

***Optional components by specialty (block 2)***

**Sustainability** - The concept of system and development. Principles of systems formation. Mechanisms of system stability. Fundamental principles of functioning and development of economic systems. Dynamics of economic processes. Feedback action. Harmonized influence of information emergent and synergetic factors on the development of economic systems.

**Environmental Economics.** Ecology and modern agriculture. Ecological agriculture and crop production. Environmental issues of the livestock concentration. Environmental expertise, assessment, monitoring and forecasting with the use of mathematical modeling. Environmental law, legislative support. Interaction between environmental and economic factors, maintaining proper environmental quality, resource conservation. Indicators of ecological, economic and social efficiency of environmental measures, changes of psychological conditions and socio-hygienic condition.

**State regulation of Economy.** Studies the theoretical aspects of the formation, functioning and development of the system of state regulation of the Ukrainian economy, reveals the methodology, methodology and organizational basis of state regulation, presents a systematic presentation of theoretical and applied issues related to the substantiation of the economic policy of the state, as well as the mechanisms of its implementation in terms of formation and functioning of the mixed economy, reflects the achievements of modern theory and practice of state regulation of the economy.

**National Economy.** The theoretical and organizational framework for regulating the national economy. Forecasting, macroeconomic planning and programming in the regulation of the national economy. Methods of state regulation of the economy.

***Optional components by specialty (block 3)***

**Insurance.** The essence, principles and role of insurance. Classification of insurance, insurance risks and their assessment. Insurance market and its characteristics, insurance companies, government regulation of insurance activity. Personal insurance. Property insurance of the companies and individuals.

**International Taxation.** Examines fundamental theoretical foundations of international tax practice of agreements on avoidance of double taxation and using methods of international tax planning.

**Mortgage Lending.** Organization of the mortgage in financial institutions and principles of the system of mortgage lending in general. Studying theory and practice of credits secured by real estate.

**Banking system.** Revealed the theoretical aspects of the study of various banking services, from traditional deposit, credit and cash transactions that form the basis of banking - to the latest forms of monetary and financial instruments that are used by banking institutions.

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**Financial market.** Features of the money market, Ukrainian and international capital markets, foreign exchange and derivatives segment, the specifics of various financial institutions.

**Finance of the Enterprise.** Essence, types and functions of the company's finance. The system of noncash and cash payments. The formation and use of gross and net income and earnings, working capital lending, financial support, reproduction of fixed assets.

**Investment.** Methodological bases of investment. Forms, objects and areas of investment. Investment risks. Financial support of investment. Budgeting of project management and investment process.

#### ***Optional components by specialty (block 4)***

**Accounting in industries.** Features of methods and organization of accounting in trade enterprises, budgetary institutions and credit institutions and industry.

**Accounting and reporting of small businesses.** Theory and practice of financial (accounting) in small businesses in accordance with current legislation of Ukraine, national regulations and international standards.

#### ***Optional components by specialty (block 5)***

**Project Analysis.** Alternatives and implementation of market approaches to meet social needs. The study of modern methods of investment projects management of economic entities.

**Models and Methods in Analysis and Audit.** The essence, principles and methodological bases of methods and models in the development of managerial decisions. Methods of solutions development for the breakeven of the enterprise. Methods and models of management development solutions for real and financial investments and assets. Methods and models of strategic management and forecasting of the enterprise.

**Digital Analysis.** The discipline studies the issues of computer processing of economic and financial information in the process of performing analytical and planning and economic calculations, the ability to create a user interface for the information-analytical model of a set of economic tasks of a specialist with Excel software.

#### ***Optional components by specialty (block 6)***

**Social Responsibility.** Formation of basic knowledge of theory and practice of social responsibility of professional competence, learning theoretical principles and practices of cooperation between the state, business, society and the rights of CSR.

**The Social (Nonfinancial) Reporting"** course will help you understand how to make effective, interesting and informative reports on sustainable development, will allow you to study international reporting standards (GRI, ISO, Global Compact) and their practical application in Ukrainian companies. Learn more about the secrets of a social report, the strategy, start and preparation process, as well as practical tips on how to communicate your report to different categories of stakeholders.

**Fundamentals of stock activities.** Fundamentals of exchange activity. Commodity, stock and currency exchange. Stock exchange transaction, the procedure of agreements conducting and exchange trading mechanism.

**Cost management.** The purpose of discipline is to present the necessary theoretical foundations, methodological approaches and practical knowledge of the principles, techniques and methods development and implementation of the overall strategy and direction of production activity of industrial enterprises; to develop and implement modern

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industrial system, including the development of the production process, decisions concerning the location of production facilities, design enterprise products, the introduction of standards and regulations for works; to plan and control current operation of the production system. To achieve this goal are made the following tasks: research productions in their relationship that formed under the influence of objective economic laws and subjective factors; scientific substantiation of decisions on the assessment of business plans with an objective assessment of their performance.

### ***Optional components by specialty (block 7)***

**Economic legislation.** It is studied the basic legal institutions of general economic legislation, as well as the regulation of certain spheres of economic life on the basis of economic and commercial procedural legislation of Ukraine.

**Financial legislation.** Today, social, legal and political reforms are underway in Ukraine. In the conditions of cardinal changes of vital activity of our countries the maintenance of financial relations essentially changes, their legal regulation improves, and consequently, the role of financial law essentially increases. The purpose of this course is to form knowledge about the legal regulation of financial activities of the state and economic entities basic skills in the application of financial legislation.

### ***Optional components by specialty (block 8)***

**Basic scientific research** - The purpose of this discipline is to highlight theoretical foundations, methodology, methodology, technology and organization of research activities in the economy, that is, the theoretical and practical grounds for the effective conducting of scientific research by students of economic specialties. The objectives of the course are to: Form students theoretical knowledge and practical skills in methodology, methodology, technology and organization of research activities in the economy with the wide use of teaching methodological and additional scientific literature.

**Methods of analysis and research.** In the process of studying the discipline it is provided to get acquainted with the creation of a personal educational environment and profiles for the identification of the researcher in the scientometric space; review of regulations, initiatives and sources related to open science and open access, copyright in electronic content, ethics of electronic communications.

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**Bachelor**  
**field of knowledge "Management and Administration"**  
**in specialty "ENTREPRENEURSHIP, TRADE AND EXCHANGE ACTIVITIES"**  
**Educational-professional program «Entrepreneurship, trade and stock activities»**

Form of Training:	Licensed number of persons:
– Full-time	75
– Part-time	140
Duration of Training	4 years
Credits	240 ECTS
Language of Teaching	Ukrainian
Qualification	Bachelor in Entrepreneurship, Trade and Stock Activities

### **Concept of training**

The specialty "Entrepreneurship, trade and stock activities" provides training of highly skilled professionals in the field of entrepreneurship, stock trading and trade, namely, competent managers and experts in the organization and specifics of agribusiness, stock trading and trade. The task of such training is the development of communicative, socio-psychological and organizational and economic competencies, skills of communication with a foreign language in professional activities, formation of theoretical and practical knowledge on the organization and conduct of business, student acquisition of competencies in determining priority areas and organization of their own business, - plans, adoption of effective business decisions on the domestic and foreign markets, the ability to use the acquired knowledge on the issues of trading, and exchange operations in practice.

### **Practical training**

Practical training is carried out at the following enterprises:

- PS RF "O.M. Muzychenko Velykosnitynske" of the NULES of Ukraine (Kyiv region)
- "Agronomic Research Station" of the NULES of Ukraine (Kyiv region)
- Training and Research Farm "Vorzel" of the NULES of Ukraine (Kyiv region)
- other bases of practical training of university students from among the advanced business structures of agribusiness, trade organizations and exchanges of Ukraine and abroad, which have the proper conditions for conducting students' practice in accordance with the requirements of educational professional programs of training specialists.

### **Proposed Topics for Bachelor theses**

1. Opening of business in business and its functioning.
  2. Business planning of entrepreneurial activity in agribusiness.
  3. Business planning of entrepreneurship for processing agricultural products (by type of products).
  4. Agrarian Exchange and its activities in Ukraine.
  5. Status and prospects of the stock market development.
  6. Financial derivatives and their use by stockholders.
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**Academic rights of Graduates:** graduates can apply for Master's Degree Specialties and Educational (Educational-professional or Educational-scientific) programs specified in Table 1.2 Section 1.3 this Catalog.

### **Employment of Graduates**

Manager of small enterprise by types of economic activity and services; private entrepreneur; Head of the farm and small business in the agrarian sector; director of a trading firm; Sales Representative; sales manager; merchant; specialist in stock trading; broker; dealer; specialist in stock exchange operations; auctioneer (licitator); trading broker (broker), etc.

**Bachelor`s Program and Curriculum in Specialty  
«Entrepreneurship, trade and stock activities»  
Educational-professional program «Entrepreneurship, trade and stock activities»**

Code n/a	Components of the educational and professional program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits ECTS	The final control
1	2	3	4
<b>1. GENERAL TRAINING CYCLE</b>			
<b>Compulsory components EPP</b>			
CC 1	Political Economy	5	exam
CC 2	Economics	5	exam
CC 3	Higher mathematics	5	exam
CC 4	Economic-mathematical methods and models	5	exam
CC 5	Econometrics	5	exam
CC 6	Information systems and technologies in economy	5	exam
CC 7	Management	5	exam
CC 8	Marketing	5	exam
CC 9	Statistics	5	exam
CC 10	Science of law	5	exam
<b>Total</b>		<b>50</b>	
<b>Compulsory components EPP by decision of the Academic Council of the University</b>			
CCU 1	Philosophy	5	exam
CCU 2	Foreign Language	10	exam
CCU 3	Technology of the industry I, II	10	exam
CCU 4	Labour and Life Safety	5	exam
CCU 5	Physical Training	5	test
CCU 6	University education and social communication	2	exam
<b>Total</b>		<b>37</b>	
<b>2. SPECIAL (PROFESSIONAL) TRAINING CYCLE</b>			
<b>Compulsory components EPP</b>			
CC 11	Price and pricing	5	exam
CC 12	Commodity studies	5	exam
CC 13	Cost management	5	exam
CC 14	Entrepreneurship	10	exam
CC 15	Economics of Enterprise	5	exam
CC 16	Organization of trade.	5	exam
CC 17	Labor economics and socio-labor relations	5	exam
CC 18	Exchange activities	5	exam
CC 19	Organization of agribusiness	10	exam
CC 20	Trade Logistics	5	exam
CC 21	Organization of production	5	exam
CC 22	Business evaluation	5	exam
CC 23	Finance	5	exam
CC 24	Accounting	5	exam
CC 25	Business planning	5	exam
CC 26	Brokerage activities	5	exam
CC 27	Educational practice	4	test
CC 28	Internship	6	exam
CC 29	Graduate design	1	exam
CC 30	State attestation	1	exam
<b>Total</b>		<b>102</b>	
<b>The total amount of Compulsory components</b>		<b>189</b>	
<b>Optional components EPP</b>			
<b>Optional components by general training (block 1)</b>			
OB 1.1	History of Ukrainian Statehood	5	exam
OB 1.2	Ethno-cultural studies	5	exam
OB 1.3	Political science	5	exam
OB 1.4	Sociology	5	exam

**CURRICULA AND PROGRAMS OF BACHELOR DEGREE**

OB 1.5	Religious Science	5	exam
OB 1.6	Logic	5	exam
OB 1.7	Psychology and Pedagogics	5	exam
OB 1.8	Ethics and aesthetics	5	exam
OB 1.9	The basics of rhetoric		exam
OB 1.10	Business protocol and ethics of communication	5	exam
<b>Total</b>		<b>5</b>	
<b><i>Optional components by Student's Choice</i></b>			
OS 1	Discipline 1 (from the general university list)	3	exam
OS 2	Discipline 2 (from the general university list)	3	exam
<b>Total</b>		<b>6</b>	
<b><i>Optional components by specialty (block 1)</i></b>			
OB 1.1	E-commerce	5	exam
OB 1.2	Sales Management	5	exam
<b>Total</b>		<b>5</b>	
<b><i>Optional components by specialty (block 2)</i></b>			
OB 2.1	Sustainability	5	exam
OB 2.2	Basics of the scientific research	5	exam
<b>Total</b>		<b>5</b>	
<b><i>Optional components subjects by specialty (block 3)</i></b>			
OB 3.1	International trade	5	exam
OB 3.2	International Economics	5	exam
<b>Total</b>		<b>5</b>	
<b><i>Optional components by specialty (block 4)</i></b>			
OB 4.1	Taxation of legal entities and individuals	5	exam
OB 4.2	The tax system	5	exam
<b>Total</b>		<b>5</b>	
<b><i>Optional components by specialty (block 5)</i></b>			
OB 5.1	Business risk	5	exam
OB 5.2	Agricultural hedging	5	exam
<b>Total</b>		<b>5</b>	
<b><i>Optional components by specialty (block 6)</i></b>			
OB 6.1	Social responsibility	5	exam
OB 6.2	Leadership and Career Management	5	exam
<b>Total</b>		<b>5</b>	
<b><i>Optional components by specialty (block 7)</i></b>			
OB 7.1	Strategy and business development	5	exam
OB 7.2	Cooperation in entrepreneurship	5	exam
<b>Total</b>		<b>5</b>	
<b><i>Optional components by specialty (block 8)</i></b>			
OB 8.1	Investment	5	exam
OB 8.2	Project analysis	5	exam
OB 8.3	Reporting of the Enterprises	5	exam
<b>Total</b>		<b>5</b>	
<b>The total amount of Optional components</b>		<b>40</b>	
<b>3. OTHER TYPES OF TRAINING</b>			
CC ...			
<b>THE TOTAL AMOUNT OF EPP (without military training)</b>		<b>240</b>	

## Annotations of components in the curriculum

### 1. GENERAL TRAINING CYCLE

#### Compulsory components

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**Information systems and technologies in economy-** object develops knowledge of the principles of construction and operation of computers, organization of computing processes on personal computers and their algorithmization, PC software and computer networks, and effective use of modern information and communication technologies in professional activity. The main objectives of the course is to study the theoretical foundations of computer science and applied skills using economic data processing systems; of programming for the PC; Computer networks in the study of social and economic systems and solving problems of professional orientation. Provides meaningful study four modules: the architecture of the modern computer, advanced software processing of textual information, work with a spreadsheet software MS Excel and modern software processing graphic data.

**Management.** The purpose of discipline is to give students a comprehensive system of knowledge about nature management in enterprises and organizations and agribusiness management skills of production processes in them; conditions for performance of business structures; diagnosis and designing system of agricultural management, appropriate goals and objectives of market economy in agriculture. The objective of the discipline is to train future professionals able to streamline the organizational structure and management system to create enterprise (organization), maintain stability and capacity, ensure the dynamic development and competitiveness, which precedes theoretical preparation of students for the administration and management of the agricultural sector.

**Marketing.** The purpose of discipline "Marketing" is learning and mastering theoretical knowledge and practical skills on the application, the use of tools AMP; organization, planning, implementation, management agro market activities of agricultural enterprises for the effective functioning of the markets for agricultural products and foodstuffs in Ukraine and abroad, and further development. The task of discipline "Marketing" is to get the students' knowledge in the field of agricultural marketing; marketing research markets for agricultural products and foodstuffs; forecasting market conditions; inventory management products agricultural enterprises and their quality; pricing; distribution system and marketing of agricultural and food products; promotion of food products in domestic and foreign markets; and gain knowledge in planning agricultural marketing, management and control of agro market.

**Statistics** - The purpose of discipline "Statistics" is to develop basic knowledge of students, including mastering their professional knowledge and practical skills in methods and forms, types and methods of statistical monitoring of agricultural production, development and analysis of statistical data, promotion of economic thought adapted to the requirements of the market economy.

The task of discipline that must be solved in the course of the study: understanding the challenges set before the statistical service of Ukraine in the current market conditions; mastering theoretical positions and mastering practical skills to use statistical methods of analyzing mass social and economic phenomena and processes; skills summarizing the results of statistical analysis and development of appropriate management decisions.

**Science of law.** Purpose: to provide basic training of students in the field of formation of students basic knowledge of the theory of law, mastering the system of basic concepts of jurisprudence, mastering the most important provisions of certain legal branches and developing skills in their application in practice.

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## Compulsory components by decision of the Academic Council of the University

Annotations of components "Philosophy", "Foreign Language (English, German, French, Spanish)", "Physical Training", "Labour and Life Safety", see Section 2.1.

**Technology of the industry I, II** - Scientific bases of crop production. Modern agricultural technologies. Technological maps of growing crops. The concept of the programmable growing crops. The concept of the technology of storage, processing of various types of crop production. Also the current state of the livestock industry. Forage. The impact of standardized feeding, breeding, means the animals on their level of performance. Milk, meat, eggs, wool etc.

**University education and social communication.** The purpose of teaching this discipline is to summarize: the vision of students of higher education as a subsystem of the educational area and socio-cultural environment, mastery of knowledge, abilities and skills necessary to understand its potential systemoformuyuchoho; knowledge of basic principles, principles, practices and perspectives of the Bologna process. The objectives of the study subjects are: knowledge and understanding of the students of the place and role of higher education in the structure of the educational system, the mastery of experience analyzing the theoretical foundations of the functioning of modern Higher Education; major trends, factors and forms; creating an understanding of integration processes in education, basic principles, results and prospects of the Bologna process.

## 2. SPECIAL (PROFESSIONAL) TRAINING CYCLE

### Compulsory components

**Price and pricing.** Theories of pricing, the method of pricing. Limit value of the price, methodological atypical formation of prices in the conditions of inflation, ensuring the equivalence of accounting and prices in the agro-industrial complex.

**Commodity studies.** Requirements for stock commodities and their features, classification of exchange commodities; general characteristics of the agricultural and food products group; peculiarities of international standards for agro-food products; the main fixed assets of futures contracts on the agro food market.

**Cost management.** The purpose of the discipline is to provide the students with the necessary theoretical foundations, methodological approaches and practical skills regarding the principles, methods and methods of developing and implementing the general strategy and directions of the industrial activity of the industrial enterprise; development and implementation of a modern production system, including the development of production processes, decisions on location of production capacities, enterprise design, product, implementation of standards and standards for the execution of works; planning and control of the current functioning of the production system. To achieve the goal set the following main objectives: the study of production processes in their relationship, formed under the influence of objective economic laws and factors of subjective order; scientific substantiation of decisions on the assessment of business plans with an objective assessment of their implementation.

**Entrepreneurship.** Essence of entrepreneurial activity; main types and forms of entrepreneurial activity; the essence of small business; main stages of preparation and registration of constituent documents of small business entities; the essence of an entrepreneurial agreement (contract); main types and types of contracts, their general components and specific features; features of the structure of business contracts and related types of risks; essence of business planning of entrepreneurial activity; main

components of the business plan and their general characteristics; essence, features and main forms of financing of entrepreneurship and their characteristics.

**Economics of Enterprise.** Economic mechanism of operation of the enterprise, formation and use of its resource potential with the purpose of optimization of economic results of activity.

**Organization of trade.** Theoretical foundations of the trade organization. Organizational models in the trading system. Organizational and economic principles of trade operations. Organizational conditions for the implementation of wholesale and retail trade. Regulation of wholesale and retail trade.

**Labor economics and socio-labor relations.** Studying the methodology and methods of analysis of the internal labor market, planning and analysis of the system of labor indicators at the enterprise; acquiring skills in solving practical problems of the labor economy.

**Exchange activities.** Evolution of wholesale trade forms. History of exchange activity. Organizational and economic principles of commodity exchange activities. Functions of exchange-trade brokers. Types of Exchange Agreements. Rules of exchange trading. Future's pricing. Stock exchange. Exchange trading in the foreign exchange market.

**Organization of agribusiness.** Entrepreneurship and business in the agrarian sector: the essence, tasks, advantages. Characteristics of business structures. Preparation of business plans.

**Trade Logistics.** Perspectives and priorities of development of logistic systems and logistic chains; modern trends in the development of supply and marketing, commercial intermediary organizations subordinated to different levels of management; forms and methods of managing the flows of material resources and their stocks; formation of the infrastructure of the market mechanism of trade in means of production; directions of formation of logistic information systems and their components of information flows; directions of formation of logistic service, its level and quality criteria.

**Organization of production.** Theoretical foundations of production organization; organization of complex production preparation and the process of organizational design and rationalization of production systems; organization of labor processes and standardization of labor; organization of the activities of the main production units and the industrial infrastructure of the enterprise.

**Business evaluation.** The concept of management system; types of agricultural enterprises and associations; organization of the land use, labor and material resources; social forms of production organization; planning and economic calculation in agricultural enterprises; organization of crop production, animal husbandry, industrial production and crafts.

**Finance.** Essence, types and functions of finance of agroindustrial complex. Finances of enterprises, formation and use of profits, working capital, lending to enterprises, financial support, restoration of fixed assets, indicators of financial condition of enterprises and their estimation. Stability of monetary systems and directions of improvement of monetary and credit relations in Ukraine and, in particular, in the agroindustrial complex.

**Accounting.** Subject and method of accounting. Balance sheet. Documentation as an element of the accounting method. Account system. Methodology of accounting of basic economic processes. Account accounting plan. Accounting registers and forms of accounting.

**Business planning.** Purpose: studying the theoretical foundations of strategic planning, mastering the skills and tools of strategic analysis and formation of enterprise strategies, as well as knowledge systems on the methodology of long-term and current plans developing in the enterprise and monitoring their implementation.

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**Brokerage activities.** Brokers on the stock exchange market. Types of Brokers and Dealers. Organization of brokerage business. Licensing and certification of brokerage houses and brokers. Brokerage services. Foundation of brokerage houses. Legal principles of regulation of brokerage activities in Ukraine.

### **Optional components**

#### ***Optional components by general training (block 1)***

Annotations of components “History of Ukrainian Statehood”, “Ethno-cultural studies”, see Section 2.1.

**Political science** - Laws, structure and functions of political science. Power and power relations. The political system of society, the place and role in it of the state. Political consciousness and political culture. Politics and national relations. Politics and ecology. National-state development of Ukraine.

**Sociology** - Essence of Sociology. Formation of human behavior in the workplace and place of activity in the process of motivation system and means of social control. The role of labor and small groups in achieving production purposes.

**Religious Science.** This is a complex area of human cognition that studies patterns of emergence, history and general characteristics of religious beliefs. It explores social and historical nature of religion, its mechanism of social ties with the spiritual, political and economic systems of society

**Logic** Objective: To provide students basic training in the fields of system knowledge of basic laws and forms of logical thinking, forming conscious attitude to the process of right thinking through scientific concepts and terms to familiarize students with the theory of logical thinking. The task of discipline is shaping students' skills of correct logical thinking for making good decisions in the future professional work, to participate in discussions and business communication, information processing, for logical and correct substantiation arguments and beliefs opponents; familiarizing students and methodological assistance in mastering a certain amount of knowledge about the means of intellectual activity, its shape and laws, understanding and assimilation of features forms and laws of thought; providing logical and methodological level studies while training.

**Psychology and Pedagogics** - Formation of knowledge about the psyche of the individual as the highest value of society; awareness of the nature of the mechanisms of mental processes, states, personality traits as the foundation of its formation in the process of education and training. The acquisition of key terms and concepts of psychology and pedagogy at their reproduction and interpretation; gaining basic skills to apply them in practice to improve competitiveness in professional social and psychological sphere.

**Ethics and aesthetics.** Gives knowledge about the peculiarities and characteristics of the moral and artistic relation of man and the world, mastering the basic functions performed by ethics and aesthetics in the knowledge of all spheres of human existence, the structure of these spheres, the content of the main categories and the significance of such knowledge for work in different areas of human activity.

**Basics of Rhetoric.** Subject of rhetoric, the essence of the concepts and all sections of classical rhetoric. Modern science: neorhetoric, style, poetics, pragmatics, theory of communication etc.

**Business protocol and ethics of communication.** National and religious peculiarities of labor ethics; the history of ethics, basic concepts, terms and methods of business communication, modern views on the place of ethics in business; professional ethics codes, ethical requirements for the manager.

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***Optional components of professional training******Optional components by specialty (block 1)***

**E-commerce.** Basics of e-commerce systems. Business models of e-commerce and their specifics. Organization of payments in e-commerce. Marketing Research and E-Commerce Planning. Current state of e-commerce development.

**Sales management.** The purpose of this course is to develop theoretical knowledge and practical skills in the field of sales management, taking into account the satisfaction of consumers' needs and ensuring the enterprises efficiency. Studying the course will provide the ability to properly organize, sales, evaluate their effectiveness, use of modern methods of sales forecasting, etc.

***Optional components by specialty (block 2)***

**Sustainability** - The concept of system and development. Principles of systems formation. Mechanisms of system stability. Fundamental principles of functioning and development of economic systems. Dynamics of economic processes. Feedback action. Harmonized influence of information emergent and synergetic factors on the development of economic systems.

**Basics of the scientific research.** The purpose of this discipline is to highlight theoretical foundations, methodology, methodology, technology and organization of research activities in the economy, that is, the theoretical and practical grounds for the effective conducting of scientific research by students of economic specialties. The objectives of the course are to: Form students theoretical knowledge and practical skills in methodology, methodology, technology and organization of research activities in the economy with the wide use of teaching methodological and additional scientific literature.

***Optional components by specialty (block 3)***

**International trade.** The purpose of the course is to formulate theoretical foundations in the field of international economy, which requires understanding of the international trade laws and mechanism. The subject of the course is to study the economic relations in the field of international trade, especially in agrarian markets. The objectives of the course are aimed at forming a complex knowledge among students about: the essence of concepts, stages and indicators of international trade development; modern forms of of international trade; features and tendencies of international trade methods; systems of international trade regulation, etc.

**International Economics.** The purpose of teaching "International Economy" is to develop a system of theoretical and applied knowledge of modern role, functional content and tools of international economics in a highly competitive environment, the laws of the modern global economy. The main objectives of the discipline is to develop in students a holistic idea about the specifics of international business; mastering categorical apparatus used in the commission of international trade; forming a system of knowledge about the theoretical foundations international environment analysis and evaluation of its attractiveness for foreign business.

***Optional components by specialty (block 4)***

**Taxation of legal entities and individuals.** Study of the concept, system, principles, mechanism and role of taxation of individuals and legal entities; types of taxes paid by individuals; types of taxation of legal entities; tax conditions.

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**The tax system.** Studying of theoretical and organizational bases of taxation, methods of calculations and the order of payment of taxes and obligatory payments of legal entities and individuals.

***Optional components by specialty (block 5)***

**Agricultural hedging.** Hedging as a method of price risks management. Types of hedging. Long hedging. Short Hedging. Basis and basis risks. Situations of Contango and Backwardation. Organization of hedging by futures and options. Features of hedging prices in the agrarian market.

**Business risk.** Types of risks and methods of managing them: the basic principles of risk analysis. Quantitative and qualitative risk analysis. Basics of risk management. Ways to reduce risk. Economic risks associated with operating activities. Economic risks associated with the investment activity of the enterprise. Economic risks associated with the financial activity of the enterprise.

***Optional components by specialty (block 6)***

**Social responsibility of business.** Formation of fundamental knowledge of the theory and practice of social responsibility of professional competences, study of theoretical positions and practice of interaction of the state, business, society and the person in the field of social responsibility.

**Leadership and Career Management** - We address the issues of professional and social competencies necessary for effective career building, leadership assessment and self-development, issues of work motivation and management of mini-groups, building our own careers and organizing effective team development, positioning a young specialist in the labor market, current trends of professional development are analyzed.

***Optional components by specialty (block 7)***

**Strategy and business development.** General concepts and approaches to the formation of enterprise strategy; basic rules for the formation of enterprise strategies and strategic analysis; criteria for classification of enterprise strategy and justification for choosing a particular strategy; the issue of managing the strategic activity of the enterprise.

**Cooperation in entrepreneurship.** Theoretical and methodological, organizational and economic principles of co-operation; the history of formation, development and regularities of the successive transformations of the cooperative movement in the world and in Ukraine; the essence of cooperative values and principles approved by the International Cooperative Alliance; types of cooperatives; the features of management of agricultural servicing cooperatives, the difference in the management of co-operative groups from the management of other forms of economic activity; objective and subjective needs for the development of cooperation in Ukraine; the basis of the process of creation and liquidation of cooperatives; the basis of state support.

***Optional components by specialty (block 8)***

**Investment.** Methodological foundations of investment. Forms, objects and directions of investment. Investment Risks. Financial provision of investment. Drafting the budget of the investment project and management of the investment process.

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**Project analysis.** Alternatives to implementing market approaches and justifying projects to meet public needs. Studying of modern methods of management of investment projects by subjects of economic activity.

**Enterprises Reporting.** General reporting requirements. Balance sheet. Income statement. Statement of cash flows. Statement of changes in equity. Errors correction and changes in the financial statements. Overall and consolidated reporting. Financial report of a small business. Tax reporting. Statistical and special reports.

## 2.14. FACULTY OF AGRARIAN MANAGEMENT

**Dean** – PhD in economics, Associate Professor **Anatoliy Ostapchuk**

Voice: (044)527 – 85-73

E-mail: [agromen\\_dean@nubip.edu.ua](mailto:agromen_dean@nubip.edu.ua)

Address: Bldg. 10, room 313,525

The faculty organizes and coordinates the educational process of bachelors in the following specialties:

### **075 Marketing**

Educational-professional Program «**Marketing**»

Guarantor of the program – Doctor of economic Sciences, Professor, Ruslan Buriak

Graduating department:

Department of marketing and international trade

Voice: (044)527-89-78

E-mail: [market\\_chair@nubip.edu.ua](mailto:market_chair@nubip.edu.ua)

Department head - Doctor of economic Sciences, Professor, Ruslan Buriak

### **073 Management**

Educational-professional Program «**Management**»

Guarantor of the program - Doctor of Economics, professor Tetiana Mostenska

Graduating departments:

Department of management named after I.S.Zavadskiy

Voice: (044)527-84-80

E-mail: [kafedra.zavadskogo@i.ua](mailto:kafedra.zavadskogo@i.ua)

Head of Department - Doctor of Economics, Professor Nadiia Reznik

Department of business administration and foreign international activity

Voice: (044)527-86-51

E-mail: [worldagro\\_chair@nubip.edu.ua](mailto:worldagro_chair@nubip.edu.ua)

Head of Department - Doctor of Economics, professor Tetiana Mostenska

Department of Production and investment management

Voice: (044)527-80-81

E-mail: [proinvestman@nubip.edu.ua](mailto:proinvestman@nubip.edu.ua)

Head of Department - Doctor of Economic Sciences, Professor, Associate member of the National academy of sciences of Ukraine Lidiia Shynkaruk

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**Bachelor**  
**Field of Knowledge "Management and Administration"**  
**in Specialty «MARKETING»**  
**Educational-professional program "Marketing"**

Form of Training:	Licensed number of persons:
– full-time	60 persons
– extramural	60 persons
Term of training	4 years
Credits	240 ECTS
Language of Teaching	Ukrainian, English
Qualification of graduates	Bachelor in Marketing

**The concept of training**

The purpose of training of specialist in "Marketing" is to provide companies and organizations in the sphere of environmental management and agribusiness with highly skilled workers who would be able to operate information about the market situation and can use it to improve effectiveness of both entities and organs of state regulation and control. Qualifications of Bachelor of Marketing allows alumnus to identify the main directions of the market development quickly, to predict trends and develop adaptation measures for them.

**Practical training**

Future marketing experts having an example of real enterprises studies specific features of agricultural production, which will largely determine conduct of such products on the market. As potential leaders they learn to manage the departments of marketing, acquire knowledge of the practical aspects of the market work and understanding of their impact on the development of both the company and the market in general, to determine the place of professional marketer in the administrative and economic system of the state.

**Proposed Topics for Bachelor theses**

1. Promotion strategy development.
2. Marketing product strategy development.
3. Increasing efficiency of agricultural enterprise on the base of marketing research.
4. Marketing activity organization on enterprise.
5. Commercial activity organization of marketing base.
6. Creation communicative enterprise policy on internal (foreign) market.
7. Logistic management.
8. Distribution strategy justification.
9. Marketing management on enterprise.
10. Organization of marketing research activity on the milk and milk-processing market.

**Academic rights of Graduates:** graduates can apply for Master's Degree Specialties and Educational (Educational-professional or Educational-scientific) programs specified in Table 1.2 Section 1.3 this Catalog

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## **Employment of Graduates**

All graduates are employed in enterprises and organizations of the agricultural sector and public authorities at the following positions: heads of departments of Logistics (Deputy Head of External Cooperation, Deputy Head of Logistics), managers of small enterprises without the apparatus control in commercial service (Deputy of manager of agency: trade, advertising, etc.), economist in pricing, economist in international trade, professional in the sphere of public services and marketing, specialist in the field of marketing, a specialist of department of public relations and media, Head of marketing department, Head of department of public relations and media, manager of a small enterprise without the administrative staff in wholesale and retail trade, manager of public relations, advertising manager.

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**Bachelor`s Program and Curriculum  
in Specialty “Marketing”  
Educational-professional program "Marketing"**

Code n/a	Components of the educational-professional program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits ECTS	The final control
1	2	3	4
<b>1. GENERAL TRAINING CYCLE</b>			
<b>Compulsory components</b>			
CC 1	High math	4	exam
CC 2	Probability theory and math statistic	4	exam
CC 3	Statistics	4	exam
CC 4	Psychology of Success	3	exam
CC 5	Economy and finance of the Enterprise	4	exam
CC 6	Management	4	exam
CC 7	Econometrics	3	exam
CC 8	Math programming	3	exam
CC 9	Accounting	4	exam
CC 10	Technology of presentations and speechwriting	4	exam
CC 11	Economic Informatics	4	exam
<b>Compulsory components EPP by decision of the Academic Council of the University</b>			
CC 1.1	Foreign language	12	exam. test
CC 1.2	System of technologies	8	exam
CC 1.3	Physical training	4	test
CC 1.4	Establishing your own business	4	exam
CC 1.5	Introductory to specialty: Bases	4	exam
CC 1.6	Legislative providing of managerial activities	4	exam
<b>2. SPECIAL (PROFESSIONAL) TRAINING CYCLE</b>			
<b>Compulsory components</b>			
CC 12	Economics	12	exam. test
CC 13	Marketing	4	exam, c. p.
CC 14	Marketing by type of activity: services, industrial, agricultural	12	exam, test, c.p.
CC 15	Commodity market infrastructure	4	exam
CC 16	Logistic	3	exam
CC 17	Human resource management	3	exam
CC 18	World Economy and International Trade	5	exam. test
CC 19	Marketing Product Policy with the Basics Of Commodity Studying	7	exam, test, c.p.
CC 20	Bases of Internet Marketing	4	exam
CC 21	Marketing research	4	exam,c.p.
CC 22	Consumer Behavior	4	exam
CC 23	Marketing Pricing Policy	7	exam, test, c.p.
CC 24	Marketing Communications	7	exam. test
CC 25	Marketing distribution policy	3,5	exam
CC 26	International Marketing	3,5	exam
CC 27	Quality Management of Goods and Services	3,5	exam
<b>the amount of compulsory components</b>		<b>144</b>	
<b>Optional components</b>			
<b>Optional Block 1. «Marketing of goods and services»</b>			
OB 1.1	Introductory to specialty: social communications	5	
OB 1.2	Marketing in a digital environment	5	exam
OB 1.3	Bases of advertising	5	exam
OB 1.4	E-commerce	5	exam
OB 1.5	Sales management	6	exam
OB 1.6	Information systems in Marketing	5	exam
OB 1.7	Commercial-intermediary activity	5	exam
OB 1.8	Risk-Management	5	exam
OB 1.9	Project analysis	4	exam
OB 1.10	Business foreign language	4	exam

**CURRICULA AND PROGRAMS OF BACHELOR DEGREE**

OB 1.11	Marketing analyze	5	exam
<b>Optional Block 2. «Internet Marketing»</b>			
OB 2.1	Introductory to specialty: social communications	5	test
OB 2.2	Internet communication	6	exam
OB 2.3	Content Marketing	5	exam
OB 2.4	Marketing of Social Networks	5	exam
OB 2.5	Internet analytics	5	exam
OB 2.6	E-commerce	5	exam
OB 2.7	Risk-Management	5	test
OB 2.8	Marketing audit	5	exam
OB 2.9	Marketing of non-profit organizations	5	exam
OB 2.10	Project analysis	4	exam
OB 2.11	Business foreign language	4	exam
<b>Optional components by Student's Choice</b>			
OB.3.1	<i>Optional discipline 1</i>	3	exam
OB 3.2.	<i>Optional discipline 2</i>	3	exam
<b>The total amount optional components</b>		60	
<b>3. OTHER TYPES OF TRAINING</b>			
OB 3.1	Studying practice	8	
OB 3.2	Industry practice	4	
State attestation		1	
Bachelors qualification thesis (diploma or project)		5	
<b>THE TOTAL AMOUNT OF EPP</b>			<b>240</b>

## Annotations of Components in the curriculum

### 1. GENERAL TRAINING CYCLE

#### Compulsory components

**Higher mathematics.** The purpose of study of discipline is forming for the students of base mathematical knowledge for the decision of tasks in professional activity, abilities of analytical thought and mathematical formulation of economic tasks which arise up in the process of management. The tasks that need to be addressed in the study subjects, students are gaining knowledge of the main sections of higher mathematics, proving basic theorems forming primary skills: perform operations on vectors, matrices, computing determinants, solving systems of linear equations, the study of shapes and properties lines and planes, curves and surfaces of the second order, of the limits of step-exponential functions.

**Probability theory and mathematical statistics.** The main purpose of teaching is to form future professionals with basic knowledge the basis of a probabilistic-statistical machine to solve theoretical and practical economic problems. The main tasks that needs to be addressed in the process of teaching is to provide students with knowledge of basic definitions, theorems, rules, theorem proving, and the formation of skills: to fulfill qualitative and quantitative mathematical analysis of random events, random variables and systems of values, conduct mathematical treatment of statistical data provide statistical estimation of population parameters.

**Statistics.** Teaching of the discipline has an aim of the formation of future professionals of theoretical knowledge and practical skills in statistical estimation of economic phenomena and processes of social life, mastering the methods of the techniques of statistical analysis. The main tasks that need to be resolved in the process of teaching include: gathering, checking and evaluation of statistical information,

development of statistical forms, bringing together and grouping of materials of statistical monitoring, identifying relationships between different phenomena and processes, establishing its structure, technics of calculation of generalized statistical indicators and their economic interpretation.

**Psychology of success.** The purpose of the academic discipline lies in studying the objective laws, mechanisms of generation and development of psychological cognitive processes, properties, states and formations and their role in the training of a successful specialist. The task of the discipline is to create a system of theoretical and methodological knowledge on the problems of psychological science and practice, cognition of the structural elements of the psyche - the psychological cognitive processes, properties, states and formations at the reproduction and interpretation level for practical application and implementation in the process of a future specialist's professional activity.

**Economy and finance of the enterprise.** It is the science of production efficiency, ways and means to achieve the best results at the lowest cost by enterprise. The subject of the study economy and finance of enterprise are methods and ways of combining rational and efficient use of all elements of the manufacturing process at the enterprise level. Target of the economics of enterprise: study measures to improve the efficiency of enterprises and the use of the means of production, and labor intensive study ways and environmentally sound development of enterprises, determination of the effectiveness of introduction of new machines and their systems, individual measures.

**Management.** The main purpose of teaching is to develop in future leaders a modern management thinking and system of special knowledge in branch of management, formation of understanding of the conceptual foundations of organizations' system management, acquirement of skills of analysing internal and external environment, making appropriate management decisions.

**Econometrics.** Purpose of the discipline is to teach students how to quantify the relationship of economic indicators for various sets of economic information going into the last test of the appropriateness of certain prerequisites and to determine methods for quantitative measurement of links that are useful in each case according to the characteristics of economic information.

**Math programming.** This discipline teaches students to use methods of economic-mathematical models in their professional careers. The main directions of studying of the discipline are the following: mathematical model in the system of material and ideal models, the research of economic processes through mathematical-economic models, the main methods of modeling of economic processes, mathematical formalization of conditions with changeable technical and economic factors, economic-mathematical analysis of optimal solutions.

**Accounting.** The main purpose of teaching future marketings is to build theoretical knowledge and acquirement of practical skills in organizing and prosecuting of accounting and leading the auditing of financial statements, as well as using of their results, as the informational base of effective decision-making. The main task of studying the discipline is detailed overall economic and accounting and auditing training of specialists and acquiring of principles, tools, methods and techniques of accounting of commercial enterprises, as well as the audit of the financial statements.

**Technology of presentations and speechwriting.** The purpose of teaching is to prepare students for presentations, reports in front of the staff at various levels, training and teaching methods of designing websites in order to bring their ideas to the audience /consumer. The objective of discipline is learning the methods for creating presentations and websites, acquaintance with the basics of building a report; usage the analytical schemes of research the verbal and nonverbal communications, which are necessary for understanding the political strategically influence of different international relations' subjects; to give necessary knowledge in sphere of the technology of oratorical influence

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for different subjects; to learn students to use appropriate tools of verbal and nonverbal communication models in marketing.

**Economic informatics.** The formation of future professionals of contemporary information and computer culture, gaining practical skills in modern computer technology and the use of modern information technology to solve various problems in the practice of the specialty.

### **Compulsory components by decision of the Academic Council of the University**

**Annotations of Compulsory components see Section 2.1.**

## **2. SPECIAL (PROFESSIONAL) TRAINING CYCLE**

### **Compulsory components**

**Economics.** The purpose of discipline is to train professionals to perform their professional functions, mastering of economic knowledge, which are based on the current macro-analysis, acquisition of skills of aggregate indicators of economic and social development of the national economy research through the use of universal instruments and macroeconomic modeling. As a result of the study of the course students should know: patterns and general trends in development of economic processes at the macro level, allocate part macroeconomic aggregates and the links between them; methodological principles of calculation of macroeconomic indicators, forecasting of macroeconomic development and emergence of cycle and indicators of economic cycle. It is one of the components of modern economic theory – the fundamental science about household which explores human behavior and explains why and how they make certain economic decisions. Microeconomics studies the behavior of individual economic agents in different market structures. The object of study is the behavior of micro-economical entities, ie the process of developing, adopting and implementing decisions regarding the selection and use of scarce resources in order to obtain the greatest possible benefit.

**Marketing.** The purpose of the discipline is the formation in students - future marketers a scientific outlook and special knowledge in the theory, methodology of marketing, development abilities and skills to perform management functions in the enterprise based on marketing for satisfaction of customer's needs and ensure the effective activities of the enterprise.

**Marketing by type of activity: services, industrial, agricultural.** The purpose of discipline is to provide students the theoretical knowledge and practical skills in management, planning and organization of marketing activities of companies in the market of service, industrial and agricultural products; to form the knowledge about branch market features. The task of discipline is students' acquiring skills in market research of agricultural products, predicting conditions of trade, inventory management and quality of agricultural products, pricing, and promotion of goods on the domestic and foreign food markets, distribution and marketing of domestic products; is to deepen students' knowledge on the specifics of marketing services as a specific commodity and conditions, mechanisms and tools for use in the activities of organizations (companies); understanding the significance marketing tools absorption features in the organization, and businesses in the service sector, the ability to use this knowledge in practice activity; learning the theory of industrial marketing, methodology of marketing research, development and planning of marketing strategies and their implementation in industrial enterprises, mastering modern methods of managing marketing communication activities in the areas of procurement, marketing, distribution.

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**Commodity market infrastructure.** The purpose of the following courses: to master the theory of commodity market infrastructure as an essential part of the market economy, the practical ability to control its activities to promote, storage and sale of goods and services to meet the needs of consumers, the ability to find and implement solutions for intensification and efficiency in this area. Objectives of the course: to know the nature of the commodity market infrastructure and its role in a market economy, the types and conditions of an effective infrastructure of individual links of the commodity market.

**Logistic.** The primary purpose of teaching of discipline is forming for the future specialists of system knowledge and understanding of conceptual bases of logistic, theory and practice of development of this direction and acquisition of skills of independent work, in relation to mastering of educational material in relation to the modern methods of management financial and other streams in modern terms.

**Human resource management (HR).** The purpose of teaching of discipline is forming of complex of theoretical knowledge and practical skills in relation to forming and realization of skilled policy in modern organizations, rational selection of workers on positions and forming of effective labor collective, evaluation and development of workers, and also the purposeful use of their potential.

**World economy and international trade.** The purpose of teaching course is to form students' understanding of the theories and policies that guide international trade, modern changes in the structure of the world economy and trade, analysis of indicators of their development; Knowledge of forms and methods of organization and regulation of international exchange of goods, services and products of intellectual property, trends and prospects for the development of international trade, Aim: to form a complex of competences for students in planning, organizing and regulating the export / import in the system of international economic relations.

**Marketing product policy.** The purpose of discipline is learning the principles of comprehensive range of optimization and further development. Solving the above problems of marketing goods policy for future specialists may make the implementation of these tasks discipline involving the study: the quality of goods and services (works), the main market characteristics of goods and services; products' competitiveness; the main areas of commercial policy formation; train future professionals to the principles and methods of goods movement; systemizing the explore of the multitude of products through the rational application of classification and coding.

**Bases of internet marketing.** The purpose of teaching the academic discipline is to form the future specialists' basis knowledge of modern Internet marketing, gaining competencies in organizing and conducting Internet marketing activities, and evaluation of their effectiveness. In order to achieve the goal, the following tasks are assigned: mastering the basic methods and technologies of products/services promotion on the Internet; effective usage of the most popular Internet marketing technologies.

**Marketing research.** The course "Marketing Research" forming students' understanding of marketing research as a science, an introduction to the history of the emergence of marketing and market research, is in the form of systematic data on the direction, organization and most important methods of marketing research in small and medium business. Important objectives of the course "Marketing research" are: developing knowledge about the nature of marketing research, study the importance of marketing research in a market economy, the definition of goals and objectives of marketing research.

**Consumer behavior.** The purpose of discipline is the acquisition of knowledge and practical skills regarding working with customers, managing their behavior, shaping and maintaining consumer demand for their products and services, identifying their customers and influence on the acceptance of their purchase decisions. Objective: To study the functional structure and data base management behavior of consumers. Subject: behavior

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of potential and actual customers, the factors that affect consumer behavior, models of consumer behavior.

**Marketing pricing.** The purpose of the course is to learn the complex knowledge how to develop and implement marketing pricing, pricing on new and traditional products and services. The task of discipline: the study of marketing processes of pricing and skills of analysis, assimilation of pricing principles and marketing management, familiarization with the practical aspects of pricing in the company.

**Marketing communications.** The purpose of discipline is mastering the knowledge of effective goods / services' selling in order to make effective production, organizational and scientific decisions at the level of modern requirements. The target of course is learning the basic categories of marketing communications; acquaintance with methods of elaboration the advertising campaigns budget, algorithms of calculations the efficiency advertising appeal to target audience and acquisition of practical skills of their use in the process of product promotion and searching the reserves of its improvement; mastering of PR bases, formation of students' theoretical knowledge and practical skills of establishing two-way communication to identify common ideas or common interests and achieve mutual understanding based on truth, knowledge and full awareness.

**Marketing distribution policy.** The purpose of discipline is to teach students the basics of effective distribution of goods and services. In the course of studying the discipline, the theoretical and methodological principles of distribution marketing policy are considered, in particular, regarding the organization and management of commodity trades, wholesale and retail trade in distribution channels, and the organization of work of intermediaries; conceptual basis of understanding marketing policy of distribution and marketing logistics, public procurement and public procurement, choice of marketing policy and distribution channels.

**International marketing.** The purpose of discipline - the formation of students' theoretical and practical knowledge in the sphere of international marketing activities needed to achieve business goals in international business. The object of discipline is a set of principles of integrated management system international marketing activities in the company and implementation of the basic functions of marketing in international business.

**Quality management of goods and services.** Purpose of the discipline aims at the formation of a knowledge system of the basic principles, categories, methods and tools of quality management in modern companies, taking into account achievements of theory and practice of quality management; application of these achievements in all aspects of the organization's activity regardless of its branch affiliation, size and structure; providing a glimpse of systematic organization of quality management processes at an enterprise that meets the requirements of international standards. Task: the disclosure of the fundamental theoretical essences of the quality management modern concept; consideration of the assignment and mechanism of the application of classical and modern methods and tools for quality management in the enterprises current activities; obtaining skills for the development and implementation of quality management systems at the enterprise; building skills in the implementation of economic calculations to substantiate organizational and technical decisions for improving quality and productivity, as well as the application of modern methods for quality management of goods and services.

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## Optional components

### ***Optional components by specialty (block 1)*** ***«Marketing of goods and services»***

**Social communications.** The main goal of the discipline is to assist students in acquiring the necessary theoretical knowledge and practical skills in the field of social education, transformation of social knowledge, social self-education and development to address modern social issues. As a result of studying the discipline, students will learn the basic concepts, principles, basic categories, trends and patterns of social education, the implementation of social learning and, accordingly, building a constructive social dialogue in society.

**Marketing in a digital environment.** This course examines the concept of digital marketing as one of the components of marketing. Particular attention is paid to communication channels specific to the digital environment. Methods of measurement of efficiency in various communication channels are analyzed. Separately, the integration of digital marketing in the marketing mix in general and in offline marketing in particular.

**Bases of advertising.** The purpose of the discipline is to inculcate among students a system of theoretical knowledge and practical skills in the organization and management of advertising activities at enterprises. The discipline's task consists in assimilation of the main components of the organization of advertising activity, understanding of the principles of advertising effectiveness, the choice of the media of advertising, the areas of creativity in advertising; principles and methodical approaches to generating new ideas in advertising; evaluation of advertising effectiveness.

**E-commerce.** The purpose of teaching the discipline is to: form higher knowledge theoretical knowledge and practical skills for the implementation of business transactions and transactions with the use of electronic information processing tools and the World Wide Web to ensure greater effectiveness of future entrepreneurial and professional activities. The tasks of studying the discipline are: systematization and expansion of knowledge about the structure and tools of work with information on the Internet; study of the main categories and forms of sales activity in the information and communication environment of the Internet; Identification of ways to improve the business activities of enterprises through the use of opportunities for doing business on the Internet; systematization of knowledge about electronic financial transactions in the Internet, determining the effectiveness of introducing elements of e-commerce in the activities of enterprises (organizations); systematization and introduction of Internet marketing and Internet advertising in entrepreneurship. Subject discipline - methodology and methods of construction, analysis of e-commerce systems and business technologies based on the use of information and communication capabilities of the Internet.

**Sales management.** The purpose of teaching discipline is: the acquisition of theoretical knowledge and practical skills from the basics of the process of analysis, planning, organization and control of sales. The tasks of studying the discipline are: assimilation of scientific and theoretical issues of distribution in market conditions; study of theoretical and practical issues of formation, design and functioning of distribution channels; providing future specialists-marketers with knowledge on the issues of researching the effective functioning of distribution channels; provision of the necessary knowledge on the choice and work with intermediaries, management of the activities of participants in the commodity movement; Students gain methodological and methodological skills in choosing and conducting distribution policies in conditions of competition and market conditions.

**Informational systems in marketing.** The goal of teaching of the discipline is to develop in future professionals a current level of informational and computer culture, the acquirement of practical skills of work on modern computer equipment and the usage of

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modern information technologies to solve various problems in the practice activity of the specialty.

**Commercial-intermediary activity.** The discipline studies modern approaches to the possibility of commercial management of intermediary enterprises in order to transfer to modern technologies, strategies, purchase and sale tactics; the use and application of modern forms, methods of commercial transactions for the effective operation of business intermediary companies.

**Risk-Management.** The purpose of teaching consists in providing knowledge about the methods of risk assessment parameters that characterize the quantitative relationships between economic variables. Challenges of teaching is learning predictive risk models, acquiring skills to use them in practice economic management. As a result, the study of the course students should know: the nature, subject and object of discipline, modeling of economic risk system of economic forecasting risks, the social risk prediction methods of technical analysis.

**Project analysis.** The purpose of teaching discipline is to acquire theoretical knowledge and practical skills in conducting marketing, commercial, technical, social, environmental, institutional, financial and economic analysis in the implementation of investment projects. The subject of discipline is the methods of analysis of certain aspects of investment projects. According to this, a marketing specialist should know: a general characteristic of indicators and methods for assessing investment projects; Be able to: analyze investment project in any of its aspects.

**Business foreign language.** The overall objective of the program of foreign language teaching for specific purposes is to develop students' professional language competences that will contribute to their effective functioning in diverse cultural, educational and professional environment.

**Marketing analyze.** The purpose of discipline is to development of students' basic mathematical knowledge to solve problems in professional activities, analytical thinking skills and mathematical formulation of economic problems arising from the management. The tasks that need to be resolved during the process of studding the discipline are: acquation of knowledge of the main sections of higher mathematics, substantiation of basic theorems, formation of primary skills: performance of actions on vectors, matrices, calculations of determinants, solving systems of linear equations, studding of shapes and properties lines and planes, curves and surfaces of the second order, finding of the limits of step-exponential functions.

### ***Optional components by specialty (block 2)*** ***«Internet Marketing»***

**Social communications.** The main goal of the discipline is to assist students in acquiring the necessary theoretical knowledge and practical skills in the field of social education, transformation of social knowledge, social self-education and development to address modern social issues. As a result of studying the discipline, students will learn the basic concepts, principles, basic categories, trends and patterns of social education, the implementation of social learning and, accordingly, building a constructive social dialogue in society.

**Internet communication.** The purpose of the discipline is to familiarize students with the complex of marketing communications on the Internet. The complex of marketing communications on the Internet, as well as traditional communications, consists of the following elements: advertising, sales promotion, direct marketing and public relations. The use of the Internet provides the specific features of these elements of the communication complex. In addition to these tools, the course deals with such special tools of Internet

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communications as search marketing (SEM), search engine optimization - SEO, SMM - work with social networks, Email - marketing, blogging etc

**Content Marketing.** The purpose of the discipline is to teach students to attract attention and attract the target audience to the media product by creating and disseminating relevant valuable information and content related marketing content, mastering content marketing skills, managing activities in social media. Objectives and principles of content marketing, its advantages and risks, work with various social media platforms and communication channels, content marketing automation, custody, aggregation and content syndication, content marketing tactics and strategies, site content auditing and content audit marketing company

**Marketing of Social Networks.** The purpose of teaching this discipline is to promote the formation of students of modern marketing thinking, acquisition of competences that will allow actively and creatively to participate in the development and practical application of modern tools for promoting business through social networks. Marketing Methods in Social Networks: Creating Brand Communities; work with the blogosphere; reputation management; personal branding; Social Media Optimization (SMO); non-standard SMM-promotion; promotion strategies in social networks; assessment and analysis of the effectiveness of work in social networks

**Internet analytics.** The purpose of teaching discipline is to create knowledge and skills for students to use web analytics tools to optimize web resources. Internet analytics: statistics, trends, absolute and relative indicators; analysis of site attendance, usability analysis, analysis of the behavior of visitors on a page, determining the conversion paths of site visitors; benchmarking - comparing with general trends and with competitors through independent researchers (Alexa, GemiusAudience, Google Trends).

**E-commerce.** The purpose of teaching discipline is to develop competencies in the implementation of business transactions and transactions using electronic media. Online stores the notion of online store; the process of making a purchase; advantages and disadvantages; corporate sites main and additional features. providing services. trading venues the idea of a trading floor. business model; types of trading platforms; exchange; auction; catalog.

**Risk-Management.** The purpose of teaching consists in providing knowledge about the methods of risk assessment parameters that characterize the quantitative relationships between economic variables. Challenges of teaching is learning predictive risk models, acquiring skills to use them in practice economic management. As a result, the study of the course students should know: the nature, subject and object of discipline, modeling of economic risk system of economic forecasting risks, the social risk prediction methods of technical analysis.

**Marketing audit.** The purpose of the discipline - to provide students with scientific and theoretical knowledge and practical skills in organizing a marketing audit, to teach methodological and organizational techniques for its use in modern marketing activities of the enterprise. This will allow students to form the appropriate knowledge of the theory of marketing audit of the enterprise; master the methodology of marketing audit in order to provide information and analytical support for marketing operations, reduce the likelihood and impact of commercial risk.

**Marketing of non-profit organizations.** The objectives of mastering the discipline are: to provide a systematic, deep and comprehensive study of the theoretical and methodological foundations of marketing and to promote the acquisition of skills in the development and adoption of managerial decisions in the field of marketing formation of non-profit organizations. Non-commercial marketing is an activity used to create, maintain or change the attitudes and relationships of target audiences to certain organizations and their professional activities. This type of marketing is related to the activities of non-profit organizations that aim to achieve a certain social effect by public institutions, health care

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facilities, social security, culture, charitable organizations, mercy services, denominational institutions, churches, sects and , finally, political parties and movements.

**Project analysis.** The purpose of teaching discipline is to acquire theoretical knowledge and practical skills in conducting marketing, commercial, technical, social, environmental, institutional, financial and economic analysis in the implementation of investment projects. The subject of discipline is the methods of analysis of certain aspects of investment projects. According to this, a marketing specialist should know: a general characteristic of indicators and methods for assessing investment projects; Be able to: analyze investment project in any of its aspects.

**Business foreign language.** The overall objective of the program of foreign language teaching for specific purposes is to develop students' professional language competences that will contribute to their effective functioning in diverse cultural, educational and professional environment.

**Bachelor  
field of knowledge "Management and Administration"  
in Specialty "MANAGEMENT"  
Educational-professional program "Management"**

Form of training:	licensed number of persons:
- full-time	150 persons
- extramural	60 persons
Term of training	4 years
Credits ECTS	240
Language of instruction	Ukrainian, English
Qualification of graduates	Bachelor in management, manager administrator

**Concept of training**

The purpose of training specialists in "Management" is to provide enterprises and organizations in the field of agribusiness with highly qualified middle managers, heads of departments with skills in working with operating systems and processes. Bachelor's degrees in management and manager-administrator allow the graduate to quickly adapt to the internal economic relations of enterprises and organizations, quickly develop and implement elements of the management system, establish an effective management system, ensure effective communication and coordinated teamwork.

**Practical training**

Future specialists in management at specific enterprises acquire skills of working with modern management methods, knowledge of technological issues of the enterprise, the ability to manage interaction, the ability to manage their own development; build clear personal goals; ability to solve problems; ability to innovate; the ability to influence others, to manage the enterprise and individual departments. In the process of learning students acquire knowledge of modern management approaches; ability to teach and develop subordinates; substantiation and management decisions.

**Proposed Topics for Bachelor theses**

1. Improving the management system of labor potential of the enterprise.
2. Improving the system of evaluation of work and personal qualities of managers.
3. Business management and ways to improve it.
4. Improving the organization and motivation of work at the enterprise.
5. Development of communication systems in enterprise management.
6. Improving the process of making and implementing management decisions.
7. Formation of competitive strategies of enterprises.
8. Product quality management of the enterprise.
9. Business plan for the company's entry into the foreign market.
10. Risks of foreign economic transactions
11. Development of a business plan for the project
12. Investment project management

**Academic rights of Graduates:** graduates can apply for master's degree Specialties and Educational (Educational-professional or Educational-scientific) programs specified in Table 1.2 Section 1.3 this Catalog.

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## **Employment of Graduates**

All graduates are employed in companies and organizations in the agricultural sector and public authorities at the following positions: managers of production units in commercial service, working apparatus of central government, workers, staff of local authorities, heads of other departments in other areas (Inspector, Deputy Chief department), managers of small enterprises without the apparatus (Vice Chairman), managers of business and management (personnel manager, manager of administration), managers in other sectors of economic activity, economists (economist contract work, Economic Advisory) assistant managers.

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**Bachelor's Program and Curriculum  
in Specialty «Management»  
Educational-professional program "Management"**

Code n/a	Components of the educational-professional program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits ECTS	The final control
<b>1. GENERAL TRAINING CYCLE</b>			
<b>Compulsory components</b>			
CC 1	High math for managers	4	exam
CC 2	Probability theory and math statistic	4	exam
CC 3	Legislative providing of managerial activities	4	exam
CC 4	Statistics	4	exam
CC 5	Marketing	4	exam
CC 6	Econometrics	3	exam
CC 7	Economy and finance of the enterprise	4	exam
CC 8	Economic and mathematic modelling	4	exam
CC 9	Accounting	4	exam
CC 10	Economic Informatics	4	exam
CC 11	<i>Economics</i>		
	Microeconomics	6	exam
	Macroeconomics	6	exam
<b>Compulsory components EPP by decision of the Academic Council of the University</b>			
CC 12	Introduction to the profession	4	exam
CC 13	Business protocol and negotiation	4	exam
CC 14	Establishment of the own business	5	exam
CC 15	<i>Technology systems</i>		exam
	System of technologies: Crop Production	8	
	System of technologies: Livestock Production		
CC 16	Foreign language	11	exam
CC 17	Physical training	4	exam
<b>2. SPECIAL (PROFESSIONAL) TRAINING CYCLE</b>			
<b>Compulsory components</b>			
CC 18	Theory of organization	4	exam
CC 19	Management	8	exam, c.w.
CC 20	Foreign economic affairs	8	exam, c.w.
CC 21	Operational management	6	exam, c.p
CC 22	Business analysis	5	exam
CC 23	Management of team interactions	4	exam
CC 24	Human resource management (HR)	8	exam
CC 25	Foreign economic activity of enterprise	6	exam, c.p.
CC 26	Risk-management	5	exam
CC 27	Social communications	5	exam
CC 28	Project management	6	exam, c.p.
CC 29	Management of innovative and investment activity	6	exam
<b>Total volume of compulsory components</b>		<b>158</b>	
<b>Optional components</b>			
<b>Optional block 1 «Management of investment activity and international projects»</b>			
OB 1.1	Information systems in management	4	exam
OB 1.2	Business English	5	exam
OB 1.3	Strategic management	5	exam
OB 1.4	Logistic	4	Exam
OB 1.5	Controlling	4	Exam
OB 1.6	Investment analysis	5	Exam
OB 1.7	International economic statistic	5	Exam
OB 1.8	Management of production systems	5	Exam
OB 1.9	Crisis management	7	exam
OB 1.10	Social management	5	Exam
OB 1.11	Asset management and investment portfolio	6	exam

**CURRICULA AND PROGRAMS OF BACHELOR DEGREE**

<b>Optional Block 2 «Management organization and business administration»</b>			
OB 2.1	Information systems in management	4	exam
OB 2.2	Business English	5	Exam
OB 2.3	Strategic management	5	Exam
OB 2.4	Logistic	4	exam
OB 2.5	Controlling	4	Exam
OB 2.6	Basics of cooperation	5	exam
OB 2.7	Marketing Management	5	Exam
OB 2.8	Management of agro-industrial enterprise	7	exam
OB 2.9	Commercial law	5	exam
OB 2.10	Accounting and analytical support of management activity	5	exam
OB 2.11	Management of motivation	5	exam
<b>Optional Block 3 «Management of foreign activity»</b>			
OB 3.1	Information systems in management	4	exam
OB 3.2	Business English	5	exam
OB 3.3	Strategic management	5	exam
OB 3.4	Logistic	4	exam
OB 3.5	Controlling	4	exam
OB 3.6	International organizations	5	exam
OB 3.7	Marketing in foreign international activity	5	exam
OB 3.8	International transportation	5	exam
OB 3.9	Customs regulation of foreign economic operations	7	exam
OB 3.10	Foreign commercial activity	5	exam
OB 3.11	International economic integration. European integration	5	exam
<b>Optional Block 4 «Management of business»</b>			
OB 4.1	Information systems in management	4	exam
OB 4.2	Business English	5	exam
OB 4.3	Strategic management	5	exam
OB 4.4	Logistic	4	exam
OB 4.5	Controlling	4	exam
OB 4.6	Implementation of business idea	7	exam
OB 4.7	Management of small enterprises	5	Exam
OB 4.8	National and international programs and grants to support small business	5	exam
OB 4.9	Legal regulation of business activity	5	exam
OB 4.10	Features of accounting for an individual entrepreneur	5	exam
OB 4.11	Consulting services	5	exam
<b>Optional Block 5 «Logistic management»</b>			
OB 5.1	Information systems in management	4	exam
OB 5.2	Business English	5	exam
OB 5.3	Strategic management	5	exam
OB 5.4	Logistic	4	exam
OB 5.5	Controlling	4	exam
OB 5.6	Logistics infrastructure	5	exam
OB 5.7	Information systems in logistics	5	exam
OB 5.8	International transportation	5	exam
OB 5.9	Functional logistics	7	exam
OB 5.10	E-commerce	5	exam
OB 5.11	Warehouse logistics	5	exam
<b>Optional components by Student's Choice</b>			
OB 6.1	Optional discipline 1	3	exam
OB 6.2	Optional discipline 2	3	exam
OB 6.3	Sociology	3	exam
	Philosophy		
	Technics of presentation and web-design		
<b>Total amount of optional components</b>		<b>63</b>	

3. OTHER TYPES OF TRAINING			
OB 30	Educational practice	8	
OB 31	Internship	4	
OB 32	Bachelors qualification thesis (diploma or project)	6	
OB 33	State attestation	1	
<b>THE TOTAL AMOUNT OF EPP</b>			<b>240</b>

## Annotations of Components in the curriculum

### 1. GENERAL TRAINING CYCLE

#### Compulsory components

**Higher mathematics for managers.** Formation of students' basic mathematical knowledge for solving problems in professional activities, skills of analytical thinking and mathematical formulation of economic problems that arise in the management process. The tasks to be solved in the process of studying the discipline are the acquisition by students of knowledge of the main sections of higher mathematics, proving the basic theorems, the formation of initial skills: performing actions on vectors, matrices, calculating determinants; solving systems of linear equations; study of shapes and properties of lines and planes, curves and surfaces of the second order; finding the boundary of exponential functions

**Probability theory and mathematical statistics.** Formation of basic knowledge of future specialists on the basics of the application of probabilistic and statistical apparatus for solving theoretical and practical economic problems. Main tasks: providing students with knowledge of basic definitions, theorems, rules, proving theorems and skills; perform qualitative and quantitative mathematical analysis of random events, random variables and systems of such quantities; to carry out mathematical processing of statistical data; give a statistical estimate of the parameters of the general population.

**Legal support of management activities.** The purpose of studying the discipline is the need to train management professionals who will work in terms of building the rule of law and a market economy; study of a set of legal norms that regulate public relations and are formed during the executive authorities to ensure the implementation and protection of rights, freedoms and legitimate interests of individuals and legal entities, as well as in the management of economic, socio-cultural and administrative-political construction in the state, formation of legal awareness and legal culture among future employees of the business elite, legal regulation of economic activity, legal status of business entities and state bodies th power.

**Statistics.** Teaching the discipline aims to form in future professionals theoretical knowledge and practical skills of statistical evaluation of economic phenomena and processes of social life, mastering the methods of statistical analysis. The main tasks to be solved in the process of teaching the discipline are: collection, verification and evaluation of statistical information, development of statistical forms; compilation and grouping of statistical observation materials, identification of connections between individual phenomena and processes, establishment of its structure; technique of calculating generalized statistical indicators and their economic interpretation.

**Marketing.** The purpose of the discipline: the formation of students' scientific worldview and special knowledge of theory, marketing methodology, development of skills and abilities to implement management functions in the enterprise on the basis of marketing to meet consumer needs and ensure effective operation.

**Econometrics.** The course examines the quantification and relationship of economic indicators for different sets of economic information. Testing arrays of information for compliance with certain prerequisites, as well as to determine the methods of quantitative measurement of relationships, which should be used in each case according to the characteristics of economic information.

**Economics and finance of the enterprise.** The purpose of studying the discipline is to form in students of modern economic thinking and a system of special knowledge about the basic concepts of economic and financial activities of the enterprise, the content of its individual areas and their relationship, the system of indicators that characterize it.

**Economic and mathematical modeling.** The purpose of studying the discipline is to form a system of knowledge on methodology and tools for building and using different types of economic and mathematical models, studying the basic principles and tools of problem statement, building economic and mathematical models, methods of solving and analyzing them for use in economics. basics and practical skills in setting, solving optimization and management problems of economics tools of mathematical methods.

**Accounting.** The main purpose of studying the discipline is to form theoretical knowledge and acquire practical skills in organizing and maintaining accounting and auditing financial statements, as well as using their results as an information base for effective management decisions. The main task of studying the discipline is a thorough general economic and accounting training of specialists and their mastery of the principles, means, methods and techniques of accounting for commercial enterprises, as well as the audit of their financial statements.

**Economic informatics.** Formation of future specialists of modern level of information and computer culture, acquisition of practical skills of work on modern computer equipment and use of modern information technologies for the decision of various problems in practical activity on a specialty.

**Economics. Module 1. Microeconomics.** Investigates people's behavior and explains why and how they make certain economic decisions. Microeconomics studies the behavior of individual economic entities in different market structures. The object of study of microeconomics is the behavior of microeconomic entities, ie the process of developing, making and implementing decisions regarding the choice and use of limited resources in order to obtain the greatest possible benefit.

*Module 2. Macroeconomics.* Assimilation of the system of economic knowledge on which modern macroanalysis is based; acquiring skills in the study of aggregate indicators of economic and social development of the national economy through the use of universal tools and macroeconomic modeling. As a result of studying the discipline, students should know: patterns and general trends in economic processes at the macro level; identify the constituent macroeconomic aggregates and the links between them; methodical bases of calculation of macroeconomic indicators, forecasting of macroeconomic development; manifestations of cyclicity and indicators of the economic cycle.

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**Compulsory components by decision of the Academic Council of the University**

**Annotations of Compulsory components see section 2.1.**

**2. SPECIAL (PROFESSIONAL) TRAINING CYCLE****Compulsory components**

**Organization theory.** The main purpose of teaching the discipline is the formation of a modern, based on a systematic approach, worldview on the creation, operation and evolution of organizations. The main tasks to be solved in the process of teaching the discipline are: providing students with knowledge about the theory and practice of organizations in the changing conditions of modern market socio-economic environment, the regulation of processes that occur in their relationship with the environment and more.

**Management.** The main purpose of teaching the discipline is the formation of future managers of modern management thinking and a system of special knowledge in the field of management, the formation of understanding of the conceptual foundations of system management of organizations; acquisition of skills of analysis of internal and external environment, making adequate management decisions. Provide skills in the use of self-organization in the organization of production, the formation of practical skills and abilities to manage their own careers and self-improvement, development of personal time management skills, mastery of self-analysis and self-assessment of self-organization, minimizing stress and fatigue, familiarization with technology and ways to increase efficiency, efficiency.

**International Economic Relations.** Module 1. International economic relations. The purpose of teaching the discipline is to form in future managers a system of special knowledge on the problems and prospects of international economic relations for basic and special education and practical activities in the specialty. The result of the study of the discipline is: the formation of a holistic view of the processes that characterize the international level of interaction of national economies; mastering the latest approaches to assess the evolutionary nature of the development of the IEA system; mastering the culture of modern economic thinking.

Module 2. Economics of world agriculture. To teach students the laws of development of world agriculture, to provide future professionals with systematic and consistent knowledge about the economics of agriculture in some countries and regions in the development of agricultural production and international relations. The objectives of the discipline are: to form students' knowledge of the main patterns of agricultural development; to teach students to analyze the current state and assess future trends in the industry on a global scale, to determine the level of development of the agricultural economy of individual countries, to use methods and foreign experience to solve the problems of the agricultural economy of Ukraine.

**Operational management.** The main purpose of teaching the discipline is to form students' competence in basic principles, basic categories, modern concepts, theoretical principles and practical methods of managing the main activities of enterprises and skills to develop operational strategy, create and use industry operating subsystems as a basis for achieving mission.

**Business analysis.** Module 1. Business analysis. ability to form an analytical conclusion from the submitted and researched information, study of enterprise structure, acquisition of skills of formation of business model of enterprise, study of place and role of business analysis at enterprise, mastering of theoretical bases of formation of successful

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business decisions, definition of tasks, functions and management structure processes in the enterprise, studying the process of business analysis and interpretation of its results.

**Module 2. Financial and economic security.** The purpose of the discipline is to provide students with knowledge on creating a modern integrated system of financial and economic security of enterprises of all forms of ownership and an effective mechanism for managing financial and economic security, acquiring theoretical and practical principles of organizing a comprehensive security system of enterprises as a basis for countering threats and risks. financial and economic security of enterprises, understanding of modern threats and risks of enterprises, the choice of the most appropriate measures tasks and tasks on counteraction to modern threats and risks of safety of activity of the enterprises, an estimation of various market and professional situations for development and realization of the most optimum decisions.

**Management of team interaction.** The purpose of the discipline is to master students' skills of forming effective teams as one of the promising models of corporate management, providing effective organizational development, studying the essence and features of forming a management team, comprehensive and constructive use of team effects, disclosure and enrichment of students in teamwork. causes and identifying conditions for positive synergy of the team.

**Human resource management.** The purpose of teaching the discipline is to form a set of theoretical knowledge and practical skills for the formation and implementation of personnel policy in modern organizations, rational selection of employees for positions and the formation of an effective workforce, evaluation and development of employees, and targeted use of their potential.

**Foreign economic activity of the enterprise.** The purpose of the discipline is to provide students with systematic knowledge of the objective laws, conditions, processes and specific features of foreign economic activity (FEA) of the enterprise, as well as the acquisition of skills for their practical use. The result of studying the discipline is the formation of students' holistic understanding of the processes in the field of foreign economic activity; mastering the culture of modern economic thinking, methodological approaches to the analysis and evaluation of the effectiveness of foreign economic activity; formation of students' skills and practical abilities to use the acquired knowledge in the practice of foreign economic activity of enterprises on the application of empirical

**Risk management.** Module 1. Risk management. The purpose of teaching the discipline is to provide knowledge about methods of estimating risk parameters that characterize the quantitative relationships between economic variables. The objectives of teaching the discipline - the study of predictive risk models, acquiring skills to use them in the practice of managing economic processes. As a result of studying the discipline, students should know: the essence, subject and object of the discipline, economic risk modeling, the system of economic risk forecasting, the system of social risk forecasting, methods of technical analysis.

**Module 2. Theory of managerial decision making.** The purpose of studying the discipline is for students to master the theory of management decision-making methods based on systems analysis, mathematical modeling and optimization of business entities in a market economy and their practical and applied applications; elaboration by them on specific, as close as possible to real, model case problems, examples and mathematical models of methods of definition of optimum administrative decisions, with use of means of computer engineering, packages of applied programs, modern information technologies, etc.

**Social communications.** The main goal of the discipline is to maximally assist students in acquiring the necessary theoretical knowledge and practical skills in the field of social communication, transformation of social knowledge, social self-education and development to address modern social issues. As a result of studying the discipline,

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students will learn the basic concepts, principles, main categories, trends and patterns of socially responsible behavior and communication, socialization in the team and, accordingly, building a constructive social dialogue in society.

**Project management.** The main task of studying the discipline is the formation of theoretical knowledge about project management and practical skills of project management. As a result of studying the discipline, students will gain knowledge on financing, economic and technical-technological calculations in project management, determining the need and implementation of resource management and project team, use of project management functions and mechanisms for implementing management decisions in project management.

**Management of innovation and investment activities.** The main purpose of teaching the discipline is to master the modern theoretical foundations and practical skills of managing investment and innovation activities of the organization. The main tasks to be solved in the process of teaching the discipline are the theoretical training of students and the formation of their skills in the field of management of investment and innovation activities of the organization. The result of studying the discipline is the acquisition of special professional competencies in investment and innovation management.

### **Optional components**

**Information systems in management.** The purpose of teaching the discipline is to reveal modern scientific concepts, models, methods and technologies of information management and research of the basic theoretical foundations of construction and use of computer information systems as a means of automation of information management.

**Business English.** The purpose of studying the discipline is to teach business vocabulary and features of business communication in English to ensure effective business communication, negotiation.

**Strategic management.** The main purpose of teaching the discipline is to master the modern theoretical foundations of strategic management and practical skills of strategic decision-making in the process of managing the activities and development of the enterprise in the market. The main tasks to be solved in the process of teaching the discipline are the theoretical training of students and the formation of their skills in the field of strategic enterprise management.

**Logistics.** The main purpose of teaching the discipline is to form in future professionals systematic knowledge and understanding of the conceptual foundations of logistics, theory and practice of development in this area and the acquisition of skills of independent work on learning material on modern methods of managing material and other flows in modern conditions.

**Controlling.** The discipline involves setting the purpose of the enterprise, the current collection and processing of information for management decisions, performing the function of monitoring deviations of actual data from the planned, and, most importantly, the preparation of recommendations for management decisions. Controlling is aimed at improving the efficiency of management and organization of economic management at the micro level.

### ***Optional block 1 «Management of investment activity and international projects»***

**Investment analysis.** The purpose of studying the discipline is a set of methods and techniques by which you can develop an effective investment strategy and make investment decisions, justify the feasibility of the investment project and determine the

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optimal parameters of its implementation in uncertainty and limited financial resources, to form an optimal investment portfolio.

**International economic statistics.** The purpose of the discipline is to reveal the content of major phenomena and processes occurring in the economy, to develop a system of economic indicators and methods of studying the economy of the country or region, to characterize social phenomena as mass, based on the whole set of factors that determine their degree of development. direction and speed of their changes, the density of relationships and interdependencies, students master not only theoretical knowledge but also practical skills in collecting, processing, compiling and analyzing statistical material acquisition and future experts knowledge and skills to research the socio-economic condition of the state, based on objective information International economic statistics

**Management of production systems.** The purpose of studying the discipline is to study the set of processes or actions that determine the integration of elements, parts into a whole, the formation of viability of a stable system, internal order, interaction with respect to independent parts of the whole, due to its structure; identification of ways to combine the resources of land, labor, capital (material means of production) and their coordinated, purposeful use.

**Crisis management.** The purpose of studying the discipline is to determine the essence, trends, methods of crisis management; state regulation of crisis situations; study of possibilities and necessity of anti-crisis management; key factors of crisis management; study of development trends and practical capabilities of crisis management, its functions and directions; features of the use of basic management tools of the organization, the study of the influence of various factors on ensuring the effectiveness of the management system.

**Social management.** The purpose of studying the discipline is to provide students with systematic knowledge of the objective laws of the functioning of the social management system, as well as the acquisition of skills for their practical use; mastering the content of basic concepts, categories and terms of social management, studying the essence of the basic laws, patterns and functions of social management; determination of its principles, disclosure of methods, forms and mechanisms of management of various social phenomena and processes in modern society at the macro and micro levels.

**Asset and investment portfolio management.** The purpose of the discipline is to provide students with theoretical and methodological knowledge and practical skills in asset management and portfolio investment, investment market analysis, selection and analysis of investment instruments, to solve specific problems of enterprise asset management and formation and effective management of investment portfolio.

### ***Optional Block 2 «Management organization and business administration»***

**Fundamentals of cooperation.** During the study of the discipline the goal is to form in the student an understanding of cooperative identity, understanding of how the cooperative works and what its place is in modern society. The origins of cooperation and the influence of cooperative identity on the tasks of the manager are studied. The importance of cooperatives, cooperative principles and values are substantiated. The advantages of cooperatives in comparison with other forms of management are analyzed on the basis of consideration of existing tendencies in global and local social and economic systems.

**Marketing management.** The purpose of the discipline is to master students' theoretical knowledge and practical skills in management, planning and organization of marketing activities of enterprises. The task of the discipline is to provide students with skills in marketing management, ensuring effective marketing activities in the market of

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agro-industrial complex (AIC), forecasting trade, product range and quality management, pricing, promotion of goods on domestic and foreign food markets, distribution systems and sales of domestic producers.

**Management of agro-industrial enterprises.** The purpose of teaching the discipline "Management in agro-industrial complex" is to provide students with a comprehensive system of knowledge and skills in the management of production processes in agricultural production systems; conditions for ensuring the effectiveness of economic structures; diagnostics and design of management systems, adequate to the goals and objectives of a market economy. To give students theoretical knowledge and develop practical skills to develop and substantiate specific proposals related to current issues of agricultural management, organization of production at agricultural enterprises, building an effective collective and individual farm, land cadastre system and land management.

**Commercial law.** The purpose of the discipline is to form in students a system of legal knowledge, inextricably linked with management activities; acquisition of theoretical knowledge and practical skills related to the legal regulation of economic activity, the legal status of economic entities and public authorities.

**Accounting and analytical support of management activities.** The discipline involves the study of theoretical and practical aspects of the use of accounting and analytical activities in the justification, adoption and implementation of management decisions. When studying the discipline, the future specialist acquires knowledge of the methods of collecting and analyzing information on a comprehensive assessment of business results, justification and determination of internal reserves for the rational use of material, financial and labor resources.

**Management of motivation.** The purpose of studying the discipline - to expand and deepen knowledge of the basics of theory and practice of motivational management, to acquire skills and abilities to motivate different categories of employees in management practice. The subject of the discipline "motivational management" is to determine the place of motivation in the socio-psychological structure of the individual, the content of the motivational process; application of motivational theories in management practice; mastering different methods of motivating different categories of employees, managing the motivation of teams and groups.

### ***Optional Block 3 «Management of foreign activity»***

**International organizations.** The purpose of studying the discipline is to form in students a comprehensive and systematic knowledge about the activities and influence of international organizations on the practice of doing business in a globalized environment. The key objectives of the course include: to acquaint students with the prerequisites for the emergence of international organizations in the world; to find out the essence, functions and types of international organizations; substantiate the influence of international organizations on the results of business entities at the micro, meso and macro levels; to consider current trends in the development of international organizations in the face of new challenges and threats to the world economy.

**Marketing of foreign economic activity.** The discipline involves the study of the activities of subjects of foreign economic activity, aimed at studying the market, the impact on consumer demand in order to meet mutual needs through exchange, expanding sales of goods produced by them. The discipline provides for the study of the nature and forms of international marketing methods of research of economic, social, cultural, political and legal environment, international marketing activities; elaboration and mastering of the methodology of international market research, segmentation, selection of target markets;

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models of research of the firm's entry into foreign markets, formation of an effective international marketing strategy.

**International transportation.** The purpose of the discipline - the formation of systematic theoretical knowledge and the acquisition of practical skills in the organization of international freight. The main objectives of the discipline - to show future professionals that the rational organization of international transport provides intensive use of rolling stock, timely delivery of goods from country to country, optimizes transport costs for exports and imports of goods; study by students of international normative-legal agreements, acts of bilateral agreements and norms of domestic legislation, which establish the order of regulation of transport activity on international transportations; acquaintance of students with the list and forms of transport document circulation on foreign economic operations; analysis and substantiation of competencies of state bodies for licensing and certification.

**Customs regulation of foreign economic transactions.** The purpose of studying the discipline is to provide students with knowledge on customs, necessary for future professionals to manage in the field of foreign economic activity. As a result of studying the discipline the student must know: theoretical and organizational principles of customs; the procedure for moving goods across the customs border of Ukraine, the procedure for accrual and collection of tax payments that arise when moving goods across the customs border of Ukraine; the procedure for customs clearance of goods; liability for violation of customs regulations. be able to: carry out customs clearance of goods; accrue taxes and fees that arise when moving goods across the customs border of Ukraine; calculate the amount of penalties for violation of customs regulations; to resolve debatable issues related to customs legislation, to critically comprehend it and to develop proposals for its improvement.

**Foreign economic commercial activity.** The purpose of studying the discipline is to provide students with knowledge of objective laws, real processes and specific features of the organization and technique of foreign trade operations, as well as skills of their practical application. The main objectives of the discipline are: the study of theoretical principles of foreign economic activity; substantiation of classification, content and specifics of foreign trade operations; elaboration of the structure and content of the foreign trade contract; study of the obligations of counterparties and the sequence of their actions in concluding international commercial agreements, taking into account international rules and regulations; acquaintance of students with features of the international commercial calculations at implementation of foreign economic operations; elaboration by students of methods of technical and economic substantiation of foreign economic operations and definition of features concerning each kind.

**International economic integration. European integration.** The purpose of teaching the discipline "International Economic Integration. European Integration "is to provide students with modern knowledge about international integration processes and European integration, which will allow to form a new type of managers who will be able to make the right decisions in the context of Ukraine's European integration into the European Union. The objectives of the discipline are: to teach students to determine the economic effects of international economic integration, to acquaint them with the stages of formation and development of the European Union, to provide in-depth knowledge of the Common Agricultural Policy and teach students to identify threats and opportunities from Ukraine's integration.

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***Optional Block 4 «Management of business»***

**Implementation of a business idea.** The purpose of the discipline is to formulate a business idea with further detailing and formation of a strategic development plan. Acquisition of knowledge on the analysis of the viability of the project, the definition of management methods for the implementation of the idea, the definition of strategic initiative, the necessary resources, sources of funding, creating a business plan for a business idea.

**Management of small businesses.** The purpose of the discipline is to determine the essence and content of small business, features of planning in small business, to consider the technology of establishing the actual business, features of the simplified system of taxation of small businesses, labor relations, features of self-organization of small businesses.

**National and international programs and grants to support small business.** The purpose of the discipline is to determine the features of financing small business development through international programs and grants for small business development: European Small and Medium Business Support Program COSME; The Unlimit Ukraine project aims to support innovative entrepreneurs, programs from the European Bank for Reconstruction and Development: from attracting expert consultants to grants, the German-Ukrainian Fund provides microcredit and lending programs in priority industries, USAID - lending to Ukrainian farmers through credit unions and others. .

**Legal regulation of business activity.** The purpose of the discipline is to master the scientific provisions and norms of national legislation on entrepreneurship in Ukraine, the formation of students' practical skills and abilities to independently solve legal problems that arise in the process of doing business. Understanding of key processes of state regulation of business activity; elements and procedure for legitimation of business entities; legal regime of property of business entities, the procedure and grounds for termination of business entities; legal bases of legislative regulation of competition and monopoly; state control in the field of entrepreneurial activity; the analysis of legal responsibility for offenses in the field of business is given; implementation processes in the field of entrepreneurship within the association with the EU.

**Features of accounting for an individual entrepreneur.** Accounting and tax reporting, a simplified system of taxation of the peculiarities of accounting of natural persons-entrepreneurs, sole proprietors, business entities - SPD, private entrepreneurs - PE; groups of single tax payers, single tax rates; financial statements: accounting report on paid income on form 1-DF; accounting report on the single social contribution; personalization report to the pension fund; accounting report on vacancies at the Employment Center.

**Consulting services.** Features of consulting activities for managers, managers on a wide range of issues in the field of financial, commercial, legal, technological, technical, expert activities, assistance in the management system (management) in achieving the stated goals. Types of consulting services. Functions and features of consulting.

***Optional Block 5 «Logistic management»***

**Logistics infrastructure.** The purpose of the discipline is to determine the features of logistics infrastructure at the macro and macro levels, the study of logistics infrastructure as an effective tool for enterprise management. Logistics chains of production and product promotion as a means of saving material, raw materials, energy, financial, labor and other resources. Characterization of infrastructure as a mechanism that ensures organic unity and efficient operation of all material logistics flows. Elements, tasks, processes in the logistics infrastructure.

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**Information systems in logistics.** The purpose of the discipline is to study the features of information technology as a decision support system. Expert systems, management programs and other tools that provide an opportunity for effective analysis of technical, economic and management processes; their modeling, preparation and submission of information for subsequent decision-making. Understanding the role of modern information technologies in improving the efficiency of cargo delivery due to the possibility of quick access to information about the subjects and objects of delivery. Features of information systems in logistics: Gonrad, Videotrans, STS, BRS, Espase Cat, ISCIS, GPS and others.

**International transportation.** The study of the discipline is aimed at mastering the following issues: TIR Convention as the legal basis of the customs transit system, the principles of the TIR Convention, the organizational structure of the TIR system, the principle of operation of the TIR system. Procedure for accession to the TIR Convention and its application. Functioning of the TIR Guarantee Network. Features of the organization of international transportations. The status of the customs carrier and the procedure for its acquisition.

**Functional logistics.** The purpose and objectives of the discipline - a detailed study of the basic functions of logistics, mastering the theoretical knowledge and practical skills of organizational, technological, technical and information support of the basic functions of logistics. The subject of the discipline is order management, inventory management, warehousing, transportation, customer service, supply, production, sales, distribution.

**E-commerce.** The purpose of the discipline is to form a system of theoretical and practical knowledge, skills in e-commerce, which will allow students and professionals to carry out their activities professionally in today's dynamic global environment. Advantages and disadvantages of e-commerce and e-business, types of e-commerce. e-commerce systems in the corporate sector: corporate representations on the Internet, virtual enterprises, Internet incubators and mobile commerce. Electronic payment systems, online advertising, prospects for e-commerce.

**Warehouse logistics.** The purpose of studying the discipline is to determine the features and functions of warehousing logistics. The role and functions of warehouses in logistics systems. Classification of compositions. The main tasks of warehousing logistics. Organization of warehousing logistics operations. Ways to optimize logistics processes in warehousing. Warehouse system, its elements.

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## 2.15. FACULTY OF INFORMATION TECHNOLOGY

**Dean** – Ds.Sc. in Pedagogics, associate professor **Olena Glazunova**

Tel.: (044) 527-83-51 E-mail: o-glazunova@nubip.edu.ua

Location: Building № 15, Room 102

The faculty organizes and coordinates the educational process of bachelors in the following specialties:

### **051 Economy**

Educational-professional Program «**Economic Cybernetics**»

Guarantor of the program – Ph.D. in Economics, associate professor Nataliia Klymenko Tel.: (044) 5278567 E-mail: [nklimenko@nubip.edu.ua](mailto:nklimenko@nubip.edu.ua)

Graduating department:

Economic Cybernetics

Tel.: (044) 5278567 E-mail: [ciber\\_chair@nubip.edu.ua](mailto:ciber_chair@nubip.edu.ua)

Head of department – Ds.Sc. in Economics, professor, Andrii Skrypnyk

Educational-professional Program «**Digital Economy**»

Guarantor of the program – Dmytro Zherlitsyn, Dr.Sc in Economics

Tel.: (044) 527-85-67 E-mail: [dzherlitsyn@nubip.edu.ua](mailto:dzherlitsyn@nubip.edu.ua)

Graduating department:

Economic Cybernetics

Tel.: (044) 5278567 E-mail: [ciber\\_chair@nubip.edu.ua](mailto:ciber_chair@nubip.edu.ua)

Head of department – Ds.Sc. in Economics, professor, Andrii Skrypnyk

### **121 Software engineering**

Educational-professional Program «**Software engineering**»

Guarantor of the program – Ph.D. in Engineering, associate professor Oleksandr Lialetskyi Tel.: (044) 527-87-23 E-mail: [a.lyaletski@nubip.edu.ua](mailto:a.lyaletski@nubip.edu.ua)

Graduating department:

Computer Sciences

Tel.: (044) 527-87- 23 E-mail: [iusprog@nubip.edu.ua](mailto:iusprog@nubip.edu.ua)

Head of the department – Ph.D. in Engineering, associate professor Bella Golub

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### **122 Computer science**

Educational-professional Program «**Computer science**»

Guarantor of the program – Ph.D. in Engineering, associate professor Bella Golub  
Тел.: (044) 527-87- 23 E-mail: [bellalg@nubip.edu.ua](mailto:bellalg@nubip.edu.ua)

Graduating department:

Computer Sciences

Тел.: (044) 527-87- 23 E-mail: [iusprog@nubip.edu.ua](mailto:iusprog@nubip.edu.ua)

Head of the department – Ph.D. in Engineering, associate professor Bella Golub

### **123 Computer engineering**

Educational-professional Program «**Computer engineering**»

Guarantor of the program – Ph.D. in Engineering, associate professor  
Viktor Smolii Тел.: (044) 527-81-99 E-mail: [v-smolii@nubip.edu.ua](mailto:v-smolii@nubip.edu.ua)

Graduating department:

Computer Systems and Networks

Тел.: (044) 527-81-99 E-mail: [csn@it.nubip.edu.ua](mailto:csn@it.nubip.edu.ua)

Head of the department – Ds.Sc. in Engineering, professor Valerii Lakhno

### **125 Cybersecurity**

Educational-professional Program «**Cybersecurity**»

Guarantor of the program – Ds.Sc. in Engineering, professor Valerii Lakhno  
Тел.: (044) 527-81-99 E-mail: [lva964@nubip.edu.ua](mailto:lva964@nubip.edu.ua)

Graduating department:

Computer Systems and Networks

Тел.: (044) 527-81-99 E-mail: [csn@it.nubip.edu.ua](mailto:csn@it.nubip.edu.ua)

Head of the department – Ds.Sc. in Engineering, professor Valerii Lakhno

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**Bachelor**  
**Field of Knowledge "Social and behavioral sciences"**  
**in Specialty "ECONOMICS"**  
**Educational-professional program "Economic cybernetics"**

Form of Training:	Licensed number of persons:
– Full-time	50
– Part-time	30
Duration of Training	4 years
Credits	240 ECTS
Language of Teaching	Ukrainian, English
Qualification	Bachelor of Economic Cybernetics

### **Concept of training**

Educational program "Economic Cybernetics" is a unique combination of computer and economic disciplines, which operates in various fields. The concept of training aimed at forming professionals which are fluent in information technology, management skills the workforce and entrepreneurial activity.

### **Practical training**

Practical training of students of this field of study is aimed at mastering basic methods and techniques of economic-mathematical modeling and forecasting of social and economic processes using information systems and technologies in management

### **Proposed Topics for Bachelor theses**

1. Models situational diagnosis of the financial condition agricultural enterprises.
2. Optimization of production resources potential.
3. Production functions in optimization problems.
4. The model of banks, leasing companies and stock exchanges.
5. Economic-mathematical modeling of foreign exchange reserves.

**Academic rights of Graduates:** graduates can apply for Master's Degree Specialties and Educational (Educational-professional or Educational-scientific) programs specified in Table 1.2 Section 1.3 this Catalog.

### **Employment of Graduates**

Graduates of the «Economic Cybernetics» can work: the head of a small business, the head of the analytical center of processing economic, financial and accounting information, the head of IT, computer network administrator, administrative tasks and systems, database administrator, analyst of computer systems and so on.

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**Bachelor's Program and Curriculum  
in Specialty "Economy"  
Educational-professional program "Economic cybernetics"**

Code n/a	Components of the educational and professional program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits ECTS	The final control
1	2	3	4
<b>1. GENERAL TRAINING CYCLE</b>			
<b>Compulsory components EPP</b>			
CC 1	Modern economics	5	exam
CC 2	Macroeconomics	5	exam
CC 3	Microeconomics	5	exam
CC 4	Higher Mathematics	10	exam
<b>Total</b>		<b>25</b>	
<b>Compulsory components EPP by decision of the Academic Council of the University</b>			
CCU 1	Modern Information Communications	5	exam
CCU 2	Philosophy	5	exam
CCU 3	Business protocol and communication ethics	5	exam
CCU 4	Physical Education		exam
CCU 5	Foreign Language	10	exam
CCU 6	Legal personality culture	5	test
<b>Total</b>		<b>30</b>	
<b>2. SPECIAL (PROFESSIONAL) TRAINING CYCLE</b>			
<b>Compulsory components EPP</b>			
CC 5	Risk Theory	5	exam
CC 6	Probability Theory and Mathematical Statistics	5	exam
CC 7	Optimization methods and models	5	exam
CC 8	Informatics	5	exam
CC 9	Econometrics	5	exam
CC 10	Business Economy	5	exam
CC 11	Management	5	exam
CC 12	Marketing	5	exam
CC 13	Finance, Money, and Credit	5	exam
CC 14	Accounting	5	exam
CC 15	Labor economics and social and labor relations	5	exam
CC 16	International Economics	5	exam
CC 17	Statistics	5	exam
CC 18	Economic Cybernetics	5	exam
CC 19	Operations Research	5	exam
CC 20	Modeling of the Economy	5	exam
CC 21	Forecasting social and economic processes	5	exam
CC 22	Decision-making systems	5	exam
CC 23	Technology of Design and Administration of DB and DW	5	exam
CC 24	Project Management Informatization	5	exam
CC 25	Information Systems in Economy and Management	5	exam
CC 26	Graduate Practice	5	
CC 27	Educational Practice	15	
<b>The total amount of Compulsory components</b>		<b>180</b>	
<b>Optional components EPP</b>			
<b>Optional components by specialty</b>			
OB 2.1	The Technology of Creating Software Products	5	exam
	Computer Programming		exam
	Object - oriented programming		exam
	Cross-platform Programming		exam
	Java Programming		exam
OB 2.2	Digital economy		exam
	Organization of Production		exam
	History of the Economy		exam
OB 2.3	Mathematical Models of the Agricultural Sector		exam

**CURRICULA AND PROGRAMS OF BACHELOR DEGREE**

OB 2.4	Agribusiness Risks		exam
	Technologies for Production, Storage, and Processing of Crop and Livestock Products		exam
	Database Programming Technologies		exam
	Financial Technology (FinTech) and Internet Trading	5	exam
	Information Security Risks		exam
	Management of Information Security Projects		exam
OB 2.5	Web Programming		exam
OB 2.6	SPSS Tools		exam
OB 2.7	Computer Networks		exam
	The basics of Blockchain Technology		exam
	Web Analytics		exam
	Data Visualization in Python		exam
OB 2.8	System Analysis and Design of Information System		exam
OB 2.9	Simulation		exam
OB 2.10	Analytics in R		exam
OB 2.11	Applied Econometrics		exam
	Digital Technology in Business		exam
	Econometric Models of the Digital Economy		exam
	Web Content Management		exam
	Fundamentals of Machine Learning		exam
	Decision-making Theory		exam
<b>Optional components by Student's Choice</b>			
OS 1	Elective 1	3	exam
OS 2	Elective 2	3	exam
<b>Total</b>		<b>6</b>	
<b>The total amount of Optional components</b>		<b>60</b>	
<b>3. OTHER TYPES OF TRAINING</b>			
	Graduate Practice	5	
	Educational Practice	15	
<b>THE TOTAL AMOUNT OF EPP (without military training)</b>		<b>240</b>	

## Annotations of Components in the curriculum

### 1. GENERAL TRAINING CYCLE

#### Compulsory components

**Modern economic theory** Buyers and consumer goods. Social production resources. Commodity production - the basis of the market economy. Money in the functioning of the market. Market economic mechanism Levels types of markets and market infrastructure. Formation of the market Entrepreneurship. Home improvement in the functioning of a market economy. Enterprise Management. Management. Marketing Macroeconomic equilibrium. Macroeconomic instability

**Macroeconomics.** Theoretical foundations of macroeconomics as a science. The method of calculation of basic macroeconomic indicators. Macroeconomic instability, unemployment and inflation. Aggregate demand and aggregate offering. Consumption, savings and investment, the total expenditure and GDP, economic functions of the state: the state in a system of macroeconomic regulation. Fiscal Policy. Money Market and Monetary Policy. Labor market and social policy. The open model of macroeconomic circulation and economic growth.

**Microeconomics.** Methodological principles of microeconomic analysis of economic behavior of market participants. Universal tools of rational economic decisions. Patterns of functioning microsystems individuals, households, businesses and organizations. Characterization and analysis of the major types of market structures - perfect competition, pure monopoly, monopolistic competition, oligopoly. Effect of general market equilibrium in the allocated efficiency of the economy, the limited failure of market regulation, welfare criteria, the need for intervention

**Higher mathematics.** Sets and functions: operations with sets, display sets, limitations, accurate numerical limits set, the principle of Cantor nested segments are equivalent sets, counted and countless sets. Theory border sequences, limit functions, partial, upper and lower limit function. Continuity of functions: local properties of continuous functions, properties of continuous functions on the interval. Differential calculus of functions of one variable: derivatives and differentials of arbitrary order, au-tic properties of differentiable functions, Taylor's formula and studies on extreme and graphing functions. Indefinite integral: primitive and indefinite integral, their properties change of variables and integration by parts, Tables of integrals, methods of integration: rational functions

### **Compulsory components by decision of the Academic Council of the University**

The annotations of the components "Philosophy," "Business Protocol and Ethics of Communication," "Physical Education," "Foreign Language," "Legal Culture of Personality" see section 2.1.

**Modern Information Communications.** Concepts of information and their main types, cloud services and their use in the modern information space, tools for communication, collaboration and cooperation, interaction in social networks, creation of text and graphic content, digital etiquette, and optimization of interaction processes. Methodology of research on social communications. Theory and history of social communications. Applied social and communication technologies. Public Communication in Management.

## **2. SPECIAL (PROFESSIONAL) TRAINING CYCLE**

### **Compulsory components**

**Risk Theory** Quantitative methods of risk assessment. The function of personal utility. Quantitative risk assessment characteristics. Playing methods of decision making under uncertainty. Solving conflicts using game techniques. The fundamental relationship of risk and return. Fundamental value risk and profitability of individual financial market instruments.

**Probability Theory and Mathematical Statistics.** Basic concepts. Classification of random events. Probability of random events. Classical, Statistical and geometrical definition of probability. Almost reliable and virtually impossible event. Numerical characteristics of random variable the expected value, variance, standard deviation, moments, kurtosis, mode, median. Laws normal probability distribution, performance, uniform, Puasson. Correlation coefficient. Chebyshev inequality. Grouping information. The principle of defining and testing the null hypothesis. Criteria for approval to test the hypotheses.

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**Optimization Methods and Models.** Conceptual aspects of mathematical modeling of the economy. Optimization of economic-mathematical models. Linear programming problems and methods of solution. The theory of duality. Integer programming. Special problems of linear programming. Models of nonlinear programming. Quantitative risk assessment. Mathematical methods for solving linear programming problems, the scope of their applications, advantages and disadvantages. Basic mathematical methods for solving problems of nonlinear programming advantages and disadvantages; mathematical tools build econometric models.

**Informatics.** Object, methods and objectives of discipline, the theoretical foundations of computer science, information system support processes, software tools work with structured documents, network technology, the use of Internet in the economy, Essentials of Web-design, organization of computer security and information protection software works with databases and storage of data, basic office programming expertise and training systems, the prospects for the development of information technology.

**Econometrics.** Principles of constructing econometric models. Multiple regression models. Generalized econometric models. Econometric models of dynamics. Mathematical building of econometric models. Method of constructing econometric models. Methods of calculating the parameters of models on personal computers using software packages.

**Business Economy.** Types of companies and their legal forms. Theories and models of enterprise and entrepreneurship basics. The external environment of the enterprise. Staff enterprise productivity. Remuneration of personnel: necessary forms and systems. Technological base of production and production capacity. Fixed and working capital: estimation and performance of fixed assets, composition, and turnover of working capital performance. Intellectual capital and its characteristics. Investments: concept, composition, structure, development of investment projects. Forecasting and planning of the company. Justification of the production program of the enterprise. Financial and economic performance and efficiency. Systems to ensure competitiveness. Information and digital technologies in business.

**Management.** Organization as an object of management, the essence, and peculiarities of the manager's activity, development of views on management. Principles and methods of management. Internal and external environment of the organization: Communication in management and the process of making managerial decisions. Planning of organization activity: organizational structure planning. Motivation of the work of the organization's employees, system, and process of control in the organization. Formation and development of the team, management, and leadership. The effectiveness of the organization's management system. New information and digital control technologies.

**Marketing.** The essence of marketing and its modern concept. System and characteristic of modern marketing. Marketing researches. Marketing Commodity Policy. Planning new products. Marketing pricing policy. Methods of marketing pricing. Marketing Communications Policy. A complex of marketing communications. Marketing Distribution Policy. Management of distribution channels. Organization and control of the marketing activity of the enterprise. Internet marketing and SEO technologies.

**Finance, money, and credit.** Subject of financial science. Financial categories. Genesis and evolution of finances. Financial law and financial policy. Taxes and the tax system. Budget. Budget system. Insurance. Insurance market. Financial market. Finances of business entities. International finance. Financial management. The essence and functions of money; Cash flow and cash flows. Money theory. The essence, functions, and types of credit. Theoretical principles of banks. Functions of the Central bank. International financial institutions. Modern financial technologies.

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**Accounting.** General characteristics of accounting, its subject, and method. Balance sheet. Accounting records and double entry. Evaluation and costing. Documentation, inventory, technique, and forms of accounting. Accounting for non-current assets. Inventory accounting. Accounting for cash and accounts receivable. Financial investment accounting. Equity accounting. Accounting obligations. Workforce accounting, its payment, and the social insurance of personnel. The expenses of the enterprise accounting. Income and financial results accounting. Financial statements. Features of accounting for digital products.

**Labor economics and social and labor relations.** Theoretical bases and practical methods of research of social-economic and industrial relations at the level of enterprises, organizations. Formation and functioning of social and labor relations based on social partnership, regulation of demand, and supply of labor in the labor market. Planning, analysis, reporting, and audit in the field of labor. Problems of integration of social and labor relations of Ukraine into the system of relations recognized by the International Labor Organization. Labor economics in the conditions of digital transformation.

**International Economics.** International Economic System: subjects and objects of international economics. International economic activity: the theory of international trade and international economic activity. The world market for goods services: types, current trends, pricing in international trade. Global financial markets: financial resources, species. Global labor market and international labor migration. The world monetary system: the nature, structure, stages of development, especially the foreign exchange market. Cryptocurrency market. Globalization of economic development: the nature, characteristics, consequences, contradictory, role of international organizations in addressing global world problems. Ukraine's integration into the world economy.

**Statistics.** Methodological principles of statistics. Statistical observation. Compilation and grouping of statistical data. Generalized statistical indicators. Selective method. Statistical evaluation of the laws of distribution of random variables. Statistical methods for measuring relationships. Analysis of economic dynamics. Analysis of dynamic trends and fluctuations. Index method. Indicators of socio-economic statistics. Statistical indicators of economic information. Presentation of statistical data: tables, graphs, maps.

**Economic Cybernetics.** General provisions of cybernetics. Introduction to applied mathematics. Theory of systems. The concept of an economic system. Fundamentals of information theory. Management theory. Theory of economic and mathematical modeling. Analysis and synthesis of economic systems. Optimization of economic systems. Fundamentals of decision theory. Models and methods of economic dynamics. Management of production systems. Methods of economic cybernetics in the field of nature management.

**Operations Research.** Essence phases of operations research, principles and methods of mathematical modeling operations, principles of selection, and mathematical software for practical implementation problems. Queuing models. Models of management. Models of human behavior. Models of risk management.

**Modeling of the Economy.** Methodology and methods of modeling. Mathematical models of real economic systems. Conceptual Foundations of Economic Modeling. Algorithmic models in economics. Production functions. Rated assessment of the economy. Model behavior of producers and consumers. Input-output model. Macroeconomic models. Models of the digital economy.

**Forecasting social and economic processes.** Theoretical basis of forecasting of socio-economic systems and algorithms for basic forecasting methods modern transformation processes. Mathematical modeling as a method of forecasting. Extrapolation prediction. Adaptive forecasting methods. Expert prediction. Fundamentals of forecasting applied problems in the field of digital economy and nature management.

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**Decision-making systems.** The main principles of decision theory. The process of making and implementing management decisions. Expert methods and decision-making. Methods and systems of decision making under certainty. Methods and systems of decision making under risk. The utility theory at decision making. The methods and decision-making in conflict.

**Technology of design and administration of DB and SB.** Relational data model that accommodates relational algebra and relational calculus. The classic approach to database design based on the principles of normalization. Top features of the approaches to semantic modeling of databases, the issues of planning, development, implementation and maintenance of databases, introduction to structured query language SQL, data types used in SQL, means the definition of database objects, data manipulation, data retrieval tools. Utilities databases and applications to databases in integrated development environments Access. Features of the databases to MySQL. The principles of expert systems, neural networks, principles of knowledge bases.

**Project management information.** The theoretical basis of project management. Classification and environment projects. The life cycle of the project. Using standard life cycles. information systems. The structure of the project. Managing the implementation of project-oriented activity. Activity organization. Planning in UP. Control in project management. Management of the project. Management subject area projects. Managing time in the project. Cost Management. Quality management of the project. Integrated project management functions. Automation functions of project management

**Information systems in Economy and management.** The essence of information systems and their importance in managing of modern enterprises. Status and trends in information technology. Methodology for developing information systems to determine their quality and efficiency. Fundamentals management of information resources and technology. Formation of structure information in the enterprise. The use of integrated automated information systems in business. Determination of the main characteristics of expert systems. The use of artificial intelligence technology in the management of organizations. Using the Internet in management cadres. The use of e-commerce in practice organization.

## **Optional components**

### ***Optional components by specialty***

**The Technology of creating software products.** The basic concepts of modern programming. Linear, structural, procedural, and modular programming. Fundamentals of object-oriented modulation, design, and programming. Processing complex data structures, working with files. Designing graphical user interface. The main stages of the product life cycle.

**Computer Programming.** The concept of the algorithm and model algorithmic structure programming. Elements of algorithmic languages: the concept of data types, names, values, indexes, variables, constants, operations, expressions. Structured programming: sequence, branching, and loops. Procedure-oriented programming. Recursion. Software development methodologies: top-down and bottom-up design, modular programming. Organization of data arrays, strings, structures, and algorithms for their processing. File data structure. Dynamic data structures lists, queues, stacks, binary trees, and algorithms for their processing. Algorithmic everyday computing tasks. Modern computer programming languages. Fundamentals of computer programming of economic problems.

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**Object-oriented programming.** The concept of object-oriented analysis, design and programming. The object model of the objective environment, the principles of its construction. The concept of objects, classes, and their relationships. Fundamentals of object-oriented design language UML. Fundamentals of object-oriented programming language. Data Abstraction and Encapsulation. Constructors, destructors classes. Transshipment of operations and functions. Static constant class members, friendly features and classes. Composition and collection facilities. Simple and multiple inheritance. Implementation of polymorphism. Patterns of functions and classes. Handling of exceptional situations. Classes of input and output streams. The standard class library media program developer. Class library of functionality of Windows. Development of graphical user interfaces. Basic programming, event-driven. Development of DLL-libraries.

**Cross-platform programming.** Definition and properties of components. Interface specification as the contract. The model links. Strategy of integration software. Design and assembly of components. Marshaling. Distributed architecture component systems. Component-oriented design. Formal design methods and visual components. Monitors processing transactions. Features component technologies of Python. Python Analytical Libraries. Python GUI. Programming application tasks in Python. Working with Internet protocols in Python. Python network services.

**Java Programming.** Structure of programming system Java. Java-machine. Basic data types and operations with it. Instruction syntax and semantics. Characteristics of basic constructions. Means of object-oriented programming language Java. Classes, methods, properties. Syntax of class definition. Class attributes. Class fields. Creation of a particular class object. Abstract classes. Inheritance and interfaces. Syntax of interface. The concept and application of packages. The concept of exceptional situation in Java and its processing. Standard packages of Java programming system. Java - technologies.

**Digital economy** The notion of a digital economy. The main goals of digital development. Accelerated scenario of digital development. Digitalization as the basis for the creation of the cyber-physics space and the digital transformation of the economy. Principles of digitalization. Directions of digital development. Development of digital competencies. Introduction of the concept of digital jobs. Digitalization of the real sector of the economy. Industry 4.0. Realization of projects of digital transformations. Cybersecurity and public safety. Digital education. Electronic Governance and Electronic Democracy. Harmonization with European and world scientific initiatives. Industry 4.0. Realization of projects of digital transformations. Cybersecurity and public safety. Digital education. Electronic Governance and Electronic Democracy. Harmonization with European and world scientific initiatives.

**Organization of production.** Theoretical foundations of production organization. Analysis of agricultural processes. Technical and economic indicators of rational organization of production systems. Selection and justification of the production structure of the enterprise. Production specialization. Organizational, technical, and economic components of production organization.

**History of the economy.** History of economic development and economies thought of the ancient world. Economic theory of the Middle Ages. Development of market economy and main directions of economic development. Economies and economics in the era of regulated market relations. Economic development of Ukraine in the XX-XXI centuries. Current trends in economics and economics.

**Mathematical models of the agricultural sector.** Subject, content, tasks, and structure of the course. Classification Features models modeling of technological processes in animal husbandry. Features of construction of models of technological processes of crop. Theory and practice of economic-mathematical analysis in agricultural production planning and evaluation of its effectiveness in market conditions. Agricultural enterprise as an object of modeling.

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**Agribusiness Risks.** Analysis, methods of quantitative valuation, and risk modeling of agricultural sector. Fundamentals of risk management activities of modern agribusiness. Conceptual approaches to manage risk and minimize them - diversification, insurance, hedging, obtain additional information. Risk management strategies for farms. Development of agricultural policy for minimizing risks.

**Technology of production, storage and processing of crop and livestock products.** Status and main directions of crop production development in Ukraine; significance and biological features of field crops, species and varieties of agricultural plants, their use, distribution, and yield and productivity potential; modern technologies for growing high, ecologically clean crops in different soil and climatic zones of Ukraine; ways and means to improve the quality of agricultural products. Scientific and theoretical foundations of technological processes and evaluation of animal products. Effective implementation of the selection process in the desired direction and the organization of biologically sound and economically feasible technology for the production, processing, and storage of animal products. A system of practical methods of control of integral complex processes, based on the technology of production, processing, and storage of animal products are carried out. Principles of organization of technological flows of raw materials processing. Production of meat, fish and dairy products, eggs for various purposes.

**Technologies database programming.** Languages databases. SQL programming as a panacea to access data in relational databases. T-SQL as a procedural programming language integrated with MS SQL Server. The standard ODBC and ADO. ADO-interface to access data using high-level programming

**Financial Technologies (FinTech) and Internet Trading.** General features of technologies that modernize financial services and products. New online payment and transfer services. Transfers between individuals (P2P). Cloud cash registers and view terminals. Consumer and business lending, crowdfunding, credit scoring based on Internet technology. Modern technologies of capital management: financial planning, algorithmic financial trading, targeted savings services. Online financial markets: cryptocurrency and forex. Technologies of technical and fundamental analysis of financial markets.

**Information security risks.** The concept and classification of risks associated with the use of information systems that support the mission and business functions. Sources of information security risks and methods of assessing their consequences. Methods of information security risk management.

**Management of Information Security Projects** Fundamentals of information security in computer systems. Conceptual models of information security systems organization in CS. Access control and distinction of access rights to information. Symmetric schemes, keys and encryption systems. Asymmetric schemes, keys and encryption systems. Authenticity confirmation of messages and users. Standards and criteria for the certification of information security facilities.

**WEB programming.** Basic language constructs, markup techniques, and links to other WEB-development tools. Application of cascading CSS stylesheets in HTML. Description of the CSS syntax, options for placing the CSS description in the body of the document and beyond, CSS attributes for block and elemental markup elements. Methods of positioning markup elements using CSS. Programming basics on JavaScript. The logic of the development of JavaScript-code and the basic principles of its usage on World Wide Web pages. PHP programming language. Client-server technology as the center area of the PHP application

**SPSS Tools.** Overview of statistical packages. Data management in IBM SPSS. Graphical capabilities package, creating charts. Formation of descriptive statistics and frequency analysis. Contingency tables and chi-squared tests. Comparison medium dependent and independent samples and non-parametric tests in SPSS. Univariate and

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multivariate analysis of variance. Factor and discriminant analysis in SPSS. Reliability analysis of economic data and logistic regression. Loglinear analysis of contingency tables.

**Computer networks.** General principles of the structure of computer networks. Local network. Network architectural solutions. Minutes of the lower level of large networks. General questions of network design. Minutes of medium and high-level networking. Controls networks

**The basic of blockchain technology.** Definition and basic concepts of blockchain technology. Advantages and disadvantages of the blockchain. Basic principles of work of blocks. Description of the blocks, their formation, and closure. Mechanisms that ensure the efficiency and reliability of blockchain. Proof of Work or PoW (performed work) and Proof of Stake or PoS (particle confirmation) algorithms. Software platforms for the implementation of blockchain technology. Ethereum platform. Smart contracts. Application areas of blockchain and specific projects for its implementation. Application of blockchain technology in Ukraine

**Web analytics.** Theoretical principles of web analytics. Scope of web analytics methods. Methods of web analytics. Basic terms of web analytics. Overview of web analytics tools. Comparison of log analyzers and counters. Log analyzers. Web analytics systems. Internet statistics systems with detail by page views. Internet analytics systems with details of visitor behavior on the page. Tag manager.

**Data visualization in Python.** Principles of business intelligence and data visualization. Python as a modern language for data analysis and visualization. Basic principles and syntax of Python. Basic Python graphics. Libraries matplotlib, seaborn and plotly. Numpy and pandas libraries to analyze and visualize data.

**System analysis and design of IS.** Information technologies and systems: general characteristics. System analysis. Structural and functional analysis of IS. Specification of functional requirements for IS. Simulation of data flows. Object-oriented analysis. IS design standards and design documentation. Instrumental design of IS. Data model. UML Standard: static and dynamic charts.

**Simulation.** Simulation model. Simulation model experimental method for the study of complex systems on the computer. The necessary steps of building a simulation model - Application of the Monte-Carlo method. Computer simulation of random events and discrete random variables. Planning of experiments in simulation models. Multi-factor correlation-regression analysis. Simulation model of reserves control. Simulation model of discrete-production process. Implementation of a simulation model using the related discrete systems: AnyLogic, VenSim. Advances and prospective development of simulation modeling of agricultural production systems.

**Analytics in R.** Introduction to R. Data analysis tools. Fundamentals of programming in R. Types of data in R. Reading and writing data in R. Working with libraries and packages in R. Descriptive analysis. Statistical analysis in R: mean, median, mod, and quantile, variance, and mean square deviation, variation. Graphical representation of data in R. Linear regression. Regression analysis in R. Logistic regression.

**Applied Econometrics.** Basic principles of constructing econometric models. Econometric models of agrarian production. Spatial Simultaneous Models. Estimation of the elasticity of individual inputs of the production process. Dynamic models for a separate farm. Multicollinearity in the analysis of agrarian business. Analysis of time series on the example of the price dynamics of the world market. Econometric models of demand and supply. Panel regression. Forecast with ARIMA.

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**Digital technology in business.** The role of networking. Control networks in business. The essence of e-commerce and its features. E-Commerce Models. Marketplaces. Security and protection of information business information. Encrypting information. Protocols and security standards for virtual payments. Internet payment systems. Electronic money. Cryptocurrency. Financial systems on the Internet. Internet Banking. Market of banking services on the Internet. Online trading. Internet insurance. Ways and tools for online advertising. Internet Marketing.

**Econometric models of the digital economy.** Econometric models of the digital economy. Modern methods of econometric analysis and their application in the digital economy. The problem of large amounts of data in econometric studies. Sources of open data for econometric analysis. Econometric research of internet marketing tools. Economic analysis of cryptocurrency market indicators. Econometric models for forecasting digital infrastructure indicators.

**Web content management.** Content management web system. Principles and management of web content: automated templates; scaling; modernization of web standards: flow management. Cost of implementation and maintenance of web content management system.

**Fundamentals of machine learning.** The concept of artificial intelligence and machine learning. Modern methods of machine learning and their scope. Approaches to the evaluation of basic models of machine learning. Application and evaluation of the effectiveness of machine learning models. Modern machine learning software.

**Decision-making Theory.** Basic principles of the theory of decision-making. The process of acceptance and implementation of managerial decisions. Expert methods and decision-making systems. Methods and decision-making systems in terms of certainty. Methods and decision-making systems in risk conditions. Applying the theory of utility to decision making. Methods and decision-making systems in a conflict situation.

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**Bachelor**  
**Field of Knowledge "Social and behavioral sciences "**  
**in Specialty "ECONOMICS"**  
**Educational-professional program «Digital Economy»**

Form of Training:	Licensed number of persons:
– Full-time	25
– Part-time	-
Duration of Training	4 years
Credits ECTS	240
Language of Teaching	Ukrainian, English
Qualification	Bachelor of Economics

### **Concept of training**

The program "Digital Economy" is aimed at forming a highly qualified specialist capable of solving complex and non-standard tasks and problems in the field of digital economy.

Students can be obtained in-depth theoretical knowledge and practical skills for effective implementation of activities by this program, which are providing in the following directions: digital information technology in the economy; computer modeling (simulation) and forecasting of socio-economic processes, which are based on information technology instruments; methods of economic and mathematical modeling in the digital transformation of the economy and social relations.

### **Practical training**

Students study practical information technology in the economy tools, simulation, and forecasting of socio-economic processes methods, advance business intelligence, and data visualization instruments, which will enable to use of modern approaches for preparing and making managerial decisions in the digital economy.

### **Proposed Topics for Bachelor theses**

1. The Agricultural Production and Rural Infrastructure: Digitalization Instruments.
2. Design and Implementation of "Smart" Agriculture Systems.
3. The Blockchain Technology in Agriculture Applications.
4. The Analytical Decision Support Systems Development.
5. Digital Marketing Systems: Implementation and Efficiency.

**Academic rights of Graduates:** graduates can apply for Master's Degree Specialties and Educational (Educational-professional or Educational-scientific) programs specified in Table 1.2 Section 1.3 this Catalog.

### **Employment of Graduates**

The graduates of the study program "Digital Economy" will be able to work in many areas of the economy, namely: positions: Administrative and Commercial Managers (Directors); Information and Communications Technology Services Managers (Directors); Scientist in the fields of Economics, Information Analytics, Data Mining, Data Science; Business and Administration Professionals; Statistical, Mathematical and Related Associate Professionals; Economists; Financial and Economic Security Professionals; Information Systems Security Professionals.

**Bachelor`s Program and Curriculum  
in Specialty «Economics»  
Educational-professional program «Digital Economy»**

Code n/a	Components of the educational and professional program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits ECTS	The final control
1	2	3	4
<b>1. GENERAL TRAINING CYCLE</b>			
<b>Compulsory components EPP</b>			
CC 1	Modern economics	5	exam
CC 2	Macroeconomics	5	exam
CC 3	Microeconomics	5	exam
CC 4	Higher Mathematics	10	exam
<b>Total</b>		<b>25</b>	
<b>Compulsory components EPP by decision of the Academic Council of the University</b>			
CCU 1	Digital Economy	5	exam
CCU 2	Philosophy	5	exam
CCU 3	Business protocol and communication ethics	5	exam
CCU 4	Physical Education		exam
CCU 5	Foreign Language	10	exam
CCU 6	Legal personality culture	5	test
<b>Total</b>		<b>30</b>	
<b>2. SPECIAL (PROFESSIONAL) TRAINING CYCLE</b>			
<b>Compulsory components EPP</b>			
CC 5	Risk Theory	5	exam
CC 6	Probability Theory and Mathematical Statistics	5	exam
CC 7	Optimization methods and models	5	exam
CC 8	Informatics	5	exam
CC 9	Econometrics	5	exam
CC 10	Business Economy	5	exam
CC 11	Management	5	exam
CC 12	Marketing	5	exam
CC 13	Finance, Money, and Credit	5	exam
CC 14	Accounting	5	exam
CC 15	Labor economics and social and labor relations	5	exam
CC 16	International Economics	5	exam
CC 17	Statistics	5	exam
CC 18	Economic Cybernetics	5	exam
CC 19	Operations Research	5	exam
CC 20	Modeling of the Economy	5	exam
CC 21	Forecasting social and economic processes	5	exam
CC 22	Data Analysis and Visualization	5	exam
CC 23	Technology of Design and Administration of DB and DW	5	exam
CC 24	Information Security of Economic Systems	5	exam
CC 25	Information Systems in Economy and Management	5	exam
CC 26	Graduate Practice	5	
CC 27	Educational Practice	15	
<b>Total</b>		<b>125</b>	
<b>The total amount of Compulsory components</b>		<b>180</b>	
<b>Optional components EPP</b>			
<b>Optional components by specialty</b>			
OB 1.1	The Technology of Creating Software Products	5	exam
OB 1.2	Computer Programming		exam
OB 1.3	Java Programming		exam
OB 1.4	Modern Information Communications	5	exam
OB 1.5	History of the Economy		exam
OB 1.6	Organization of Production		exam
OB 1.7	Financial Technology (FinTech) and Internet Trading	5	exam
OB 1.8	Mathematical Models of the Agricultural Sector		exam

**CURRICULA AND PROGRAMS OF BACHELOR DEGREE**

OB 1.9	Database Programming Technologies		exam
OB 1.10	Information Security Risks		exam
OB 1.11	Project Management	5	exam
OB 1.12	Agribusiness Risks		exam
OB 1.13	Technologies for Production, Storage, and Processing of Crop and Livestock Products		exam
OB 1.14	Management of Information Security Projects		exam
OB 1.15	Web Analytics	5	exam
OB 1.16	Web Programming		exam
OB 1.17	Fundamentals of Business Analytics		exam
OB 1.18	The basics of Blockchain Technology	5	exam
OB 1.19	Cross-platform Programming in Python		exam
OB 1.20	Database Programming		exam
OB 1.21	Data Visualization in Python	4	exam
OB 1.22	SPSS Tools		exam
OB 1.23	Computer Networks		exam
OB 1.24	Digital Technology in Business	5	exam
OB 1.25	System Analysis and Design of Information System		exam
OB 1.26	IT Project Management		exam
OB 1.27	Econometric Models of the Digital Economy	5	exam
OB 1.28	Web Content Management		exam
OB 1.29	Simulation		exam
OB 1.30	Fundamentals of Machine Learning	5	exam
OB 1.31	Analytics in R		exam
OB 1.32	The Software Economy		exam
OB 1.33	Intelligent Data Analysis		exam
OB 1.34	Decision-making Theory	5	exam
OB 1.35	Applied Econometrics		exam
OB 1.36	Entrepreneurship in IT		exam
<b>Total</b>		<b>54</b>	
<b>Optional components by Student's Choice</b>			
OS 1	Elective 1	3	exam
OS 2	Elective 2	3	exam
<b>Total</b>		<b>6</b>	
<b>The total amount of Optional components</b>		<b>60</b>	
<b>3. OTHER TYPES OF TRAINING</b>			
	Graduate Practice	5	
	Educational Practice	15	
<b>THE TOTAL AMOUNT OF EPP (without military training)</b>		<b>240</b>	

**Annotations of Components in the curriculum**

**1. GENERAL TRAINING CYCLE**

**Compulsory components**

**Modern economics.** Needs and consumer goods. Social production and resources. Economic relations of ownership. Economic systems. Commodity production as a basis of the market economy. Money in the functioning of the market. Economic market mechanism. Levels of markets and market Infrastructure. Formation of revenues in the market economy. Enterprise in the system of market relations. Entrepreneurship. Household in the functioning of the market economy. Enterprise management. Management. Marketing activity. National economy as a whole. Macroeconomic equilibrium. Macroeconomic instability. The concept of the digital economy.

**Macroeconomics.** Theoretical foundations of macroeconomics. Macroeconomics as a science. Methodology for calculating the fundamental macroeconomic indicators. Macroeconomic instability, unemployment, and inflation. Aggregate demand and aggregate supply. Consumption, savings, and investments, total expenditures, and GDP. Economic functions of the state: the state in the system of macroeconomic regulation. Fiscal policy. Money market and monetary policy. Labor market and social policy. Open model of macrocycle and economic growth. Macroeconomic problems of the digital economy.

**Microeconomics.** Methodological principles of microeconomic analysis of market actors' economic behavior. Universal tools for making sound economic decisions. Regularities of functioning of microsystems of individuals, households, enterprises, organizations. The main types of market structures, characteristics, and analysis. The perfect competition, pure monopoly, monopolistic competition, oligopoly. Influence of the general market equilibrium on the efficiency of the resource allocation in the economy, the reasons for the limited insufficiency of market regulation, the criteria for welfare, the need for intervention in the marketplace. Patterns of development of digital product markets.

**Higher mathematics.** Multiple sets and functions: operations with sets; display of sets; boundedness, exact limits of the numerical set; the principle of Cantor Embedded Segments; equivalent sets; countless and innumerable sets. The boundary theory: the boundary of the sequence; boundary function; partial, upper, and lower bounds of the function. Continuity of the function: local properties of continuous functions; properties of continuous functions on a segment. Differential calculus of functions of one variable: derivatives and differentials of arbitrary order, properties of differentiating functions; Taylor's formula; research on extremum and plotting functions. Indefinite integral: primitive and indefinite integral, their properties; replacement of variable and integration by parts; table integrals; methods of integration: rational functions.

### **Compulsory components by decision of the Academic Council of the University**

The annotations of the components "Philosophy," "Business Protocol and Ethics of Communication," "Physical Education," "Foreign Language," "Legal Culture of Personality" see section 2.1.

**Digital economy.** The concept of the digital economy. The main goals of digital development. Information and digital communications in economic development. Digitalization as a basis for creating a new commercial space and carrying out the digital transformation of the economy. State regulation in the digital economy. Digitization of the real sector of the economy. Implementation of the concept of digital workplaces. Digital technologies in business. Application of digital transformation projects. Digital security and economic prosperity. Digitization of education. E-government and e-democracy. Harmonization with European and world scientific initiatives.

## **2. SPECIAL (PROFESSIONAL) TRAINING CYCLE**

### **Compulsory components**

**Risk theory.** Quantitative methods for risk assessment. The function of personal utility. Quantitative characteristics of risk assessment. Game methods of decision making in conditions of uncertainty. Resolving conflict situations using game techniques. Fundamental ratios of risk and profitability. Fundamental ratios of risk and profitability of selected financial market instruments. Specific risks in terms of digital transformations.

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**Probability Theory and Mathematical Statistics.** Basic concepts. Classification of random events. Probability of an accidental event. Classical, statistical, and geometric determination of probability. Practically reliable and practically impossible event. Numerical characteristics of random variables: mathematical expectation, variance, mean square deviation, moments, asymmetry, excess, fashion, median. Laws of probability distribution: normal, indicators, uniform, Poisson. Correlation coefficient. Chebyshev's inequality. Grouping information. The principle of determination and verification of the null hypothesis. Harmonization Criteria for Testing Hypotheses. Methodological bases of statistics; statistical observation; compilation and grouping of statistical data; general statistical indicators; analysis of distribution series; concentration analysis; differentiation and similarity of distributions; selective method; statistical methods for measuring interconnections; analysis of the intensity of the dynamics; analysis of the development of trends and fluctuations; index method; presentation of statistical data: tables, charts, maps.

**Optimization Methods and Models.** Conceptual aspects of mathematical modeling of the economy. Optimization of economic and mathematical models. The task of linear programming and methods of its solution. The theory of dualism. Integer programming. Individual tasks of linear programming. Models of nonlinear programming. Quantitative risk assessment. Mathematical methods for solving linear programming problems, their application, advantages, and disadvantages. Basic mathematical methods for solving nonlinear programming problems; advantages and disadvantages; mathematical apparatus for the construction of econometric models.

**Informatics.** Subject, methods, and tasks of the discipline. Theoretical fundamentals of informatics, systemic provision of information processes, software tools for working with structured documents, network technologies, Internet application in the economy. Basics of Web-design, organization of computer security and information security, software tools for work with databases and data warehouses, fundamentals of office programming, expert and training systems, prospects for the development of information technology.

**Econometrics.** Principles of econometric model construction. Multiple regression models. Generalized econometric models. Dynamics econometric models. Mathematical fundamentals for building econometric models. Methods of building econometric models. Method of calculating the parameters of models on personal computers using application packages. Basic principles of construction of econometric models. Essential econometric dependencies of the digital economy.

**Business Economy.** Types of companies and their legal forms. Theories and models of enterprise and entrepreneurship basics. The external environment of the enterprise. Staff enterprise productivity. Remuneration of personnel: necessary forms and systems. Technological base of production and production capacity. Fixed and working capital: estimation and performance of fixed assets, composition, and turnover of working capital performance. Intellectual capital and its characteristics. Investments: concept, composition, structure, development of investment projects. Forecasting and planning of the company. Justification of the production program of the enterprise. Financial and economic performance and efficiency. Systems to ensure competitiveness. Information and digital technologies in business.

**Management.** Organization as an object of management, the essence, and peculiarities of the manager's activity, development of views on management. Principles and methods of management. Internal and external environment of the organization: Communication in management and the process of making managerial decisions. Planning of organization activity: organizational structure planning. Motivation of the work of the organization's employees, system, and process of control in the organization. Formation and development of the team, management, and leadership. The effectiveness

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of the organization's management system. New information and digital control technologies.

**Marketing.** The essence of marketing and its modern concept. System and characteristic of modern marketing. Marketing researches. Marketing Commodity Policy. Planning new products. Marketing pricing policy. Methods of marketing pricing. Marketing Communications Policy. A complex of marketing communications. Marketing Distribution Policy. Management of distribution channels. Organization and control of the marketing activity of the enterprise. Internet marketing and SEO technologies.

**Finance, money, and credit.** Subject of financial science. Financial categories. Genesis and evolution of finances. Financial law and financial policy. Taxes and the tax system. Budget. Budget system. Insurance. Insurance market. Financial market. Finances of business entities. International finance. Financial management. The essence and functions of money; Cash flow and cash flows. Money theory. The essence, functions, and types of credit. Theoretical principles of banks. Functions of the Central bank. International financial institutions. Modern financial technologies.

**Accounting.** General characteristics of accounting, its subject, and method. Balance sheet. Accounting records and double entry. Evaluation and costing. Documentation, inventory, technique, and forms of accounting. Accounting for non-current assets. Inventory accounting. Accounting for cash and accounts receivable. Financial investment accounting. Equity accounting. Accounting obligations. Workforce accounting, its payment, and the social insurance of personnel. The expenses of the enterprise accounting. Income and financial results accounting. Financial statements. Features of accounting for digital products.

**Labor economics and social and labor relations.** Theoretical bases and practical methods of research of social-economic and industrial relations at the level of enterprises, organizations. Formation and functioning of social and labor relations based on social partnership, regulation of demand, and supply of labor in the labor market. Planning, analysis, reporting, and audit in the field of labor. Problems of integration of social and labor relations of Ukraine into the system of relations recognized by the International Labor Organization. Labor economics in the conditions of digital transformation.

**International Economics.** International Economic System: subjects and objects of international economics. International economic activity: the theory of international trade and international economic activity. The world market for goods services: types, current trends, pricing in international trade. Global financial markets: financial resources, species. Global labor market and international labor migration. The world monetary system: the nature, structure, stages of development, especially the foreign exchange market. Cryptocurrency market. Globalization of economic development: the nature, characteristics, consequences, contradictory, role of international organizations in addressing global world problems. Ukraine's integration into the world economy.

**Statistics.** Methodological principles of statistics. Statistical observation. Compilation and grouping of statistical data. Generalized statistical indicators. Selective method. Statistical evaluation of the laws of distribution of random variables. Statistical methods for measuring relationships. Analysis of economic dynamics. Analysis of dynamic trends and fluctuations. Index method. Indicators of socio-economic statistics. Statistical indicators of economic information. Presentation of statistical data: tables, graphs, maps.

**Economic Cybernetics.** General provisions of cybernetics. Introduction to applied mathematics. Theory of systems. The concept of an economic system. Fundamentals of information theory. Management theory. Theory of economic and mathematical modeling. Analysis and synthesis of economic systems. Optimization of economic systems. Fundamentals of decision theory. Models and methods of economic dynamics.

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Management of production systems. Methods of economic cybernetics in the field of nature management.

**Operations Research.** Essence phases of operations research, principles and methods of mathematical modeling operations, principles of selection, and mathematical software for practical implementation problems. Queuing models. Models of management. Models of human behavior. Models of risk management.

**Modeling of the Economy.** Methodology and methods of modeling. Mathematical models of real economic systems. Conceptual Foundations of Economic Modeling. Algorithmic models in economics. Production functions. Rated assessment of the economy. Model behavior of producers and consumers. Input-output model. Macroeconomic models. Models of the digital economy.

**Forecasting social and economic processes.** Theoretical basis of forecasting of socio-economic systems and algorithms for basic forecasting methods modern transformation processes. Mathematical modeling as a method of forecasting. Extrapolation prediction. Adaptive forecasting methods. Expert prediction. Fundamentals of forecasting applied problems in the field of digital economy and nature management.

**Data analysis and visualization.** Basic principles of big data collection and processing. Stages of preliminary and thematic data processing. Grouping and clustering, data cleaning. New tools and information systems for big data processing. Methods of processing time series of spatial data. Application of modern mathematical-statistical and intellectual methods of data analysis. Creation of analytical materials (reports, presentations, infographic materials) for management decisions. Data visualization in the field of nature management.

**Technology of design and administration of DB and DW.** Relational data model that accommodates relational algebra and relational calculus. The classic approach to database design based on the principles of normalization. Top Features of the approaches to semantic modeling of databases, the issues of planning, development, implementation, and maintenance of databases, introduction to structured query language SQL, data types used in SQL, means the definition of database objects, data manipulation, data retrieval tools. Utilities databases and applications to databases in integrated development environments Access. Features of the databases to MySQL. The principles of expert systems, neural networks, principles of knowledge bases.

**Information security of economic systems.** Information security of economic systems. Information security of the state, business, personality. Technology for implementing attacks on computer systems and networks and information security. Characterization and classification of attacks on economic systems. Construction of a comprehensive information security system. Criteria for assessing the level of information security. Security mechanisms: user authentication and authorization. Monitoring of information security systems. Fundamentals of cryptography and cryptoanalysis. Fundamentals of cyber and digital literacy in employees.

**Information systems in economy and management.** The essence of information systems and their importance in the management of modern organizations. The current state and trends of information technology development. Methodology for developing information systems, defining their quality and effectiveness. Basic principles of management of information resources and technologies. Formation of the information structure at the enterprise. Using Integrated Automated Information Systems in business. Determination of main characteristics of expert systems. Technologies of artificial intelligence in the management of organizations.

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## Optional components

### *Optional components by specialty*

**The Technology of creating software products.** The basic concepts of modern programming. Linear, structural, procedural, and modular programming. Fundamentals of object-oriented modulation, design, and programming. Processing complex data structures, working with files. Designing graphical user interface. The main stages of the product life cycle.

**Computer Programming.** The concept of the algorithm and model algorithmic structure programming. Elements of algorithmic languages: the concept of data types, names, values, indexes, variables, constants, operations, expressions. Structured programming: sequence, branching, and loops. Procedure-oriented programming. Recursion. Software development methodologies: top-down and bottom-up design, modular programming. Organization of data arrays, strings, structures, and algorithms for their processing. File data structure. Dynamic data structures lists, queues, stacks, binary trees, and algorithms for their processing. Algorithmic everyday computing tasks. Modern computer programming languages. Fundamentals of computer programming of economic problems.

**Java Programming.** Structure of programming system Java. Java-machine. Basic data types and operations with it. Instruction syntax and semantics. Characteristics of basic constructions. Means of object-oriented programming language Java. Classes, methods, properties. Syntax of class definition. Class attributes. Class fields. Creation of a particular class object. Abstract classes. Inheritance and interfaces. Syntax of interface. The concept and application of packages. The concept of exceptional situation in Java and its processing. Standard packages of Java programming system. Java - technologies.

**Modern Information Communications.** Concepts of information and their main types, cloud services and their use in the modern information space, tools for communication, collaboration and cooperation, interaction in social networks, creation of text and graphic content, digital etiquette, and optimization of interaction processes. Methodology of research on social communications. Theory and history of social communications. Applied social and communication technologies. Public Communication in Management.

**History of the economy.** History of economic development and economies thought of the ancient world. Economic theory of the Middle Ages. Development of market economy and main directions of economic development. Economies and economics in the era of regulated market relations. Economic development of Ukraine in the XX-XXI centuries. Current trends in economics and economics.

**Organization of production.** Theoretical foundations of production organization. Analysis of agricultural processes. Technical and economic indicators of rational organization of production systems. Selection and justification of the production structure of the enterprise. Production specialization. Organizational, technical, and economic components of production organization.

**Financial Technologies (FinTech) and Internet Trading.** General features of technologies that modernize financial services and products. New online payment and transfer services. Transfers between individuals (P2P). Cloud cash registers and view terminals. Consumer and business lending, crowdfunding, credit scoring based on Internet technology. Modern technologies of capital management: financial planning, algorithmic financial trading, targeted savings services. Online financial markets: cryptocurrency and forex. Technologies of technical and fundamental analysis of financial markets.

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**Mathematical models of the agricultural sector.** Subject, content, tasks, and structure of the course. Classification Features models modeling of technological processes in animal husbandry. Features of construction of models of technological processes of crop. Theory and practice of economic-mathematical analysis in agricultural production planning and evaluation of its effectiveness in market conditions. Agricultural enterprise as an object of modeling.

**Technologies database programming.** Languages databases. SQL programming as a panacea to access data in relational databases. T-SQL as a procedural programming language integrated with MS SQL Server. The standard ODBC and ADO. ADO-interface to access data using high-level programming.

**Information security risks.** The concept and classification of risks associated with the use of information systems that support the mission and business functions. Sources of information security risks and methods of assessing their consequences. Methods of information security risk management.

**Project management.** The theoretical basis of project management. Classification and environment projects. The life cycle of the project. Using standard life cycles. The structure of the project. Managing the implementation of project-oriented activity. Activity organization. Planning in UP. Control in project management. Management of the project. Project management subject area. Managing time in the project. Cost Management. Quality management of the project. Integrated project management functions. Automation functions of project management.

**Agribusiness Risks.** Analysis, methods of quantitative valuation, and risk modeling of agricultural sector. Fundamentals of risk management activities of modern agribusiness. Conceptual approaches to manage risk and minimize them - diversification, insurance, hedging, obtain additional information. Risk management strategies for farms. Development of agricultural policy for minimizing risks.

**Technology of production, storage and processing of crop and livestock products.** Status and main directions of crop production development in Ukraine; significance and biological features of field crops, species and varieties of agricultural plants, their use, distribution, and yield and productivity potential; modern technologies for growing high, ecologically clean crops in different soil and climatic zones of Ukraine; ways and means to improve the quality of agricultural products. Scientific and theoretical foundations of technological processes and evaluation of animal products. Effective implementation of the selection process in the desired direction and the organization of biologically sound and economically feasible technology for the production, processing, and storage of animal products. A system of practical methods of control of integral complex processes, based on the technology of production, processing, and storage of animal products are carried out. Principles of organization of technological flows of raw materials processing. Production of meat, fish and dairy products, eggs for various purposes.

**Management of Information Security Projects** Fundamentals of information security in computer systems. Conceptual models of information security systems organization in CS. Access control and distinction of access rights to information. Symmetric schemes, keys and encryption systems. Asymmetric schemes, keys and encryption systems. Authenticity confirmation of messages and users. Standards and criteria for the certification of information security facilities.

**Web analytics.** Theoretical principles of web analytics. Scope of web analytics methods. Methods of web analytics. Basic terms of web analytics. Overview of web analytics tools. Comparison of log analyzers and counters. Log analyzers. Web analytics systems. Internet statistics systems with detail by page views. Internet analytics systems with details of visitor behavior on the page. Tag manager.

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**WEB programming.** Basic language constructs, markup techniques, and links to other WEB-development tools. Application of cascading CSS stylesheets in HTML. Description of the CSS syntax, options for placing the CSS description in the body of the document and beyond, CSS attributes for block and elemental markup elements. Methods of positioning markup elements using CSS. Programming basics on JavaScript. The logic of the development of JavaScript-code and the basic principles of its usage on World Wide Web pages. PHP programming language. Client-server technology as the center area of the PHP application

**Foundation of business analytics.** Analysis of development factors and sales optimization. Analytics in various spheres of economic activity. Predict macroeconomic indicators that affect business performance. New investment criteria for business decisions. System of critical indicators. Evaluation of business efficiency in the conditions of digital transformation. Ways to motivate employees in the face of resistance to transformation.

**Fundamentals of blockchain technology.** Definition and basic concepts of blockchain technology. Advantages and disadvantages of the blockchain. Basic principles of work of blocks. Description of the blocks, their formation, and closure. Mechanisms that ensure the efficiency and reliability of blockchain. Proof of Work or PoW (performed work) and Proof of Stake or PoS (particle confirmation) algorithms. Software platforms for the implementation of blockchain technology. Ethereum platform. Smart contracts. Application areas of blockchain and specific projects for its implementation. Application of blockchain technology in Ukraine

**Cross-platform programming in Python.** Definition and properties of components. Interface specification as the contract. The model links. Strategy of integration software. Design and assembly of components. Marshaling. Distributed architecture component systems. Component-oriented design. Formal design methods and visual components. Monitors processing transactions. Features component technologies of Python. Python Analytical Libraries. Python GUI. Programming application tasks in Python. Working with Internet protocols in Python. Python network services.

**Data visualization in Python.** Principles of business intelligence and data visualization. Python as a modern language for data analysis and visualization. Basic principles and syntax of Python. Basic Python graphics. Libraries matplotlib, seaborn and plotly. Numpy and pandas libraries to analyze and visualize data.

**SPSS Tools.** Overview of statistical packages. Data management in IBM SPSS. Graphical capabilities package, creating charts. Formation of descriptive statistics and frequency analysis. Contingency tables and chi-squared tests. Comparison medium dependent and independent samples and non-parametric tests in SPSS. Univariate and multivariate analysis of variance. Factor and discriminant analysis in SPSS. Reliability analysis of economic data and logistic regression. Loglinear analysis of contingency tables.

**Computer networks.** General principles of the structure of computer networks. Local network. Network architectural solutions. Minutes of the lower level of large networks. General questions of network design. Minutes of medium and high-level networking. Controls networks.

**Digital technology in business.** The role of networking. Control networks in business. The essence of e-commerce and its features. E-Commerce Models. Marketplaces. Security and protection of information business information. Encrypting information. Protocols and security standards for virtual payments. Internet payment systems. Electronic money. Cryptocurrency. Financial systems on the Internet. Internet Banking. Market of banking services on the Internet. Online trading. Internet insurance. Ways and tools for online advertising. Internet Marketing.

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**System analysis and design of IS.** Information technologies and systems: general characteristics. System analysis. Structural and functional analysis of IS. Specification of functional requirements for IS. Simulation of data flows. Object-oriented analysis. IS design standards and design documentation. Instrumental design of IS. Data model. UML Standard: static and dynamic charts.

**IT project management.** Theoretical foundations of project management in the field of IT. Classification and environment of IT projects. Information system life cycle. The structure of the IT project. Management of the IT project implementation process. IT project cost management. Quality management in the field of IT. Integrated functions of IT project management and their automation.

**Econometric models of the digital economy.** Econometric models of the digital economy. Modern methods of econometric analysis and their application in the digital economy. The problem of large amounts of data in econometric studies. Sources of open data for econometric analysis. Econometric research of internet marketing tools. Economic analysis of cryptocurrency market indicators. Econometric models for forecasting digital infrastructure indicators.

**Web content management.** Content management web system. Principles and management of web content: automated templates; scaling; modernization of web standards: flow management. Cost of implementation and maintenance of web content management system.

**Simulation.** Simulation model. Simulation model experimental method for the study of complex systems on the computer. The necessary steps of building a simulation model - Application of the Monte-Carlo method. Computer simulation of random events and discrete random variables. Planning of experiments in simulation models. Multi-factor correlation-regression analysis. Simulation model of reserves control. Simulation model of discrete-production process. Implementation of a simulation model using the related discrete systems: AnyLogic, VenSim. Advances and prospective development of simulation modeling of agricultural production systems.

**Fundamentals of machine learning.** The concept of artificial intelligence and machine learning. Modern methods of machine learning and their scope. Approaches to the evaluation of basic models of machine learning. Application and evaluation of the effectiveness of machine learning models. Modern machine learning software.

**Analytics in R.** Introduction to R. Data analysis tools. Fundamentals of programming in R. Types of data in R. Reading and writing data in R. Working with libraries and packages in R. Descriptive analysis. Statistical analysis in R: mean, median, mod, and quantile, variance, and mean square deviation, variation. Graphical representation of data in R. Linear regression. Regression analysis in R. Logistic regression.

**The Software Economy.** Features of functioning entities at market conditions. Critical indicators of enterprise resource potential and the efficiency of its use. Business organization and management bases.

**Intelligent data analysis (Data Mining).** Methods, stages, tasks of data mining. The concept of artificial intelligence. The concept of intelligent system and creative problem. Ways of presenting an intellectual problem and methods of finding solutions. Methods of initial data processing. Data structure research methods: data visualization and automatic grouping. Cluster analysis. Decision trees. Methods for estimating classification errors. Methods of data template search.

**Decision-making Theory.** Basic principles of the theory of decision-making. The process of acceptance and implementation of managerial decisions. Expert methods and decision-making systems. Methods and decision-making systems in terms of certainty. Methods and decision-making systems in risk conditions. Applying the theory of utility to decision making. Methods and decision-making systems in a conflict situation.

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**Applied Econometrics.** Basic principles of constructing econometric models. Econometric models of agrarian production. Spatial Simultaneous Models. Estimation of the elasticity of individual inputs of the production process. Dynamic models for a separate farm. Multicollinearity in the analysis of agrarian business. Analysis of time series on the example of the price dynamics of the world market. Econometric models of demand and supply. Panel regression. Forecast with ARIMA.

**Entrepreneurship in IT.** The leading indicators of resource potential and efficiency in the IT-sphere. Theoretical and methodological foundations of software economics. Types of costs for the creation, maintenance, implementation of software. Cost allocation in the life cycle of complex software systems. Pricing methods and their application for the formation of prices for products and services in the IT field. Methods for evaluating the effectiveness of the software, the profitability of software systems.

**Bachelor**  
**Field of Knowledge " Information Technology "**  
**in Specialty "SOFTWARE ENGINEERING"**  
**Educational-professional program «Software Engineering»**

Form of Training:	Licensed number of persons:
– Full-time	50
– Part-time	50
Duration of Training	4 years
Credits ECTS	240
Language of Teaching	Ukrainian
Qualification	Bachelor of Information Technology

### **Concept of training**

Direction of "Software Engineering" provides students ownership algorithmic thinking, software engineering methods to implement software to meet the requirements for quality, reliability, production characteristics

### **Practical training**

Practical training of students of the field of study is aimed at mastering the basic methods and techniques of information systems development.

### **Proposed Topics for Bachelor theses**

1. Software monitoring system of ecological processes.
2. Design software learning management system.
3. Design pattern recognition software system for GIS.
4. The software of the automated process control system cultivation of agricultural crops.
5. Software distributed accounting system.

**Academic rights of Graduates:** graduates can apply for Master's Degree Specialties and Educational (Educational-professional or Educational-scientific) programs specified in Table 1.2 Section 1.3 this Catalog.

### **Employment of Graduates**

Graduates field of study "Software Engineering" can work: software engineer, administrator local and corporate networks, expert in the design and development of information and automated systems, artificial intelligence and expert systems, expert in Web- design, Business Intelligence engineer, etc.

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**Bachelor`s Program and Curriculum  
in Specialty «Software Engineering»  
Educational-professional program «Software Engineering»**

Code n/a	Components of the educational and professional program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits ECTS	The final control
1	2	3	4
<b>1. GENERAL TRAINING CYCLE</b>			
<b>1.1. Compulsory components EPP</b>			
CC 1	Higher mathematics	10	exam
CC 2	Physical basics of electronics	4	exam
CC 3	Linear algebra and analytic geometry	5	exam
CC 4	Probability Theory and Mathematical Statistics	4	exam
CC 5	Computer discrete mathematics	4	exam
CC 6	Discrete structures	5	exam
CC 7	Philosophy	4	exam
<b>1.2. Compulsory components EPP by decision of the Academic Council of the University</b>			
CC 8	Business protocol and communication ethics	5	exam
CC 9	Foreign Language	10	exam
CC 10	Legal culture of personality	5	exam
	Physical Education	5	
<b>1.3. Optional components EPP</b>			
	<b>Optional subjects by Student's Choice</b>	5	exam
OB 1.1	Information theory	5	exam
OB 1.2	Statistical methods, theory flow of events	5	exam
OB 1.3	Nonclassical logic	5	exam
OB 1.4	Management	5	exam
OB 1.5	Economy and Business	5	exam
OB 1.6	Ethnocultural studies	5	exam
OB 1.7	History of Ukrainian statehood	5	exam
OB 1.8	Equipment and technologies in agro-industrial complex	5	exam
OB 1.9	Typical technological objects of agriculture production.	5	exam
OB 1.10	Technology of production of crop and livestock production	5	exam
<b>Optional subjects by Student's Choice</b>			
OS 1	Вибіркова 1	3	test
OS 2	Вибіркова 2	3	test
<b>2. SPECIAL (PROFESSIONAL) TRAINING CYCLE</b>			
<b>2.1 Compulsory components EPP</b>			
CC 11	Basics of Software Engineering	4	exam
CC 12	Programming	5	exam
CC 13	Information Technology	5	exam
CC 14	Group dynamics and communication	4	exam
CC 15	Algorithms and Data Structures	4	exam
CC 16	The software requirements analysis software	5	exam
CC 17	Databases	5	exam
CC 18	Object-oriented programming	5	exam
CC 19	Technologies WEB programming	5	exam
CC 20	Organization of computer Networks	4	exam
CC 21	Modeling and analysis of the subject area	5	exam
CC 22	Operating Systems	5	exam
CC 23	Security applications and data	4	exam
CC 24	Design Software	5	exam
CC 25	Methods of object-oriented design of software systems	5	exam
CC 26	Technologies database programming	4	exam
CC 27	Software Quality and Testing	4	exam
CC 28	Programming paradigms and formal software specification	5	exam
CC 29	Project Management Software	4	exam
CC 30	Architecture and design Software	5	exam
CC 31	Human-Computer Interaction	4	exam

**CURRICULA AND PROGRAMS OF BACHELOR DEGREE**

CC 32	Software life cycle	4	exam
CC 33	Project practicum	4	exam
CC 34	Academic Practice	10	test
CC 35	Work Practice	5	test
CC 36	Bachelor Thesis writing (Graduate thesis or Project)	5	захист
<b>2.2. Optional components EPP</b>			
	<b><i>Optional components by specialty</i></b>	5	exam
OB 1.11	The theory of algorithms	5	exam
OB 1.12	Design and analysis of algorithms	5	exam
OB 1.13	Functional programming	5	exam
OB 1.14	Computer Architecture	5	exam
OB 1.15	Technical communication tools	5	exam
OB 1.16	Programming microprocessors	5	exam
OB 1.17	Software technology dot.net	5	exam
OB 1.18	Cross-platform programming (Java)	5	exam
OB 1.19	Cross-platform programming (Python)	5	exam
OB 1.20	Service programming program	5	exam
OB 1.21	Computer Graphics	5	exam
OB 1.22	3D- modeling	5	exam
OB 1.23	Intellectual systems	5	exam
OB 1.24	Neural networks	5	exam
OB 1.25	The technology of pattern recognition	5	exam
OB 1.26	Technologies distributed programming	5	exam
OB 1.27	Principles of multitasking systems	5	exam
OB 1.28	Real time operating system	5	exam
OB 1.29	Programming of mobile devices	5	exam
OB 1.30	Means of multimedia in information technologies.	5	exam
OB 1.31	Professional Software Engineering Practice	5	exam
OB 1.32	Computer networks administration	5	exam
OB 1.33	Intellectual data analysis	5	exam
OB 1.34	Economy software	5	exam
OB 1.35	Entrepreneurship in the IT.	5	exam
OB 1.36	Industry Environmental Monitoring	5	exam
<b>The total amount of Compulsory components</b>		<b>180</b>	
<b>The total amount of Optional components</b>		<b>60</b>	
<b>THE TOTAL AMOUNT OF EPP (without military training)</b>		<b>240</b>	

## Annotations of Components in the curriculum

### 1. GENERAL TRAINING CYCLE

#### Compulsory components

**Higher mathematics.** Complex numbers. Elementary functions. Continuity of functions. Derivative and differential functions. The study of functions, building graphs. The original, indefinite integral. Definite integral. Functions of several variables. Extreme functions necessary and sufficient conditions. Multiple and curvilinear integrals. Numerical, functional, degree Fourier series. Differential Equations. Linear algebra and analytic geometry.

**Physical basics of computer electronics.** The principles of operation of electronic components of computer systems, problems of computer speed, new physical principles of creating memory elements are studied. Physical basics of signal transmission.

**Linear algebra and analytic geometry.** The coordinate system, straight and plane. Curves and surfaces of second order. Vectors, matrices, determinants. Systems of linear algebraic equations. Linear vector space.

**Probability Theory and Mathematical Statistics.** Basic concepts. Classification of random events. Probability of random events. Classical, Statistical and geometrical definition of probability. Almost reliable and virtually impossible event. Numerical characteristics of random variable the expected value, variance, standard deviation, moments, skewness, kurtosis, mode, median. The principle of defining and testing the null hypothesis. Criteria for approval to test the hypotheses.

**Computer discrete mathematics.** The sets, functions and relations. Boolean algebra. Logic statements. Predicate logic. Graphs and trees. Basics of combinatorics. Recurrent ratio.

**Discrete structures.** The simplest methods of proof. Elementary number theory. Computational complexity.

### **Compulsory components by decision of the Academic Council of the University**

The annotations of the components "Philosophy," "Business Protocol and Ethics of Communication," "Physical Education," "Foreign Language," "Legal Culture of Personality" see section 2.1.

## **2. SPECIAL (PROFESSIONAL) TRAINING CYCLE**

### **Compulsory components**

**Basics of Software Engineering.** Engineering software-based. Basics of modeling. Technologies software development. Basics of requirements engineering software. Written communication.

**Programming.** The basic design of programming. Algorithms and solving problems. Fundamental data structures. Recursion. Programming events.

**Information Technology.** Information systems and technology. The main Resources Internet. Libraries and databases. Trends in the world of information technology. Review and comparative characteristics of existing Web-browsers. Characteristics of the existing search engines to use online resources.

**Group dynamics and communication.** Basics of work effectively with colleagues, acquaintance with the motivation of people, the concept of group dynamics. Practice extraction requirements, interviews, scripts, prototypes, "explanatory meeting" supervision. Strategy auscultation, persuasion and negotiation. Review written technical documentation to identify different kinds of problems. Creating a formal presentation of good quality. Principles of effective oral communication.

**Algorithms and Data Structures.** Basic data structures: stacks, queues, linked lists, cash tables, trees, graphs. Basic computing algorithms: sorting, hash tables and algorithms exclusion conflicts binary tree search, presentation of graphs, and go in depth and in width. Recursion. Analysis algorithms.

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**The software requirements analysis software.** The types of requirements, functional and non-functional attributes of quality. Specification and documentation requirements. Languages writing specifications. Basics of requirements engineering software. Matching requirements and risk management.

**Databases.** Information models and systems. Relational database. Languages queries to the database. Processing transactions. Distributed database.

**Object-oriented programming.** Object-oriented design. Encapsulation and hiding information. Distribution of conduct and implementation. Classes and subclasses. Inheritance (override dynamic linking). Polymorphism (polymorphism subtypes and inheritance). The hierarchy of classes. Classes of collections and iteration protocols. The internal representation of objects and table methods.

**Technologies WEB programming.** The structure and principles WEB. Creating Web applications. Client and server scenarios.

**Organization of computer Networks.** Distributing computing. Basics of networking and telecommunications. Network Management. Principles of safety and protection in the software.

**Modeling and analysis of the subject area.** Design software-based domain model. Pattern design. Software development through testing. Language modeling domains.

**Operating Systems.** Basics of operating systems. Parallelism (multitasking). Planning and scheduling processes. Organization of virtual memory. Managing devices.

**Security applications and data.** Principles of safety and protection in the software. Fundamentals of information security systems in the software.

**Design Software.** Basics of modeling. Models construction. The types of models. Plan your design. Languages construction. Integration. The quality of construction. Templates design.

**Methods of object-oriented design of software systems.** Classes and objects. Concept OOP. Imitation. Charting packages, component placement, classes and objects. Templates and design patterns.

**Technologies database programming.** Languages databases. SQL programming as a panacea to access data in relational databases. T-SQL as a procedural programming language integrated with MS SQL Server. The standard ODBC and ADO. Using ADO-interface to access data by means of high-level programming.

**Software Quality and Testing.** Methods of tests. Automated testing tools. Quality standard software. The processes of quality management software. Terminology and basics of verification and certification software.

**Programming paradigms and formal software specification.** Defining the concept of programming paradigm as a set of ideas and concepts that define the style of writing programs (approach to programming), as a method of conceptualization that determines the organization of calculations and structuring the work performed by the computer. The concept of multiparadigm programming. Basic programming models. Approaches and techniques.

**Project Management Software.** The processes of project management, software lifecycle Project Management. Managing deadline and the cost of the project. Human potential and communications. Quality management and project risks.

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**Architecture and design Software.** Technologies software development. Structure and architecture of the software. Strategies and methods of designing software. Quality analysis and evaluation of software design. Notation and design support tools.

**Human-Computer Interaction.** Psychological principles of human-machine interactions. Analysis, design and prototyping man-machine interface. Functional components and properties of man-machine interface. Utilities man-machine interface. Assessment of quality of man-machine interface.

**Software life cycle** The concept of a software product life cycle. Software development models: cascade, evolutionary, step-by-step, formal, spiral, etc. Software lifecycle management standards.

**Project practicum.** The principles of a systematic approach to software development. Design templates and documentation requirements. Technologies software development. The processes of quality management software. Human potential and communications. Quality management and project risks.

### **Optional components**

#### ***Optional components by Student's Choice***

**Information theory.** Disclosure of the content and practice of information theory as a field of knowledge about the amount of information, signals, their time and frequency characteristics, coding of messages used in the processes of transformation, transmission, reception and storage of information about objects (processes). Formation of the basic provisions of information theory, system of knowledge and practical skills in quantitative evaluation of information, theory of deterministic and random signals, methods of coding and processes of message conversion during transmission and reception.

**Statistical methods, theory flow of events.** Basics of probability theory and statistical methods of information systems. Variation number and statistical distribution. Basic theory of estimation of unknown parameters of distributions. Statistical hypothesis. Checking hypotheses. Correlation theory of random variables. Elements of variance and regression analysis. Information queuing system. Elements of the theory of random processes. Stationary random process. Elements of queuing theory. ISMO flow of events. Mathematical introduction to the theory of Markov chains. Information Network of service.

**Nonclassical logic** Analysis of formal systems. The logic of calculus. Multifaceted logic. Logic of questions. The logic of estimates.

**Management.** The essence, principles and functions of modern management. Management Tools. The organizational structure of public management. State management in the field of information industry. The activity of members of management.

**Economics and Business.** Business Economics. The general management functions and management techniques. Marketing: The marketing system in the enterprise, methods of market research, marketing planning. Strategic management: model, strategy, technology, strategic planning PEST. SWOT. BCG. SNW and others. Financial Management. Business planning: developing a business plan, sources of investment. Accounting and taxation burned. Management Accounting. Management. Prediction of the company. Marketing. Sales management and resources. Logistics. Budgeting and controlling. Management.

**Ethnocultural studies.** Features of the Ukrainian ethnos, basic concepts and definitions of ethnocultural studies, factors of ethnos formation, main cultural and historical world centers and regions, regularities of their functioning and development, proofs of national identity of the Ukrainian people.

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**History of Ukrainian statehood.** Development of national self-consciousness of future specialists, acquisition by specialists of skills of work with historical sources and literature, scientific analysis aimed at providing independent comprehension of patterns of historical development, development of skills to apply acquired knowledge of history in everyday life, for orientation in social and political life. and events.

**Equipment and technologies in agro-industrial complex.** Use of machinery in agriculture. Agricultural bases responsible for the basing, use and repair of agricultural machinery, as well as for keeping pets, harvesting fodder and market sales on other smaller agricultural sites. Features of development and implementation of innovative agro-engineering technologies in agro-industrial complex. Innovative technologies and new generation equipment for crop production. Innovative technologies and new generation equipment for livestock production. Modern problems and perspective solutions in resource-saving and ecological safety of transport.

**Typical technological objects of agriculture production.** Theoretical and practical training of students in research and modeling of typical technological and thermal processes and objects for their automation in various fields of agriculture based on the use of computer technology.

**Technology of production of crop and livestock production.** Acts population in emergency peacetime and wartime. Ways of population protection from damaging factors of accidents, natural disasters and modern weapons of mass destruction. Methods of forecasting of possible radiological, chemical, bacteriological, biological situation arising in case of disaster or accident. Sanitary norms and modes of work.

### ***Optional components by specialty***

**The theory of algorithms.** Mathematical Foundations of analysis algorithms. Algorithmic strategies. Basic theory of computability. Complexity classes P and NP. Algorithms for sorting, merging and searching. Combinatorial, recursive, geometric, cryptographic algorithms and heuristics. Fundamental algorithms on graphs and trees.

**Design and analysis of algorithms** Design, development and analysis of algorithms, evaluation of their efficiency and complexity, solvability and insolvability of algorithmic problems for adequate modeling of subject areas and creation of software and information systems. Requirements for tests and test data. Stages of the testing process.

**Functional programming.** Using different paradigms of functional programming. Identify the advantages and disadvantages. Development of algorithms. Software systems development. Basics of Python.

**Computer Architecture.** Digital logic. Submission of data. Organization of memory. Functional organization devices, ensuring their interaction. Multiprocessor Architecture. Modern architecture.

**Technical communication tools.** General information about the telecommunications system. Generalized system of digital communication systems. The message signals, interference and their mathematical models. Mathematical models circuits. Fundamentals of information theory. Methods and tools for coding messages. Transferring messages in digital system. Obstacles protection for modern telecommunications systems. Principles of multichannel communication and their implementation in analog and digital systems. The efficiency of telecommunications. Elements of design SEZ.

**Programming microprocessors.** Programming real-time systems management tool as simple and complex systems using PCs and microcontroller technology. The composition of real-time systems. Types of operating systems real time. Parameters

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operating systems real time. Using interrupts with low-level programming. Use timers with low-level programming. Communications protocol RS-232. Programming serial data exchange. Using the built-in methods of system libraries Windows.

**Software technology dot.net.** Overview of the platform Microsoft .NET. Cross-language integration in .NET. Collections .NET. Remoting objects .NET (.NET-Remoting). Programming in C #.

**Cross-platform programming (Java).** Definition and properties of components. Interface specification as the contract. The model links. Strategy of integration software. Design and assembly of components. Marshaling. Distributed architecture component systems. Component-oriented design. Formal design methods and visual components. Brokers object requests. Monitors processing transactions. Features component technologies: COM / DCOM / NET, CORBA, Java Beans.

**Cross-platform programming (Python).** Basic programming tools in Python. Simple and complex data types. Basic algorithmic constructions (conditions, cycle). Elements of functional and modular programming. The concept of recursion is defined. Working with files and directories. Opportunities for handling exceptional situations.

**Computer Graphics.** Raster and vector graphics. Modern graphics system. Use of graphics API. Fundamental techniques in graphics. Two-dimensional and three-dimensional clipping. Algorithms for generating lines. The use of coordinate transformations. Basic theory of transformations Euclidean and affine transformation. Simple color model. The parallel and central projection. Approximation of spline curves and surfaces. Fractal curves and surfaces. Polygonal representation of three-dimensional objects. Visualization and Computer Animation.

**3D modeling** Basics of 3D modeling. 3D modeling in AutoDesk Inventor, SolidWorks. Creation of 3D models of installations of various spheres of application.

**Intellectual systems.** Modeling knowledge in intelligent systems. Cash and logical systems of knowledge bases. Experts, ontological and many agent system.

**Neural networks.** Basic principles of construction of fuzzy logic systems, neural networks, fuzzy neural networks and systems of genetic algorithm. Using a specialized software environment for the synthesis of neural information systems

**The technology of pattern recognition.** Basic concepts of pattern recognition theory. The basic definition of science pattern recognition. Clustering. Bayesian approach. Not Bayesian problem. Nyman -Pearson. Minimax problem. Classification of recognition.

**Technologies distributed programming.** Parallel computing using existing technologies PVM, MPI. Parallel computational methods. Construction of parallel computing systems conveyor, matrix, multiprocessor. Building cluster systems. Tools supporting parallel computing PVM, MPI. Models RPC RPC and remote application of RMI.

**Principles of multitasking systems.** Software Requirements Governing calculators. Features of construction and programming of real-time systems. The concept of multitasking processes and threads. The formal description of system tasks that run on a single processor. Functions of the operating system software environment in real time. Types of scheduling performance problems. Static schedule without interruption. Dynamic schedule with interruptions (multitasking with squeezing). Curriculum quantized-parallel (multitasking without squeezing). Features of the calculation of schedules and building load calculator charts. Features and software mechanisms operating systems real time. Features of algorithmic and software implementation of different types of scheduling performance problems.

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**Real time operating system.** Real Time Systems. Systems of hard and soft real time. Requirements for real time operating systems. The functions of the operating system kernel. Abstractions in the operating system. Versions of the kernels for real time operating system. Monolithic and layered architecture. Client-server architecture. Software interfaces. Services at real time operating system. The system priorities and scheduling algorithms. Memory management. The interaction between tasks. Timers. Input/output services. Interrupts and their processing. Programming of interrupts. DOS and BIOS interrupts. Software interrupts. Industrial operating systems. QNX operating system. RTLinux. The exchange of information in real time systems and its programming. Programming of interface of real time system. Creation of hardware-software real time complex.

**Programming of mobile devices.** Programming for Android using the Android SDK; programming language Java, which will develop for other platforms (Core Java, Java EE, Blackberry, etc.); features SQLite; placing the app in Google Play.

**Means of multimedia in information technologies.** Basics of the Java language. Basic Java tools. Java AWT GUI. Java Swing GUI. Input output in Java. Internationalization of applications in Java. Collections in Java. Working with DBMS in Java. Programming of application tasks in Java language. Working with Internet protocols in Java. Java network services. Data processing on a Web server using Java.

**Professional Software Engineering Practice.** The concept of quality and culture of the software. The system of rules of ethics and professional conduct aesthetic code software engineer. The nature and role of software engineering standards. Social, legal, historical and professional issues and interests. The nature and role of professional societies.

**Computer networks administration.** Construction and administration of computer networks hardware part . Types and applications of active and passive network equipment. Choosing equipment based on the needs of a specific network, developing of network structure for a given network technology. Assessment of network performance.

**Intellectual data analysis.** The concept of artificial intelligence. The concept of smart and intelligent problem IS FROM. Methods submission intellectual tasks and methods of finding solutions. Knowledge and knowledge representation model in SSHI. Semantic Grid SS: basic concepts, types, methods, and describe a logical conclusion to the SS. Frames: basic concepts, structure frame. Frame system. Expert Systems EC: purpose and principles of the generalized architecture, classes of problems that are solved by EC. Modern software and tools create SSHI: Visual Prolog. Allegro CLOS, CLIPS, JESS. Languages functional and logic programming.

**Economy software.** Features of functioning entities at market conditions. Key indicators of enterprise resource potential and efficiency of its use. Business organization and management bases.

**Entrepreneurship in the IT.** Study of the functioning of entities operating in the global Internet space (business, business law, consumer protection, Internet technology, commodity science).

**Industry Environmental Monitoring.** The purpose of studying the discipline "Intellectual computer monitoring systems" is to format the skills in solving problems that are difficult to formalize. To provide the knowledge on assessing the status and trends in the development of information systems (monitoring); the information technologies for solving management tasks are related to the use of artificial intelligence tools and techniques; the means to develop and to use an intelligent information systems in various applied fields.

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The task of the discipline studying is to master the mathematical and algorithmic foundations of intelligent information systems, existing and promising means of data analysis and acquiring the skills of their practical application for solving specific problems in the field of environmental monitoring.

**Bachelor**  
**Field of Knowledge "Information Technology"**  
**in Specialty "COMPUTER SCIENCE"**  
**Educational-professional program «Computer Science»**

Form of Training:	Licensed number of persons:
– Full-time	50
– Part-time	50
Duration of Training	4 years
Credits ECTS	240
Language of Teaching	Ukrainian
Qualification	Bachelor of Computer Science

### **Concept of training**

Specialty "Computer Science" is preparing a broad specialists to participate in a variety of areas that require basic knowledge of mathematics, physics, computer science, natural sciences, humanities and social and economic disciplines. Specialist focused on solving problems of analysis and synthesis of complex systems based on the latest information technologies with modern advances basic and engineering sciences.

### **Practical training**

Practical training of students of the field of study is aimed at mastering the basic methods and techniques of information systems development.

### **Proposed Topics for Bachelor theses**

1. Create subsystems authorization of electronic commerce
2. Develop and implement protocols to exchange information between the industrial and computer interfacing management regimes in poultry house
3. Development of a conceptual model database of the control of power consumption
4. Development of a conceptual database model agricultural enterprise information system
5. Development of smart dose of the flotation reagent drinking water

**Academic rights of Graduates:** graduates can apply for Master's Degree Specialties and Educational (Educational-professional or Educational-scientific) programs specified in Table 1.2 Section 1.3 this Catalog.

### **Employment of Graduates**

Graduates field of study "Computer Science" can work: software engineer, administrator local and corporate networks, expert in the design and development of information and automated systems, artificial intelligence and expert systems, expert in Web- design, etc.

**Bachelor`s Program and Curriculum  
in Specialty «Computer Science»  
Educational-professional program «Computer Science»**

Code n/a	Components of the educational and professional program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits ECTS	The final control
1	2	3	4
<b>1. GENERAL TRAINING CYCLE</b>			
<b>Compulsory components EPP</b>			
CC 1	Higher Mathematics	10	exam
CC 2	Physics	6	exam
CC 3	Philosophy	4	exam
CC 4	Numerical methods	5	exam
CC 5	Discrete Mathematics	5	exam
CC 6	Ecological	5	exam
<b>Total</b>		...	
<b>Compulsory components EPP by decision of the Academic Council of the University</b>			
CCU 1	Business protocol and communication ethics	5	exam
CCU 2	Foreign Language	10	exam
CCU 3	Legal culture of personality	5	exam
CCU 4	Physical Education	5	test
<b>Total</b>		...	
<b>2. SPECIAL (PROFESSIONAL) TRAINING CYCLE</b>			
<b>Compulsory components EPP</b>			
CC 7	Probability theory , probabilistic processes and mathematical statistics	5	exam
CC 8	Mathematical Methods of Operations Research	5	exam
CC 9	Programming	5	exam
CC 10	Information Technology	5	exam
CC 11	Computer circuitry and architecture of computers	5	exam
CC 12	Computer Graphics	5	exam
CC 13	The theory of algorithms	5	exam
CC 14	Organization of databases and knowledge	5	exam
CC 15	Object - oriented programming	5	exam
CC 16	Web- technologies and Web- design	5	exam
CC 17	Technology distribution systems and parallel computing	5	exam
CC 18	Modeling systems	5	exam
CC 19	Operating Systems	5	exam
CC 20	Technology of software	5	exam
CC 21	System Analysis	5	exam
CC 22	Computer Networks	5	exam
CC 23	The theory of pattern recognition and classification in artificial intelligence systems	5	exam
CC 24	Methods and systems of artificial intelligence	5	exam
CC 25	Design of Information Systems	5	exam
CC 26	IT project management	5	exam
CC 27	Technology development ICS	5	exam
CC 28	Project Practice	10	
CC 29	Work Practice	5	
CC 30	Bachelor Thesis writing (Graduate thesis or Project)	5	
<b>The total amount of Compulsory components</b>		<b>180</b>	
<b>Optional components EPP</b>			
<b>Optional components by specialty</b>			
OB 1.1	Information theory	5	exam
OB 1.2	Statistical methods, theory flows of events	5	exam
OB 1.3	Technical communication tools	5	exam
OB 1.4	Management	5	exam
OB 1.5	Economy and Business	5	exam
OB 1.6	Ethnocultural studies	5	exam

**CURRICULA AND PROGRAMS OF BACHELOR DEGREE**

OB 1.7	History of Ukrainian statehood	5	exam
OB 1.8	Equipment and technologies in agro-industrial complex	5	exam
OB 1.9	Safety and life	5	exam
OB 1.10	Robotics	5	exam
OB 1.11	Fundamentals of GIS and remote sensing	5	exam
OB 1.12	Intelligent Systems	4	exam
OB 1.13	Decision theory	4	exam
OB 1.14	Algorithms and Data Structures	4	exam
OB 1.15	Microprocessor control system	4	exam
OB 1.16	Technology Information Protection	4	exam
OB 1.17	Cross- platform programming	4	exam
OB 1.18	Forecasting methods	4	exam
OB 1.19	Identification and modeling of technological objects	4	exam
OB 1.20	Automated process control systems.	4	exam
OB 1.21	Intellectual data analysis based on artificial intelligence methods	5	exam
OB 1.22	Means of multimedia in information technologies	5	exam
OB 1.23	Programming Mobile Application	5	exam
OB 1.24	Computer Design Technologies	5	exam
OB 1.25	Modern management theory	5	exam
OB 1.26	Computer system ecological and economic monitoring	5	exam
OB 1.27	Software of computer-integrated technologies	5	exam
OB 1.28	Industry Environmental Monitoring	5	exam
<b>Total</b>		<b>54</b>	
<b>Optional components by Student's Choice</b>			
OS 1	Elective 1	3	
OS 2	Elective 2	3	
<b>Total</b>		<b>6</b>	
<b>3. OTHER TYPES OF TRAINING</b>			
	Military training course	<b>29</b>	
	Project Practice	10	
	Work Practice	5	
	Bachelor Thesis writing (Graduate thesis or Project)	5	
<b>THE TOTAL AMOUNT OF EPP (without military training)</b>		<b>240</b>	

## Annotations of Components in the curriculum

### 1. GENERAL TRAINING CYCLE

#### Compulsory components

**Higher mathematics.** Complex numbers. Elementary functions. Continuity of functions. Derivative and differential functions. The study of functions, building graphs. The original, indefinite integral. Definite integral. Functions of several variables. Extreme functions necessary and sufficient conditions. Multiple and curvilinear integrals. Numerical, functional, degree Fourier series. Differential Equations. Linear algebra and analytic geometry.

**Physics.** Kinematics. Dynamics. Conservation laws. Thermodynamics. The ideal gas. Statistical distributions. Real gas. Phase equilibrium. Static electric field. An electric current. Static magnetic field. Electromagnetic waves. Dynamic electromagnetic field. Maxwell's equations. Mechanical and electromagnetic waves. Mechanical and electromagnetic waves. Optics. The basic principles of quantum physics. Quantum theory of atoms.

**Numerical Methods.** Direct methods for solving systems of linear equations. Solving systems of linear equations of large dimension. Numerical methods for solving nonlinear equations. Calculate the Eigen values and Eigen vectors of the matrix. Numerical differentiation and integration of functions. Solution of the Koshi problem for ordinary differential equations. Many stepping methods for solving differential equations. Implicit methods for solving hard problems. Boundary-value problems for ordinary differential equations. Integral Equations. Solving partial differential equations methods grids, finite elements, direct and iterative. Difference methods for solving parabolic equations. Methods for solving hyperbolic and elliptic equations. Methods of interpolation functions. Approximation of functions. Extrapolation and convergence features.

**Discrete Mathematics.** The theory of sets and relations. Combinatorial analysis. Mathematical logic. Logic of statements. Predicate logic. Graph Theory. Trees. Fundamentals of coding theory. The theory of formal grammars. The theory of finite automata.

**Ecological.** Optimization of relationships between humans, on the one hand, individual species and populations, ecosystems - on the other. Research the habitat of living beings. Ways to limit the consumption of biosphere resources to meet the needs of human economic activity.

### **Compulsory components by decision of the Academic Council of the University**

The annotations of the components "Philosophy," "Business Protocol and Ethics of Communication," "Physical Education," "Foreign Language," "Legal Culture of Personality" see section 2.1.

## **2. SPECIAL (PROFESSIONAL) TRAINING CYCLE**

### **Compulsory components**

**Probability Theory and Mathematical Statistics.** Basic concepts. Classification of random events. Probability of random events. Classical, Statistical and geometrical definition of probability. Almost reliable and virtually impossible event. Numerical characteristics of random variable the expected value, variance, standard deviation, moments, skewness, kurtosis, mode, median. The principle of defining and testing the null hypothesis. Criteria for approval to test the hypotheses.

**Mathematical Methods of Operations Research.** Construction of mathematical models of problem situations. Linear and nonlinear, discrete and stochastic programming. Duality. Post optimal analysis. Parametric programming. Principles of discrete programming. Methods of ZCLP solution. The method of branch and bound. Dynamic programming. Stochastic Programming. Optimization methods: features that differentiated functions matched are not differentiated in high dimensional problems. Objectives and methods of multicriteria optimization.

**Programming.** The concept of the algorithm and model algorithmic structure programming. Elements of algorithmic languages: the concept of data types, names, values, indexes, variables, constants, operations, expressions. Structured programming: sequence, branching and loops. Procedure-oriented programming. Recursion. Software development methodologies: top-down and bottom-up design, modular programming. Organization of data arrays, strings, structures and algorithms for their processing. File data structure. Dynamic data structures lists, queues, stacks, binary trees and algorithms for their processing. Algorithmic common computing tasks..

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**Information technology.** Subject methods and objectives of discipline, the theoretical foundations of computer science, system software processes information, software tools work with structured documents, network technology, and the use of Internet in the economy. Fundamentals of Web-design, organization of computer security and information protection software work with databases and data warehouses, office basics of programming, expertise and training systems, the prospects of development of information technologies.

**Computer circuitry and computer architecture.** Method of image information. Logical foundations of building elements. Circuitry combinational nodes. Digital circuitry and service elements of digital and analog components. Power sources. Circuitry combinational nodes. Digital computers. Memory. Processors. Supercomputers. Parallel computing systems. Universal microprocessors. MP support schemes on the system board. Structures of microprocessor systems. RISC-processors.

**Computer Graphics.** Raster and vector graphics. Modern graphics system. Use of graphics API. Fundamental techniques in graphics. Two-dimensional and three-dimensional clipping. Algorithms for generating lines. The use of coordinate transformations. Basic theory of transformations Euclidean and affine transformation. Simple color model. The parallel and central projection. Approximation of spline curves and surfaces. Fractal curves and surfaces. Polygonal representation of three-dimensional objects. Visualization and Computer Animation.

**The theory of algorithms.** Mathematical Foundations of analysis algorithms. Algorithmic strategies. Basic theory of computability. Complexity classes P and NP. Algorithms for sorting, merging and searching. Combinatorial, recursive, geometric, cryptographic algorithms and heuristics. Fundamental algorithms on graphs and trees.

**Organization of databases and knowledge.** The main design principles database. Items of a relational database. Databases MS SQL SERVER. Table relational database. The notion of relational databases. Optimize time access to the database. Managing transactions. Processing algorithms that are stored on the server. Controlling access to the database.

**Object-oriented programming.** The concept of object-oriented analysis, design and programming. The object model of the objective environment, the principles of its construction. The concept of objects, classes, and their relationships. Fundamentals of object-oriented design language UML. Fundamentals of object-oriented programming language. Data Abstraction and Encapsulation. Constructors, destructors classes. Transshipment of operations and functions. Static constant class members, friendly features and classes. Composition and collection facilities. Simple and multiple inheritance. Implementation of polymorphism. Patterns of functions and classes. Handling of exceptional situations. Classes of input and output streams. The standard class library media program developer. Class library of functionality of Windows. Development of graphical user interfaces. Basic programming, event-driven. Development of DLL-libraries.

**Web technology and web design.** The structure and principles of the Web. Launching client-server technology Web. Protocol HTTP. Custom scripts and applications. Server-side Web applications. JavaScript. Languages Development Scripting Perl, PHP, JSP. Developing applications for CGI-Perl, PHP, JSP. Basics of web applications using PHP. Interfaces Web applications interact with the DBMS. Web services and their description languages. Based on XML. Web content. CMS / CMF. Technology AJAX. Web Design.

**Technology distribution systems and parallel computing.** Organization and management of resource allocation WSRF, GRAM, CONDOR. Grid and database. Grid environment management. File system security. Public key certificate. Grid portal for user access to Grid resources and applications. Organization of parallel calculations using existing PVM, MRI technologies. Parallel computational methods. Construction of parallel

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computer systems conveyor, matrix, multiprocessor. Construction of cluster systems. Means of support of parallel calculations PVM, MRI. Models for remote calling RPC procedures and remote application of RMI methods.

**Systems modeling.** Models of queuing systems. Petri nets. Probabilistic modeling. Simulation. Software simulation. Planning and conducting experiments with models. Action on the simulation results. Simulation and industrial computer systems.

**Operating systems.** Basic concepts, evolution, variety of operating systems. Architecture and operating system resources. Planning and management of processes and threads. Multitasking, the interaction of flows, inter processor interaction. Manage RAM. The organization of memory in protected mode, control memory allocation. The logical and physical organization of file systems. Implementing file systems. Executable files. Manage O devices. Network tools Operating Systems. Interaction with the user in operating systems. Protection in operating systems. Download and administration of operating systems. Multiprocessor and distributed system.

**Technology of the software products creation.** The concept of software development and the problems of complex software. The life cycle and software development processes. International and national standards for developing complex software products. Software development methodologies RUP, MSF, XP, DSDM, RAD. Software architecture, standards describing software architectures. Software design patterns. Automation software development. Software quality metrics, software quality standards. Verification, validation and testing. Standards for testing. Testing and maintenance of software products. Documenting and marketing software..

**System analysis.** Building system models of problem situations. Concepts and patterns of system analysis. Methods of system analysis. System analysis Business process objects computerization. Disclosure of the uncertainties in system analysis problems. Objectives and methods of system analysis multivariate risks. System management of complex objects. Standards documentation system solutions.

**Computer networks.** General principles of the structure of computer networks. Local network. Network architectural solutions. Minutes of the lower level of large networks. General questions of network design. Minutes of medium and high level networking. Controls networks.

**The theory of pattern recognition and classification in artificial intelligence systems.** Basic concepts of pattern recognition theory. The basic definition of science pattern recognition. Clustering. Bayesian approach. Not Bayesian problem. Nyman - Pearson. Minimax problem. Classification of recognition.

**Methods and systems of artificial intelligence.** Fundamental concepts of artificial intelligence. Methods of designing artificial intelligence systems and designing intelligent information control systems and technical automated systems, methods and models of knowledge representation in artificial intelligence systems.

**Design of Information Systems.** Approaches, principles and technologies of design IP. System and inductive approaches to IC design. Data models, process models and their design using Erwin. Standard UML: static and dynamic diagrams. Create reports using RPTS. Designing interfaces of information systems. RAD-methodology and CASE-technology creation and maintenance of IP. Technology RUP. Technology ARIS. Pahnern technology. Reengineering IP

**IT project management.** Basic concepts and methodology for managing IT projects. The life cycle of the product. Requirements management, organization design and resource management, quality, cost and risk of the project. Project Planning. Procedures and project management system. Methodology for functional simulation IDEF0. The methodology describing business processes IDEF3. Models project teams: MSF Microsoft, RUP IBM, CDM Oracle PMI-PMB

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**Technology development ICS.** Definition and classification of information systems. Models of information systems. Basic concepts of information support of information systems. Simulation data. Models databases. Construction of information systems based on distributed databases. Review architectural complex information systems. Software Information Systems

### **Optional components**

#### ***Optional components by specialty***

**Information theory.** Disclosure of the content and practice of information theory as a field of knowledge about the amount of information, signals, their time and frequency characteristics, coding of messages used in the processes of transformation, transmission, reception and storage of information about objects (processes). Formation of the basic provisions of information theory, system of knowledge and practical skills in quantitative evaluation of information, theory of deterministic and random signals, methods of coding and processes of message conversion during transmission and reception.

**Statistical methods, theory flow of events.** Basics of probability theory and statistical methods of information systems. Variation number and statistical distribution. Basic theory of estimation of unknown parameters of distributions. Statistical hypothesis. Checking hypotheses. Correlation theory of random variables. Elements of variance and regression analysis. Information queuing system. Elements of the theory of random processes. Stationary random process. Elements of queuing theory. ISMO flow of events. Mathematical introduction to the theory of Markov chains. Information Network of service.

**Technical communication tools.** General information about the telecommunications system. Generalized system of digital communication systems. The message signals, interference and their mathematical models. Mathematical models circuits. Fundamentals of information theory. Methods and tools for coding messages. Transferring messages in digital system. Obstacles protection for modern telecommunications systems. Principles of multichannel communication and their implementation in analog and digital systems. The efficiency of telecommunications. Elements of design SEZ.

**Management.** The concept and nature of management. Development of management science. Basic theory of managerial decisions. Performance Management. Planning Organization. Organization as a management function. Motivation. Management control. Leadership. Communication in management.

**Economy and Business.** Business Economics. The general management functions and management techniques. Marketing: The marketing system in the enterprise, methods of market research, marketing planning. Strategic management: model, strategy, technology, strategic planning PEST. SWOT. BCG. SNW and others. Financial Management. Business planning: developing a business plan, sources of investment. Accounting and taxation burned. Management Accounting. Management. Prediction of the company. Marketing. Sales management and resources. Logistics. Budgeting and controlling. Management.

**Ethnocultural studies.** Features of the Ukrainian ethnos, basic concepts and definitions of ethnocultural studies, factors of ethnos formation, main cultural and historical world centers and regions, regularities of their functioning and development, proofs of national identity of the Ukrainian people.

**History of Ukrainian statehood.** Development of national self-consciousness of future specialists, acquisition by specialists of skills of work with historical sources and literature, scientific analysis aimed at providing independent comprehension of patterns of

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historical development, development of skills to apply acquired knowledge of history in everyday life, for orientation in social and political life. and events.

**Equipment and technologies in agro-industrial complex.** Use of machinery in agriculture. Agricultural bases responsible for the basing, use and repair of agricultural machinery, as well as for keeping pets, harvesting fodder and market sales on other smaller agricultural sites. Features of development and implementation of innovative agro-engineering technologies in agro-industrial complex. Innovative technologies and new generation equipment for crop production. Innovative technologies and new generation equipment for livestock production. Modern problems and perspective solutions in resource-saving and ecological safety of transport.

**Safety and life.** Acts population in emergency peacetime and wartime. Ways of population protection from damaging factors of accidents, natural disasters and modern weapons of mass destruction. Methods of forecasting of possible radiological, chemical, bacteriological, biological situation arising in case of disaster or accident. Sanitary norms and modes of work.

**Robotics.** Possibilities of different kinematic schemes of robots, functioning of electric drives, possibilities of different types of computer systems, principles of different types of sensors of robotic complexes, principles of functioning of control system, control algorithms for the simplest wheel robot, control algorithms using ready libraries, adjustment of implemented algorithms quality assessment of implemented algorithms.

**Fundamentals of GIS and remote sensing.** The methods of remote sensing of the Earth are based on the registration and further interpretation of the reflected solar radiation from the soil surface, vegetation, water and other objects. The removal of recording devices in the air or near-Earth space allows to obtain a much wider coverage of the territory compared to ground-based research methods. With remote sensing, the spectral range of the survey, spatial accuracy, radiometric accuracy, spatial coverage, efficiency and repeatability of the survey, data cost have a significant impact on the quality and applicability of the obtained data.

**Intelligent systems.** Neural networks. Neural network adaptive resonance theory. Fuzzy sets and fuzzy neural network. Basic concepts of neural networks. The properties of the neural network training. Rosenblatt perceptron. Neural networks counter-proliferation.

**Decisions making theory.** General aspects of decision-making. Binary relations and decision-making. Attitude and expert evaluation. Models and methods of decision-making under conditions multi criteria. Decision making by analytical hierarchy. The concept of utility and rational choice. Models and methods of decision-making under fuzzy information, uncertainty and risk. Models and methods of multi personal decisions. Game theory, strategic and statistical game. Psycholinguistic aspects of decision-making.

**Algorithms and Data Structures.** The term "algorithm". Description of the algorithm. Data types and data structures. Abstract data types. ADT list, queue, stack, trees, graphs. Analysis of algorithms and algorithmic strategies. Sorting algorithms, merge, search. Fundamental algorithms of abstract data structures.

**Microprocessor management system.** Classification and application of microprocessor control systems. Architecture microprocessors. Using MPLAB environment for compiling and debugging programs. Programming microprocessors. Programming in assembler. Using the embedded microprocessor modules in control systems.

**Technology protection.** Methods and devices of protection and security. Security, access and authentication. Models defense. Memory protection. Data encryption. The main directions of modern cryptography. Mechanisms and protocols in PKI Key Management Information System. The main types of attacks, the principles of cryptanalysis. Basics of cryptography. Algorithms of secret and public keys. Authentication protocol. Digital Signatures. Use passwords and access control mechanisms. Questions Security and Firewalls

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**Cross-platform programming.** Definition and properties of the components. Interface specification as a contract. The model links. Strategies for software integration. Design and assembly of components. Marshaling. The distributed architecture of component systems. Component-oriented design. The formal design methods and visual components. Object request brokers. Transaction processing monitors. Features Component Technologies: COM/DCOM/NET, CORBA, Java Beans

**Forecasting methods.** The discipline is aimed at applying the skills of statistical and regression modeling in order to obtain prognostic models in various applied problems of pyrode use. During the course, students will be introduced to approaches to forecasting natural disasters (floods, floods, droughts) and forecasting crop yields. On applied tasks, students will be able to improve their skills in data analysis and programming.

**Identification and modeling of technological objects.** Theoretical and practical training of students, obtaining knowledge on the development and research of mathematical models of agricultural production based on the use of computer technology, research of mathematical model using mathematical package MathCad with the study of possible control channels for this production, use of technological objects to solve feed issues bases, fodder preparation, response of biological objects to external factors, intensification of the branch.

**Automated process control systems.** Basic concepts, terminology and definitions in the field of automated systems and their varieties; study of the classification, composition and structure of the process control system, development of the principles of interaction and interconnection of the object, complex of technical means and man in the ACS, study of methods and means of collecting, converting, transmitting and displaying technological, biological and economic information in the process control system formulation of tasks of automatic control system in APV, acquaintance with principles of design and operation of ACS by objects of agrarian and industrial complex.

**Intellectual data analysis based on artificial intelligence methods** The concept of artificial intelligence. The concept of smart and intelligent problem IS FROM. Methods submission intellectual tasks and methods of finding solutions. Knowledge and knowledge representation model in SSHI. Semantic Grid SS: basic concepts, types, methods, and describe a logical conclusion to the SS. Frames: basic concepts, structure frame. Frame system. Expert Systems EC: purpose and principles of the generalized architecture, classes of problems that are solved by EC. Modern software and tools create SSHI: Visual Prolog. Allegro CLOS, CLIPS, JESS. Languages functional and logic programming.

**Means of multimedia in information technologies.** Basics of the Java language. Basic Java tools. Java AWT GUI. Java Swing GUI. Input output in Java. Internationalization of applications in Java. Collections in Java. Working with DBMS in Java. Programming of application tasks in Java language. Working with Internet protocols in Java. Java network services. Data processing on a Web server using Java

**Programming mobile applications.** Programming for Android using the Android SDK; programming language Java, which will develop for other platforms (Core Java, Java EE, Blackberry , etc.); design , create and work with databases , especially the SQLite; placement app in Google Play;

**Computer Design Technologies.** Basic concepts and methodology for designing complex objects and systems. Systemic structural level computer-aided design of complex objects. Mathematical models of design objects. CAD and CALS-technologies. CASE-technologies. Analysis, verification and optimization of design solutions by means of CAD.

**Modern management theory.** The subject of management theory. Structural and functional components of the control system. Transients and characteristics of the input-output. Model -driven systems. Manageability and observation linear systems. Routh - Hurwitz criteria, Mikhailov, Neykvist. Discrete and digital control system. Mathematical modeling of stochastic systems. Differentiation of random functions. The main criteria

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optimization. Method of variations. Mathematical modeling of fuzzy systems. Design of fuzzy logic -based algorithms. Development of data analysis by fuzzy clustering. Fuzzy Petri Nets.

**Computer systems ecological and economic monitoring.** Architecture of monitoring system. Resources of computer system. Operating system at monitoring tools. Real Time Systems. The core of the operating system. Monolithic, layered and client-server architecture. Services of operating system. The system of priorities and scheduling algorithms. Memory management. The interaction between tasks. Industrial operating systems. The SmartDust concept. TinyOS operating system. Architecture of microprocessor system. The structure of the microprocessor and its programming model. Interrupts and their processing. Programming of interrupts. DOS and BIOS interrupts. Software interrupts. C language functions for interrupts programming. Low-level and high-level programming of systems. Hardware of monitoring systems. Information exchange at monitoring systems and its programming. Industrial interfaces of information exchange. Monitoring system sensors.

**Software of computer-integrated technologies.** Use and application. Basic definitions and concepts. History of ACS development. Computer in automation systems. Block diagram of computer-integrated system. Levels of organization of computer-integrated production.

**Industry Environmental Monitoring.** The purpose of studying the discipline "Intellectual computer monitoring systems" is to format the skills in solving problems that are difficult to formalize. To provide the knowledge on assessing the status and trends in the development of information systems (monitoring); the information technologies for solving management tasks are related to the use of artificial intelligence tools and techniques; the means to develop and to use an intelligent information systems in various applied fields.

The task of the discipline studying is to master the mathematical and algorithmic foundations of intelligent information systems, existing and promising means of data analysis and acquiring the skills of their practical application for solving specific problems in the field of environmental monitoring.

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**Bachelor**  
**Field of Knowledge «Informatics and Computers»**  
**in specialty «COMPUTER ENGINEERING»**  
**Educational-professional program «Computer Engineering»**

Form of Training:	Licensed number of persons:
- Full-time	50
- Part-time	50
Duration of Training	4 years
Credits	240 ECTS
Language of Teaching	Ukrainian
Qualification	Bachelor of Computer Engineering

### **The Concept of training**

Students training in "Computer Engineering" allows graduates in the field of programming and software independently develop and use system and application software, including the development and use of information systems, databases, computer-aided design systems, interactive systems, programs for specialized embedded systems. In the hardware field, bachelor's in computer engineering can develop computer systems at all levels - components, controllers, universal and specialized computer systems, local, global and virtual corporate computer networks and carry out their adjustment and monitoring.

### **Practical training**

Practical training of students in this area is aimed at basic methods and technologies mastering for computer systems hardware and software development, according to global trends in network technologies and the Internet of Things and university's agricultural orientation.

### **Proposed Topics for Bachelor theses**

1. Specialized computer system development that functionally focused on specific problems solving in a particular subject area.
2. IoT systems devices design.
3. Automated information systems hardware and software components Development;
4. Hardware and software Development for computer systems information defense.
5. System software development.
6. Tools Development for computer networks security improving.

**Academic rights of Graduates:** graduates can apply for Master's Degree Specialties and Educational (Educational-professional or Educational-scientific) programs specified in Table 1.2 Section 1.3 this Catalog.

### **Employment of Graduates**

Bachelors of Computer Engineering can work at specialist positions in information technology, programming, system administration, computer network administration, in engineer's role for computer systems and their components design and exploitation.

**Bachelor`s Program and Curriculum  
in Specialty «Computer Engineering»  
Educational-professional program «Computer Engineering»**

Code n/a	Components of the educational and professional program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits ECTS	The final control
1	2	3	4
<b>1. GENERAL TRAINING CYCLE</b>			
<b>Compulsory components EPP</b>			
CC 1	Higher mathematics	11	exam
CC 2	Computer electronics physical basics	6	exam
CC 3	Programming	9	exam
CC 4	Probability Theory and Mathematical Statistics	4	exam
CC 5	The theory of electric and magnetic circuits	5	exam
<b>Total</b>		<b>35</b>	
<b>Compulsory components EPP by decision of the Academic Council of the University</b>			
CC 6	Physical Training	4	test
CC 7	Foreign Language	4	exam
CC 8	Business protocol and communication ethics	5	exam
CC 9	Legal culture of personality	3	test
CC 10	Philosophy	3	exam
CC 11	Economics and business	3	test
CC 12	Information Technologies	8	exam
<b>Total</b>		<b>30</b>	
<b>2. SPECIAL (PROFESSIONAL) TRAINING CYCLE</b>			
<b>Compulsory components EPP</b>			
CC 13	Computer Logic	9	exam
CC 14	Information and coding theory	3	exam
CC 15	Discrete Mathematics	5	exam
CC 16	Computer electronics	5	exam
CC 17	The databases organization	5	exam
CC 18	Computer circuitry	9	exam
CC 19	Computer Architecture	8	exam
CC 20	Digital systems design technologies	5	exam
CC 21	Parallel and distributed computing	3	exam
CC 22	System programming	10	exam
CC 23	Computer networks	10	exam
CC 24	Computer systems	3	exam
CC 25	Information protecting in computer systems	5	exam
CC 26	System software	3	exam
CC 27	System analysis	5	exam
CC 28	Object-oriented programming	3	exam
CC 29	Technical communication tools	4	exam
CC 30	Practical training in programing and information technologies	5	Test
CC 31	Practical training in digital device design	5	Test
CC 32	Internship	5	test
CC 33	Preparation and defense of bachelor thesis	5	Thesis defense
<b>Total</b>		<b>115</b>	
<b>The total amount of Compulsory components</b>		<b>180</b>	
<b>Optional components EPP</b>			
<b>Optional components by specialty</b>			
OS 1.1	Management	5	exam
OS 1.2	Equipment and technologies in agro-industrial complex	5	exam
OS 1.3	Typical technological objects of agricultural production	5	exam
OS 2.1	Life safety and labor protection basics	5	test
OS 2.2	Modern means of software project management	5	test
OS 3.1	Software engineering	5	exam
OS 3.2	Computer Graphics	5	exam

**CURRICULA AND PROGRAMS OF BACHELOR DEGREE**

OS 3.3	Means of multimedia in information technologies (cs)	5	exam
OS 3.4	Human interaction interfaces	5	exam
OS 4.1	Cross-platform programming	5	exam
OS 4.2	Specialized computers	5	exam
OS 4.3	Microcontroller Systems	5	exam
OS 4.4	WEB technology and WEB design	5	exam
OS 5.1	The theory of pattern recognition	5	exam
OS 5.2	Modern tools for multithreading implementation	5	exam
OS 5.3	WEB programming basics	5	exam
OS 5.4	Modern server systems	5	exam
OS 6.1	Devices for communication with object	4	exam
OS 6.2	Intellectual systems	4	exam
OS 6.3	Microprocessor control system	4	exam
OS 7.1	Hardware and software of GIS	5	exam
OS 7.2	Mobile computer systems	5	exam
OS 7.3	Programming in modern operating systems environment	5	exam
OS 7.4	Computer networks administration	5	exam
OS 7.5	Data-storage systems and Virtualization	5	exam
OS 7.6	Modern control theory	5	exam
<b>Total</b>		<b>54</b>	
<b><i>Optional components by Student's Choice</i></b>			
OS 2.1	Elective discipline 1 from University's Select-list	3	exam
OS 2.2	Elective discipline 2 from University's Select-list	3	exam
<b>The total amount of Optional components</b>		<b>60</b>	
<b>THE TOTAL AMOUNT OF EPP (without military training)</b>		<b>240</b>	

## Annotations of Components in the curriculum

### 1. GENERAL TRAINING CYCLE

#### Compulsory components

**Higher mathematics.** Complex numbers. Elementary functions. Continuity of functions. Derivative and differential functions. The research of functions. Integrals. Functions of several variables. Extreme functions. Series. Differential Equations. Ordinary differential equations of the first order. Cauchy problem. Differential equations of higher order. Systems of linear differential equations. Linear algebra. Vector algebra. Analytic geometry. Systems of linear algebraic equations. Linear spaces and linear operators.

**Computer electronics physical basics.** The principles of computer systems electronic components operation, problems of computer speed, new physical principles for memory elements creating and signal transmission theory are presented.

**Programming.** Programming Fundamentals. Programming Paradigms. Algorithms and problem solving. The concept of the algorithm and typical algorithmic programming structure. Fundamental data structures. Structured programming. Procedure-oriented programming. Syntactic and semantic structures of programming languages. Recursion. Paradigms of object-oriented programming. Object-oriented technologies. Algorithms and Data Structures. Programming of dynamic data structures. Exceptions handling.

**The Theory of electric and magnetic circuits (electrical engineering).** The theory of linear DC circuits. Basic laws of electrical circuits. Methods of the electrical circuit analysis. Linear circuits of sinusoidal current. Properties and analysis of AC networks. Resonant effects and frequency characteristics. Basic theory of four-pole. Three-phase networks. Non-sinusoidal transients in linear electric circuits. Electric circuits of non-

sinusoidal periodic current. Transients in linear electric circuits. Electric circuits with distributed parameters and elements of nonlinear circuits theory. Transients in circuits with distributed parameters. General characteristics of nonlinear circuits and methods of its calculation.

**Probability Theory and Mathematical Statistics.** Probability theory and mathematical statistics. Random events and its analysis. Random variables. Systems of random variables functions. Mathematical statistics and processing of measurement results. Verification of statistical hypotheses. Applied methods of mathematical statistics. Random processes. Fundamentals of information theory.

### **Compulsory components by decision of the Academic Council of the University**

Annotations of the disciplines "Legal culture of personality", "Business protocol and ethics of communication", "Foreign language", "Philosophy", "Physical training", "Economics and business" see section 2.1.

**Information technology.** Subject, methods and objectives of discipline, the theoretical foundations of computer science, system software of information processes, program tools for structured documents creating, network technologies, the use of Internet in the economics. Web-design fundamentals, computer security and information protection organization, software work with databases and repository software, office programming fundamentals, expert and training systems, the prospects of information technologies development.

## **2. SPECIAL (PROFESSIONAL) TRAINING CYCLE**

### **Compulsory components**

**Computer Logic.** Basic terms and definitions of computer logic. Information basics of computer technology. Algebra of switching functions. Methods of switching functions minimization. Synthesis of combinational circuits in different element bases. Basic theory of digital machines with memory. Synthesis of digital machines with memory. Analysis of logic and dynamic processes in digital machines. Typical digital circuits of computers. Introduction to the theory of number system notation. Forms of representation and coding of numbers in computers. Fixed-point and floating-point operations. Synthesis of operating machines.

**Information and coding theory.** Fundamental methods of information theory and coding, which are widely used in modern computer information technology in various fields of human activity, are studied. Basic methods of estimating the amount of information, modern coding algorithms for message sources and data transmission over communication channels, the principles of noise-tolerant codes construction and their use in modern computer information systems.

**Discrete Mathematics.** Set theory and relations. Algebra. The basic operations of algebra of sets. Graph theory. The theory of functions. Combinatorics. Trees. Coding theory.

**Computer electronics.** Basics of analogue and pulse electronic devices. Basic principles and definition of computer electronics. Diodes. Bipolar and unipolar transistors. Linear and differential amplifiers. Devices of digital electronics. Devices based on flip-flops. Generating devices. Semiconductor memory devices. Logic devices with programmable characteristics.

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**The databases organization.** Information systems and database management systems. The concept of information and information systems. Classification of information systems. Architecture of Information System. Database functions. Data models. The hierarchical and network data models. The relational model and its characteristics. The structure of a relational data. Database tables. Potential, primary and external keys. The integrity of the relational data. Operations of the relational algebra and relational calculus. Query language for relational databases. SQL Concepts. Requests for data reading. Aggregate functions. Queries for grouping. Complex queries. Requests for updates. The concept of data indexation. Methods of indexes organization. The internal database programming language. Client/server database technologies. Architecture of client/server database. The concept of open systems. Open communication with the database. ODBC. Access technologies Access BDE, ADO, ADO.Net. JDBC. Transactions. Administration. ACID properties of transactions. Problems of parallelism. Transactions isolation levels. Transaction management in programming languages. Distributed database. The logical database design. Physical database design. Hardware and software components. Database security.

**Computer circuitry.** Circuitry of standard units and blocks. Fundamentals of computer circuitry. Typical units and blocks of digital technologies. Flip-flops. Registers. Counters. Binary adders. Decoders. Multiplexers. Encoders. Memory devices. RAM. Register and buffer memory. ROM. Circuitry of arithmetic devices. Varieties of adders. Arithmetic devices structures for different purposes. Varieties and implementation of information channels. Circuits based on LSI and VLSI systems. Circuitry of FPGA.

**Computer Architecture.** Von Neumann architecture. Hierarchical principle of hardware and software construction of computers. Instruction sets. The structure and formats of instructions and stages of its execution. Program control organization of program execution. Purpose, classification and characteristics of processors. Architecture of arithmetic-logic devices with distributed and concentrated logic. Features of processor architecture to processing of the numbers with fixed and floating point. Functions and general organization of control in computers. Types of control (centralized, distributed, synchronous, asynchronous, combined control). Architecture of control units with hard-wired logic and flexible logic. Multi-level memory of computers (scratch-pad, operational, buffer (cache) memory). The organization of pages and segments in virtual memory. Interaction of all memory levels. Multiprogram modes of processor functioning. Protect of memory sections. Modes of processor functioning with external devices. The program data sharing, interrupt processing, organizing of direct memory access. Architecture of data input-output facilities. Features Architecture of microprocessor sets of various purpose (single-chip microprocessor, sectional microprocessors, microcontrollers). Areas of microprocessor systems architecture development.

**Digital systems design technologies.** The methodology of computer systems designing. General characteristics of computer systems CAD. System design. Operational design. Functional design. The technical design. Systems for computer systems design. Verilog and VHDL hardware description languages. FPGA / PLA technological base.

**Parallel and distributed computing.** Parallel and distributed computing foundations. The structures of parallel and distributed computer systems. Parallel algorithms: representation, construction and analysis. Parallel algorithms for linear algebra problems. The processes (streams). Process state. Interaction processes through shared variables. The task of synchronization and mutual exclusions and facilities of its solution: atomic variables, semaphores, mutex, events, critical sections, monitors. The interaction of processes by link messages. Primitives Send/Receive. Rendezvous mechanism. Models of parallel computation. Parallel programming languages. Library of parallel programming. Examples: MPI, PVM, OpenMP, Win32. Programming for multicore systems. Distributed

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computing. Client-server model. Sockets. Remote methods. Programming for cluster systems.

**System programming.** Assembler language as efficient programming facility. Architecture and instruction set of basic processor. Programming of subroutines in assembler language. Technologies of development of multimodule system programs. Usage of software libraries. Processing of data structures in system programs. Programming of tables and graphs processing in system programs. Programming of conversions in programs of translation. Basic concepts of the theory of grammars. Basic programming of lexical and syntactic analysis. Types of semantic processing in translators. Construction of elements of control programs.

**Computer networks.** Introduction to network technologies. Generalized structure of computer networks. Basic network topology. System network architecture. Open systems interconnection basic reference model. Communication systems of computer networks. Local networks. Global networks. Wireless and mobile networks. Protocols. Network operating systems. System and application software of networks. Planning of computer networks. Control of computer networks. Administration of computer networks. Security of computer networks.

**Computer systems.** Subject, tasks and methods of the theory of computer system (CS). Computational processes in CS and their models. Planning of work in the CS. CS metrics: productivity, efficiency, reliability. Structural organization of CS of different generations. Classification of parallel CS. CS with fixed communication system. CS with reconfigurable communication system. Memory organization in CS. Organization of data input-output in CS. Organization of data transfer in CS. Computer systems of SISD class. Computer systems of SIMD class: matrix, vector, associative. Computer systems of MISD class: conveyor computer systems. CS of MIMD class: multiprocessor, multicomputer systems with heterogeneous access to RAM, cluster systems, GRID systems. Computer systems with non-conventional architectures. CS interfaces. Basic concepts of fault-tolerant CS. Structural aspects of fault-tolerant CS construction.

**Information protecting in computer systems.** Fundamentals of information security in computer systems. Conceptual models of information security systems organization in CS. Access control and distinction of access rights to information. Symmetric schemes, keys and encryption systems. Asymmetric schemes, keys and encryption systems. Authenticity confirmation of messages and users. Standards and criteria for the certification of information security facilities.

**System software.** System software architecture. Structural organization and method of resource control in computer systems (CS). Fundamentals of construction and design of system software in CS. Methodology of development of dynamic and static task scheduling and dispatching in CS. The structures and functions of the OS. Task control. Memory control. Data control. IO devices control. Interrupts. Processes control. Modern operating systems. Resource control in distributed systems, GRID and CLOUD systems.

**System analysis.** System models creation of problem situations. Concepts and patterns of system analysis. Methods of system analysis. System analysis of Business process computerization objects. Disclosure of the indeterminacies in system analysis problems. Objectives and methods of system analysis multifactorial risks. System management of complex objects. Standards of system solutions documentation.

**Object-oriented programming.** Paradigms of object-oriented programming (OOP). The concept of programming technologies. The concept of objects, classes, and their relationships. Fundamentals of object-oriented programming language. Data Abstraction and Encapsulation. Constructors, destructors of classes. Static constant class members, friendly functions and classes. Composition and collection facilities. Simple and multiple inheritance. Implementation of polymorphism. Patterns of functions and classes. Handling of exceptional situations. Classes of input-output streams. The standard classes libraries

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of program developer environment. Development of graphical user interfaces. Basic event-driven programming.

**Technical communication tools.** General information about the telecommunications system. Generalized system of digital communication systems. The message signals, interference and their mathematical models. Mathematical models circuits. Fundamentals of information theory. Methods and tools for coding messages. Transferring messages in digital system. Obstacles protection for modern telecommunications systems. Principles of multichannel communication and their implementation in analog and digital systems. The efficiency of telecommunications. Elements of design SEZ.

### **Optional components**

#### ***Optional components by specialty***

**Management.** The concept and nature of management. Development of management science. Basic theory of managerial decisions. Performance Management. Planning Organization. Organization as a management function. Motivation. Management control. Leadership. Communication in management.

**Equipment and technologies in agro-industrial complex.** Use of machinery in agriculture. Agricultural bases responsible for the basing, use and repair of agricultural machinery, as well as for keeping pets, harvesting fodder and market sales on other smaller agricultural sites. Features of development and implementation of innovative agro-engineering technologies in agro-industrial complex. Innovative technologies and new generation equipment for crop production. Innovative technologies and new generation equipment for livestock production. Modern problems and perspective solutions in resource-saving and ecological safety of transport.

**Life safety and labor protection basics.** Acts population in emergency peacetime and wartime. Ways of population protection from damaging factors of accidents, natural disasters and modern weapons of mass destruction. Methods of forecasting of possible radiological, chemical, bacteriological, biological situation arising in case of disaster or accident. Sanitary norms and modes of work

**Software engineering.** Basic concepts and problems of software development. The life cycle of software; international standards of software lifecycle. Models and methodologies of software development. Analysis, specification, verification and validation of software requirements. Designing of software architecture. Patterns of software design. Designing of the user interface. Methodology of modeling SADT, IDEF, DFD, ELM, OOAD. Modeling languages. Behavioral modeling. Diagrams of states, activity, interaction, sequence, time. Structural modeling. Functional modeling. Simulation of data streams. Means of simulation automation. The tasks of project management. Risk management software project. Control and monitoring of the project state. Organization of the project team. The roles and areas of responsibility team members. The quality of the software. Verification and validation of software. Software Testing. The Code optimization and refactoring. Aspects of software productivity. Integrated software development environment. Project Management System. Documents version and architectural features control system. Automation tools of projects assembly. Tools of testing process automation.

**Computer Graphics.** Raster and vector graphics. Modern graphics systems. Use of graphics API. Fundamental techniques in graphics. Two-dimensional and three-dimensional clipping. Algorithms for lines generating. Coordinate transformations. Basic theory of transformations. Euclidean and affine transformations. Simple color models. The parallel and central projection. Approximation of curves and surfaces by splines. Fractal

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curves and surfaces. Polygonal representation of three-dimensional objects. Visualization and Computer Animation.

**Human interaction interfaces.** The discipline studies the issues of ergonomic construction of interfaces of interactive human-machine systems and physical and psychological factors influence for their design process.

**Cross-platform programming.** Definition and properties of the components. Interface specification as a contract. The model links. Strategies for software integration. Design and assembly of components. Marshaling. The distributed architecture of component systems. Component-oriented design. The formal design methods and visual components. Object request brokers. Transaction processing monitors. Features of Component Technologies: COM/DCOM/NET, CORBA, Java Beans. The main tools of language Java. Graphic interface AWT of language Java. Graphic interface Swing of language Java. Internationalization of applications in Java. Collections in Java. Working with database in Java. Programming of Java applications. Working with Internet protocols in Java. Network Services in Java.

**Specialized computers.** Specialized computer systems (SCS) architecture. SCS design. Technologies of SCS design. Features of SCS structures. Specialized structures of microprocessors with control features. Instruction set of basic processor. Memory organization. Software organization of SCS. Organization of communication with object. The subsystem of digital and analogue data input-output. Software testing technologies of SCS.

**Microcontroller Systems.** Microcontroller (MC) architecture. Instruction set of basic MC. Features of memory organization. Addressing methods. Events processing. General organization of interruptions system. Timers of MC. Real time systems. The subsystem of analogue data input-output. Indication subsystem. Serial port. Synchronous mode of data transferring/receiving. Features of industrial MC networks. Features of the MC software testing. MC emulators. Arithmetic operations programming. Bit operations programming. Development of MC systems.

**Web technology and web design.** The structure and principles of the Web. Introduction to client-server technology Web. Protocol HTTP. Client scripts and applications. Server Web-applications. JavaScripts. Languages of Scripting Development Perl, PHP, JSP. Developing of CGI-applications on Perl, PHP, JSP. Basics of Web-applications using PHP. Interaction interfaces of Web-applications with the data bases. Web services and their description languages. Fundamentals of XML. Web content development. CMS/CMF. Technology AJAX. Web Design.

**The theory of pattern recognition.** The theory of pattern recognition and classification in artificial intelligence systems. Basic concepts of pattern recognition theory. The basic definition of science pattern recognition. Clustering. Bayesian approach. Not Bayesian problem. Nyman -Pearson. Minimax problem. Classification of recognition.

**Modern tools for multithreading implementation.** As an outcome of studying the discipline, the students will be able to create highly efficient multi-threaded programs designed to run on modern software and hardware platforms. The study of the discipline requires deep basic knowledge in the field of systems programming, discrete mathematics, mathematical logic, graph theory, dynamic data structures, the theory of algorithms. When studying the discipline, students will acquire the skills to create multi-threaded applications using current techniques, tools and approaches. Students will learn to effectively use the computing power of modern multi-core platforms.

**WEB programming basics.** The discipline highlights the data and information presentation in global networks, that based on markup languages. These processes are analyzed from organization of network services and interfaces point of view. Features and tools for working with the xml language are considered.

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**Modern server systems.** While studying the discipline, students get acquainted with Windows and Linux server operating systems. Configure basic services by type such as DHCP, DNS, AD, TFTP and SYSLog and others. When studying the discipline, students will acquire skills to run web servers and ensure their security. Setting up a simple firewall and creating login rules for various users. By studying the discipline, students will acquire skills in server administration, automation and the process of integration into large cluster systems. Get acquainted with the stages of selection, launch, installation of the OS.

**Devices for communication with object.** Principles of sensors. Organization of signal converters. Serial information interfaces. Specialized devices for transmitting information at the physical level. Conversion of signals for information transmission using a serial interface. Transmission of information by current. Information transmission systems in computer systems. Communication channels.

**Intellectual systems.** Modeling knowledge in intelligent systems. Cash and logical systems of knowledge bases. Experts, ontological and many agent systems.

**Microprocessor control system.** Classification and application of microprocessor control systems. Architecture microprocessors. Using MPLAB environment for compiling and debugging programs. Programming microprocessors. Programming in assembler. Using the embedded microprocessor modules in control systems.

**Hardware and software of GIS.** Organization and operation principles of geoinformational systems (GIS). Architecture of GIS. The data in geoinformational systems. Data representation. Hardware of GIS. The organization of real time GIS. Objects properties in GIS. Mathematical models of information channels. Application of GIS. Software of GIS. Data analysis in GIS. Mapmetric operations in GIS. Spatial analysis in GIS. Applied aspects of geo-data analysis.

**Mobile computer systems.** Architecture of Mobile Computer Systems (CS). Hardware of mobile CS. Software of mobile CS. Programming of mobile CS. Programming in Android using the Android SDK. Databases, features SQLite.

**Programming in modern operating systems environment.** Platform. NET and its application. Basic concepts of programming language C#. The semantics of the C# basic structures. Objects and classes. The concept of polymorphism and its implementation in C#. Polymorphic methods. Advanced capabilities of programming language C#. The typical structure of the OS. Structure and functions of kernel components. Instruction interpreter. The syntax and semantics of the command interpreter language. The structure of the program (script). Creating a physical file system. Virtual file systems. System files containing information on the mounted file systems. Physical and logical models of file system. Categories of OS users. The algorithms of checking the access rights to system resources. User accounts. File types and their features as file system objects. Program functions of creation and access to files. The concept of process. Process creating. The process life cycle. Process priorities. Demons as special processes. The need for interaction between different processes. Information interaction and control interaction. Processes sync. Trends of UNIX systems.

**Computer networks administration.** Construction and administration of computer networks hardware part. Types and applications of active and passive network equipment. Choosing equipment based on the needs of a specific network, developing of network structure for a given network technology. Assessment of network performance.

**Data-storage systems and Virtualization.** While studying the discipline, students will learn what virtualization is, why it is needed, what hardware resources are needed for deployment to implement it. Get acquainted with hardware hypervisors such as: ESXi, VMWARE, PROXMOX. When studying the discipline, students will acquire the skills to start creating virtual machines, connecting them to each other. Deployment of cluster resources, transfer of large amounts of data to cloud resources. Gain skills to implement add-ons to automate the work of the system administrator.

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**Modern control theory.** The subject of management theory. Structural and functional components of the control system. Transients and characteristics of the input-output. Model -driven systems. Manageability and observation linear systems. Routh - Hurwitz criteria, Mikhailov, Neykvist. Discrete and digital control system. Mathematical modeling of stochastic systems. Differentiation of random functions. The main criteria optimization. Method of variations. Mathematical modeling of fuzzy systems. Design of fuzzy logic -based algorithms. Development of data analysis by fuzzy clustering. Fuzzy Petri Nets.

**Bachelor**  
**Field of Knowledge "Information Technologies"**  
**in Specialty "CYBERSECURITY"**  
**Educational-professional program «Cybersecurity»**

Form of Training:	Licensed number of persons:
– Full-time	50
– Part-time	50
Duration of Training	4 years
Credits ECTS	240
Language of Teaching	Ukrainian
Qualification	Information security officer

### **Concept of training**

The educational process of specialists training in the sphere of cybersecurity allows future professional to be grown up with the skill to be able to dynamically combine skills, knowledge, communicational skills and abilities with the individual work with responsibility during resolving the tasks and answering the problem questions in the sphere of informational security; forming the profound theoretical and practical background in the form of skills and knowledge to establish and grant the informational security on the objects of informational activities. The objects of the professional activities of graduates are the informatization objects, including computational, automated, telecommunication, informational, info-analytical, info-telecommunication systems, informational resources and technologies; technologies for granting the informational security; processes for control of informational and/or cybersecurity of objects to be protected.

### **Practical training**

Practical training of students in the sphere of named specialty is aimed at mastering the basic methods and technologies for information security computer systems hardware and software developing.

### **Proposed Topics for Bachelor theses**

1. Development and organization of specialized computer system informational security facilities, functionally aimed at domain-specific tasks resolving.
2. Designing of systems for monitoring the unauthorized activities taking place in computer systems.
3. Development of system software for granting the information security in computer systems.
4. Development of hardware and software facilities for information security in computer systems.
5. Development of the facilities for fostering computer networks safety.

**Academic rights of Graduates:** graduates can apply for Master Degree Specialties and Educational (Educational-professional or Educational-scientific) programs specified in Table 1.2 of Section 1.3 of this Prospect.

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## **Employment of Graduates**

In accordance with the current version of the National Classifier of Ukraine: the Occupational Classifier (DK 003: 2010) and the International Standard Classification of Occupations 2008 (ISCO-08), a graduate with the "Information Security Officer" professional qualification can be employed at enterprises and institutions of any ownership form, which work in the sphere of IT technologies, information-communication and telecommunication sectors.

Cybersecurity officers may hold the following primary positions: Software Engineer / QA Engineer; administrator of computer systems and networks; administrator of information and cybersecurity; safety auditor of information and communication systems; developer of information security facilities; engineer of information technical security service, etc.

**Bachelor`s Program and Curriculum  
in Specialty «Cybersecurity»  
Educational-professional program «Cybersecurity»**

Code n/a	Components of the educational and professional program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits ECTS	The final control
1	2	3	4
<b>1. GENERAL TRAINING CYCLE</b>			
<b>Compulsory components EPP</b>			
CC 1	Higher mathematics	11	exam
CC 2	Physical fundamentals of computer electronics	6	exam
CC 3	Programming	10	exam
CC 4	Information security risks theory	4	exam
CC 5	National information security	8	exam
CC 6	Information and coding theory	4	exam
<b>Compulsory components EPP by decision of the Academic Council of the University</b>			
CCU 1	Legal culture of personality	3	exam
CCU 2	Business protocol and ethics of communication	5	exam
CCU 3	Foreign language	8	exam
CCU 4	Philosophy	4	exam
CCU 5	Economics and business	4	exam
CCU 6	Information technologies	8	exam
CCU 7	Physical training	4	credit
<b>2. SPECIAL (PROFESSIONAL) TRAINING CYCLE</b>			
<b>Compulsory components EPP</b>			
CC 7	Computer Logic	10	exam
CC 8	Methods and means of information security	5	exam
CC 9	Integrated information security systems	4	exam
CC 10	Organizational support for information security	6	exam
CC 11	Component base and circuitry in information security systems	10	exam
CC 12	Computer systems	7	exam
CC 13	Information security in information and communication systems	4	exam
CC 14	Cryptographic and steganographic information security fundamentals	4	exam
CC 15	System programming	7	exam
CC 16	Computer networks	6	exam
CC 17	Wireless, mobile and cloud technologies security	4	exam
CC 18	Information security in computer systems	5	exam
CC 19	Cryptanalysis fundamentals	5	exam
CC 20	Information technical protection fundamentals	4	exam
CC 21	Safe programming technologies	4	exam
CC 22	Programming and information technologies educational training	5	credit
CC 23	Cybersecurity system design educational training	5	credit
CC 24	Practical training	5	credit
CC 25	Preparation and defense of bachelor thesis	5	thesis defense
<b>The total amount of Compulsory components</b>		<b>180</b>	
<b>Optional components EPP</b>			
<b>Optional components by specialty</b>			
OB 1.1	Management	5	credit
OB 1.2	Technics and technologies in AIC	5	credit
OB 1.3	Typical technological objects of agricultural production	5	credit
OB 1.4	Life safety and labor protection basics	5	credit
OB 1.5	Internet of Things fundamentals	5	exam
OB 1.6	Discrete mathematics	5	exam
OB 1.7	Information and cybersecurity standards	5	exam
OB 1.8	Fundamentals of forecasting and modeling in social domain	5	exam

**CURRICULA AND PROGRAMS OF BACHELOR DEGREE**

OB 1.9	Applied aspects of information security systems building	5	exam
OB 1.10	Wireless and mobile networks security and audit	5	exam
OB 1.11	Parallel and distributed computing	5	exam
OB 1.12	Access control	5	exam
OB 1.13	System analysis	5	exam
OB 1.14	Computer electronics	5	exam
OB 1.15	Project management of information security systems development	5	exam
OB 1.16	Licensing and certification of information security tools	5	exam
OB 1.17	IT systems operation and maintenance security	5	exam
OB 1.18	System software	5	exam
OB 1.19	Information security audit fundamentals	5	exam
OB 1.20	Threat and attack monitoring systems	5	exam
OB 1.21	Cross-platform programming	5	exam
OB 1.22	Information and psychological confrontation	5	exam
OB 1.23	Applications development and maintenance security	5	exam
OB 1.24	Information security incidents investigation	5	exam
OB 1.25	Web-content management	5	exam
OB 1.26	Information security products and services	5	exam
OB 1.27	Programming in modern OS environment	5	exam
OB 1.28	Computer networks administration	5	exam
<b>Total</b>		<b>54</b>	
<b>Optional components by Student's Choice</b>			
OS 1	Optional discipline 1	3	exam
OS 2	Optional discipline 2	3	exam
<b>Total</b>		<b>6</b>	
<b>The total amount of Optional components</b>		<b>60</b>	
<b>3. OTHER TYPES OF TRAINING</b>			
	Programming and information technologies educational training	5	
	Cybersecurity system design educational training	5	
	Practical training	5	
	Preparation and defense of bachelor thesis	5	
<b>THE TOTAL AMOUNT OF EPP (without military training)</b>		<b>240</b>	

**Annotations of Components in the curriculum**

**1. GENERAL TRAINING CYCLE**

**Compulsory components**

**Higher mathematics (parts 1 and 2).** The following topics are studied: Mathematical analysis. Complex numbers. Elementary functions. Continuity of functions. Derivative and differential functions. Functions analysis. Integrals. Functions of several variables. Function extreme. Series. Differential Equations. Ordinary differential equations of the first order. Cauchy problem. Linear algebra. Vector algebra. Analytic geometry. Systems of linear algebraic equations. Linear spaces and linear operators.

**Physical fundamentals of computer electronics.** The following topics are studied: computer performance problems, novel physical principles of memory elements creation. The following approach is analyzed: the computing machine is considered as the layered hierarchical structure, where each layer is devoted to certain function.

**Programming – part 1.** In the first part of the “Programming” course the following topics are covered: Main concepts and problems of software development. Software life cycle; international standards of software life cycle. Models and methodologies of software development. Analysis, specification, verification and validation of the requirements to the software. Designing of software architecture. Software design patterns. Designing of user interface. SADT, IDEF, DFD, ELM, OOAD modeling methodologies. Modeling languages. Behavioral modeling. State diagrams, activity diagrams, sequence diagrams, time diagrams. Structure modeling. Functional modeling. Data flows modeling.

**Programming – part 2.** In the second part of the “Programming” course the following topics are covered: Means of modeling automation. Project management tasks. Software project risks management. Control and monitoring of project status. Project team work management. Team members’ roles and roles and spheres of responsibility. Software quality; software quality standards. Software verification and validation. Software testing. Code optimization and refactoring. Software performance aspects. Integrated software development environments. Project management systems. Documents version control systems, architectural peculiarities. Instruments for project management automation. Instruments for testing processes automation.

**Information security risks theory.** Violation of the basic properties of information can be a serious threat to organizations at present. It is harder to control the information and it is exposed to a large number of threats and vulnerabilities, including computer fraud, espionage, sabotage, vandalism, fires or floods. Information resources, like material ones, are also characterized with quality and quantity, cost and price. Risk assessment is an important part of any information security process. It is used to determine the extent of threats to the security of information and the likelihood of a threat. The goal of "Information security risks theory" discipline is to study the process of risk assessment and assess the probability and potential damage from the identified threats, as well as develop the models for assessing the individual risk level of each information asset.

**National information security.** Information security is one of the essential components of the national security of the country. The discipline provides the methods, techniques, means, as well as the channels for the implementation of threats to national interests at the information level. The basic methods and means of timely detection, prevention and neutralization of threats for state information security are also studied. The goal of studying the "National information security" discipline is the formation of knowledge about the theoretical foundations of information security, especially the provision of information security of the state, the rules of the relation of information to state secrets, confidential information that is the property of the state, non-state confidential and open information that needs protection, ways of building information security systems.

**Information and coding theory.** Fundamental methods of information theory and coding, which are widely used in modern computer information technology in various fields of human activity, are studied. Basic methods of estimating the amount of information, modern coding algorithms for message sources and data transmission over communication channels, the principles of noise-tolerant codes construction and their use in modern computer information systems.

### **Compulsory components by decision of the Academic Council of the University**

Annotations of the components "Legal culture of personality", "Business protocol and ethics of communication", "Foreign language", "Philosophy", "Economics and business", "Physical training" see section 2.1.

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**Information technologies.** The subject, methods and tasks of the discipline, theoretical fundamentals of informatics, system software for information processes, software tools for work with structured documents, network technologies, Internet usage in the economy, Web design fundamentals, organization of computer and information security, software tools for work with databases and data stores, office programming fundamentals, expert and training systems, information technology development prospects.

## 2. SPECIAL (PROFESSIONAL) TRAINING CYCLE

### Compulsory components

**Computer logic – part 1.** In the first part of "Computer Logic" course the following topics are considered: Key points and definitions of computer logic. Information basics of computer technics, for the tasks of information security and cybersecurity in particular. Switching functions algebra. Methods for switching functions minimization. Combinational schemes synthesis in various elemental bases. Fundamentals of the theory of digital automata with memory.

**Computer logic – part 2.** The second part of "Computer Logic" course deals with the following topics: Methods of digital devices with memory synthesis. Analysis of logic circuits and dynamic processes in digital automata. Typical digital circuits of computers. Introduction to the theory of numerical systems. Forms of numbers representation and encoding in computers. Fixed-point operations. Floating point operations. Operational automata synthesis. Digital automata as the basis for building the up-to-date information security and cybersecurity digital systems.

**Methods and means of information security.** Getting started with the main physical principles, methods and means of information security and search for the equipment devoted to information obtaining. Study the methods and means of unauthorized obtaining of information, as well as the creation of counteraction to the protection of information through the channels where it is possible to lose the information.

**Integrated information security systems.** Study of organizational and engineering-technical activities aimed at protecting information from disclosure, leakage and unauthorized access. Introduction to basic organizational activities for integrated information security systems, as well as engineering and technical activities. Learning the functional capabilities and methods of building integrated information security systems, mastering the necessary techniques and practical skills when configuring modern network equipment.

**Organizational support for information security.** The role of organizational security of information in the system of security measures is determined by the timeliness and correctness of the management decisions taken, methods and techniques of information security on the basis of valid normative and methodological documents. Organizational methods of security include organizational, technical and legal activities, as well as include the following principles of information security: a scientific approach to the organization of information security; security planning; management of the security system; continuity of the information security process; the minimum sufficiency of providing the security; systematic approach to the organization and design of systems and methods of information security; integrated approach to information security organization; compliance with the level of protection of the value of information; security flexibility; multi-zonal security, which implies the placement of information sources in the areas with a controlled level of security; restriction of the number of persons that are allowed to get the access to secure information; personal responsibility of personnel for the maintenance of trusted information.

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**Component base and circuitry in information security systems - part 1.** The following topics are considered: Schematic techniques of typical nodes and blocks. Fundamentals of computer circuitry. Typical nodes and blocks of digital technics. Triggers. Registers. Counters. Binary adders. Decoders. Multiplexers. Encoders. Memory devices. Random access memory. Register and buffer memory. Permanent memory. Circuitry of arithmetic devices. Adders variations. Structures of arithmetic devices of different function.

**Component base and circuitry in information security systems - part 2.** The following topics are considered: Variations and implementation of information transmission channels, protected channels in particular. Schematics of information security systems on Large-scale integrated circuits and Very large-scale integrated circuits.

**Computer systems.** The discipline is devoted to consideration of the following issues: Structure, principles of creation and classification of computer systems (COP). Subject, tasks and methods of the theory of the COP. Computational processes in the COP and their models. Planning work in the COP. Metrics of the CS: productivity, efficiency, reliability. The structural organization of the COP of different generations. Classification of parallel COP. COP with a fixed tangle system. COP with reconfigured suture system. Organization of memory in the COP. Organization of I / O data in the COP. Organization of data transmission in the COP. KS class SISD. KS class SIMD: matrix, vector, associative. MISD Class Console: Conveyor Computer Systems. KI class MIMD: multiprocessor, multicomputer, systems with heterogeneous access to RAM, cluster systems, GRID systems. Computer systems with unconventional architecture. Interfaces of the COP. Basic concepts of fault-tolerance COP. Structural aspects of building a fault-tolerant COP. The place of computer systems in integrated design, production and operation systems. Communication of computer systems with other automated systems. Organization and methodology in the structure of modern software and hardware complexes, in particular related to the protection of information and cybersecurity. Examples of modern design and engineering systems. The structure of engineering analysis systems for the protection of information and cyber security. Types of computer systems to protect information and provide cyber security of objects of informatization.

**Information security in information and communication systems.** The discipline is the theoretical basis of the amount of knowledge and skills that form the profile of a specialist in the field of cybersecurity. On the basis of acquired knowledge and skills, a specialist will be able to solve professional problems based on modern technologies and methods of information security in modern information and communication systems and networks. The purpose of teaching the discipline is to disclose the modern methods of information security in computer systems and networks and familiarization with the peculiarities of hardware and software implementations of these methods. The discipline involves the study of the following constituents: types of information threats in computer systems and networks; basic security protocols; principles of security systems operation; main means of software and hardware protection of information in computer systems and networks; methods of unauthorized information retrieval and deliberate damage of information and means to counter these attempts.

**Cryptographic and steganographic information security fundamentals.** The discipline introduces students to classical and modern symmetric cryptographic systems, open source cryptography, various cryptographic protocols and their applications, as well as new promising directions for the development of cryptology. The discipline aims to give students the knowledge in the field of theoretical cryptography and steganography. Discipline introduces the main principles of the work of cryptographers, mathematical models of information sources. Specific types of encryption algorithms and cryptographic transformations are considered according to their classification into classical schemes, streaming systems, block encryption systems, and public key information security systems. Much attention is paid to cryptographic protocols and their application in the

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protection of modern information technologies.

**System programming - part 1.** The goal of the first part of "System programming" course is to provide students with the knowledge and skills of working with the Assembler language, as a mean of effective programming, study the architecture and the system of commands of the base processor, subroutines creation in the Assembler language.

**System programming - part 2.** The purpose of the second part of the discipline "System programming" is the formation of students knowledge and skills regarding the means of constructing system programs, programming system programs using C and C++ languages. In the study of discipline covered, in particular, the following issues: technologies for the development of multimodal system programs, the use of software libraries, processing of data structures in system programs. The issue of optimizing the code of system software products for the tasks of information security and cybersecurity.

**Computer networks - part 1.** The purpose of the first part of the discipline "Computer Networks" is the formation of students knowledge and basic skills related to the theoretical and practical aspects, as well as the methodology of design, construction and use of computer networks.

**Computer networks - part 2.** The purpose of the second part of the discipline "Computer Networks" is to study students of the architecture of modern computer networks, software for network configuration, acquiring practical skills for analyzing the security of networks from unauthorized access to information.

**Wireless, mobile and cloud technologies security.** Modern information and communication technologies foresee the use of virtualization technologies for server systems technologies, communication tools for distributed computing, and the development of software for hardware solutions for data centers. To manage cybersecurity of heterogeneous computing resources remotely, software and hardware solutions are required for secure implementation of virtualization systems as well as remote service functions, which in general creates opportunities for the organization and use of wireless, mobile and cloud computing technologies. The purpose of teaching discipline is the formation of theoretical knowledge and acquisition of practical skills in the use of distributed distributed computing technologies, virtualization of server systems, the design of secure corporate computing systems with the use of wireless, mobile and cloud computing.

**Information security in computer systems.** The discipline deals with the main principles and decisions in the design and implementation of information security and cyber security systems in specialized computer and robotic technical systems and networks. The purpose of the discipline is to provide students with the necessary knowledge about cybernetic threats to specialized computer and robotic technical systems and networks. Introduction to the main methods, principles, algorithms of information security in computer systems, taking into account the current state and forecast of the development of methods, systems and means of implementation of threats and cyber attacks on the part of potential violators. During the study of the discipline students are expected to have certain knowledge and skills in the theory and practice of protecting information and information security in specialized computer and robot technical systems and networks.

**Cryptanalysis fundamentals.** The discipline is aimed at providing the students with the knowledge in the field of theoretical cryptography and cryptanalysis. The discipline introduces the main principles of the work of crypto analysts, the mathematical models of the information sources, theoretical and practical secrecy concepts, as well as practical methods of cryptanalyst work.

**Information technical protection fundamentals.** The discipline helps to prepare future professionals for the effective use of modern information technology in the process of data security and digital information protection tasks solving. Goal of the discipline:

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acquisition of knowledge, skills and abilities on the basics of information security and acquisition of skills of their practical application when working with modern software; techniques of building the information security in information systems; modern means of human interaction with hardware and software; basics of crypto data protection; techniques of important information protection from unauthorized access.

**Safe programming technologies.** Studied: research of software systems for the analysis of computer systems security. The principle of language identification programs development and review. Development of software tools for electronic digital signature support. Software complexes for computer systems security analysis. Access control systems. Development of the applications with security features on the basis of Remote Application Platform. Shareware protection mechanisms implementation.

### **Optional components**

#### ***Optional components by specialty***

**Management.** The concept and nature of management. Development of management science. Basic theory of managerial decisions. Performance Management. Planning Organization. Organization as a management function. Motivation. Management control. Leadership. Communication in management.

**Technics and technologies in AIC.** Use of machinery in agriculture. Agricultural bases responsible for the basing, use and repair of agricultural machinery, as well as for keeping pets, harvesting fodder and market sales on other smaller agricultural sites. Features of development and implementation of innovative agro-engineering technologies in agro-industrial complex. Innovative technologies and new generation equipment for crop production. Innovative technologies and new generation equipment for livestock production. Modern problems and perspective solutions in resource-saving and ecological safety of transport.

**Life safety and labor protection basics.** Acts population in emergency peacetime and wartime. Ways of population protection from damaging factors of accidents, natural disasters and modern weapons of mass destruction. Methods of forecasting of possible radiological, chemical, bacteriological, biological situation arising in case of disaster or accident. Sanitary norms and modes of work.

**Internet of Things fundamentals.** The purpose of studying the discipline is to master the basics of building industrial solutions according to IoT methodologies. The program of the discipline provides for the in-depth knowledge of network technologies in terms of their application in the field of the Internet of Things. Students in the process of studying the course material gain active skills in using a wide range of hardware and software tools for collecting, transmitting and analyzing data from various sensors and generating control signals for actuators.

**Discrete mathematics.** The purpose of the discipline is to master students' mathematical language and fundamental concepts (and their basic properties and practical skills of use) of some of the most traditional sections of discrete mathematics, to promote the development of logical and analytical thinking of students in cyber security.

**Information and cybersecurity standards.** Current standards of information and cybersecurity of Ukraine, the EU, the USA, etc., are studied.

**Fundamentals of forecasting and modeling in social domain.** Studied: Subject field of the discipline. General concepts and approaches to understanding the basic principles of social modeling and forecasting. Modern methodological and methodical approaches to the analysis of forecasting processes in the social sphere. Features of utilization of applied methods and social technologies in the system of socio-engineering

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activity. Criteria, indicators and social indicators for the implementation of modern research in the forecast direction.

**Applied aspects of information security systems building.** The purpose of studying the discipline is to form knowledge about the basic methods and technologies of automated modeling, designing and research of information security systems. The technologies for designing computerized cybersecurity systems and information security for real objects of protection are studied. Object-oriented design and construction of cybersecurity and information security systems, components and components of P-CAD, examples of synthesis of information security systems in P-CAD are studied.

**Wireless and mobile networks security and audit.** The purpose of the discipline is to form knowledge about the basic methods of auditing the means of protection of information resources, the principles of multilevel wireless and mobile networks integrated with public access networks, such as the Internet.

**Parallel and distributed computing.** The following positions are studied: theoretical bases of organization of parallel and distributed computational processes, parallelization of algorithms, transformation of sequential programs into parallel ones; problems of organization of parallel and distributed computing.

**Access control.** Modern information and computer systems are vulnerable to a number of network threats that may be the result of unauthorized access, as well as the disclosure or modification of information. In order to protect relevant information resources from cyber threats, it is necessary to apply targeted access control measures. This discipline is devoted to the study and mastering of the guiding and general principles for the design, implementation, support and improvement of the access control and information protection system. Students acquire practical skills in planning and developing an effective access control system that provides management and control of access, development and maintenance of hardware-software systems and networks; management of business continuity and optimization of management processes. Students learn to identify the specific security risks that threaten the resources of the organization and for which vulnerability assessment, likelihood of its occurrence and potential impact; develop security policy; to organize the management of assets and resources in order to increase the efficiency of the operation and security of computer systems.

**System analysis.** Aim: to develop students' skills in system thinking and prepare them for solving practical problems of analysis and synthesis of information security, information and (or) cybersecurity systems. Objective: to study the methodology of the system approach, widely used in solving global and special problems such as monitoring, management of technological processes, information systems, technical diagnostics, etc.

**Computer electronics.** Prepares future professionals to understand the electronic processes occurring in computer hardware during the processing of electrical signals and how these processes are reflected in the quality of information signal processing. The program provides a comprehensive study of electronic means of processing analog and digital signals, which are the basis for the presentation of information in computer hardware.

**Project management of information security systems development.** Aimed to provide students with knowledge about the theoretical foundations of project management and the basics of applying their acquired knowledge, skills and abilities in practice, carried out by studying the principles of project activities during the development of complex information security systems in the enterprise, specific methods and tools of project management; mastering the skills to perform the basic functions of project management in the field of cybersecurity.

**Licensing and certification of information security tools.** The purpose of studying the discipline is the formation of knowledge about the organization of the state licensing system in the field of information security, certification and certification of

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information security objects, as well as organization of events on information security at the object of informatization and their legal support. The discipline reveals the basic concepts and types of information that is protected in accordance with the legislation of Ukraine, gives knowledge about the system of protection of state secrets, confidential information, forms the professional competencies necessary for the professional activity. Objectives of studying the discipline: study of information legislation of Ukraine and international legislation in the field of information security; formation of knowledge in the field of organization of state licensing in the field of information security; development of the skills of organization of the system of certification and attestation of objects of informatization.

**IT systems operation and maintenance security.** The theory of reliability and efficiency of computer systems and software in terms of restorative and non-renewable objects, in particular after events related to cyber incidents, is studied. The indicators of reliability, durability and storage of elements and systems, complex indicators of reliability are considered. Methods of construction of structural schemes of reliability and failure trees are studied. The methods of estimating the reliability of systems without restoration and with restoration, with reservation are considered. The basic concepts of technical diagnostics, principles of organization of systems of technical diagnostics and the use of automated diagnostic systems are studied.

**System software - part 1.** The purpose of studying the disciplines "System software" (Part 1) - training specialists for the effective use of modern computer technology in order to optimally use it in the tasks of information security and cybersecurity, gaining skills for working with Windows operating systems for installation and proper administration of the OS on personal computers and servers, in the work with packages of applications and additional software shells, etc.

**System software - part 2.** Part 2 of the "System Software" course covers topics related to developing Unix / Linux operating systems to install and fully administer OS on personal computers and servers.

**Information security audit fundamentals.** The discipline studies the systemic process of obtaining objective qualitative and quantitative assessments of the current state of security of the information system or information and telecommunication system, and also allows for a comprehensive assessment of the level of information security of the customer's information objects, taking into account three main factors: personnel, processes and technologies. A comparative analysis of the current state of the information system, which is determined by the results of the questionnaire, with the test model of the requirements of the standard ISO 27001.

The need for a regular information security audit is to assess the real state of the security of IP and / or IT resources and their ability to withstand external and internal threats to information security that are constantly changing and adapting. The State Ukrainian Enterprise "Ukrainian Special Systems" proposes to conduct an audit of information security at the objects of information activity of the Customer, with the purpose of determining the state of protection of IP and / or ITS, means of which are processed confidential or other critical information of the Client, as well as the compliance of IP and / or ITS standards and regulatory documents in the public or commercial sector.

**Threat and attack monitoring systems.** Studies: collection of event information from various information security devices and network devices; real-time visualization of events; support for signature and "behavioral" methods of detecting anomalies and attacks; ability to create own correlation rules; ability to control active network devices to block malicious traffic; predicting the results of the attack; risk analysis for the system; automatic determination of the status of the event (attack, scan, etc.); ability to process and analyze security incidents; focusing on priority nodes; automatic reactions to incidents.

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**Cross-platform programming.** The purpose of teaching the subject "Cross-platform programming" is to provide students with the theoretical knowledge and practical skills of component programming, the principles of the technology of developing cross-platform software systems, the principles of using cross-platform programming tools. Themes: Architecture and standards of component models, communication tools and distributed computing; strategy integration software components; main intermediate platform and component models; formal and visual methods of constructing components; development of requirements and specifications of components of information systems and objects of professional activity; design of software components; design of the human-machine interface of information systems; integration of components into the system.

**Information and psychological confrontation.** Studies: the essence and characteristics of information warfare; concepts of information confrontation; components of information operations; ways and methods of psychological influence in information warfare; directions of using the Internet in information wars; ways to mislead the enemy in the information war; essence, characteristics, conditions of distribution and types of rumors in information wars; stages of information operations planning; methods of "image of the enemy" forming in information wars, etc.

**Applications development and maintenance security.** The purpose of the discipline is to study the means and methods of information security and security for the uninterrupted and efficient use of programs and data in various computerized systems, modern methods of data development and support, and promising algorithmic methods for protecting programs and data.

**Information security incidents investigation.** In order to process information security incidents and incidents, an incident response process must be organized. Discipline "Investigation of incidents of information security", respectively, acquaint students: with the methodology of organizing the process of responding to incidents IB; methods of providing coordination of response to an incident; means of confirmation / refutation of the fact of the incident of the IB; methods of minimization of violations of the order of work and damage to the IT system, methods of restoration in the shortest possible time of the organization's operation in case of its violation as a result of the incident and minimize the consequences of violating the confidentiality, integrity and availability of IT information. Also, they study the main approaches to creating the conditions for protecting the reputation of the organization and its resources; the rapid detection and / or prevention of such incidents in the future; methods of company personnel training to identify, eliminate the consequences and prevent IB incidents, and inform the management in a timely manner about the state of information security.

**Web-content management.** The discipline addresses electronic document management systems and corporate web content management systems that provide effective information management through its secure storage and access organization. These systems are the basis for implementation of corporate content management and knowledge management strategies at the enterprise, which ensures its innovative development.

**Information security products and services.** The purpose of the discipline is to provide students with knowledge and skills to pass the information system penetration test. This test is the best way to assess the security of the information system as a whole, to identify individual vulnerabilities and to check the reliability of the existing mechanisms for protecting the information system from unauthorized influence, using different models of offenders. During the study of discipline the following topics are studied: methods for assessing the current state of information security; technique of identifying the vulnerabilities of information system – with respect to the degree of criticality; requirements of international standards and legislation; methodology for developing recommendations for improving the effectiveness of protection; methodology to provide the client with an

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independent assessment of the selected information protection measures; methodology of data preparation for complex audit of information security of the object of informatization.

**Programming in modern OS environment.** The purpose of the discipline "Development of applications in modern OS" is the formation of students knowledge and skills of programming in the environment of modern OS (Linux, MacOS, Android), taking into account their structure, functions, positions in relation to multi-threaded data processing. In studying the discipline, students receive multi-threaded programming skills in high-level languages, with the use of modern integrated development tools, learn about aspects of the use of data containers, receive, in particular, skills for creating web applications.

**Computer networks administration.** The purpose of the discipline is to study the fundamentals of theory and to acquire practical skills in network administration of the information system of an organization - management of network nodes, network protocols, directory services, network services, file system resources management, rights of access to resources, printers, backup and restore systems, monitoring network devices and services.

## 2.16. FACULTY OF HUMANITIES AND PEAGOGY

**Dean** – Doctor of Philology, Professor **Vasyl Shynkaruk**

Tel.: (044) 527-80-83 E-mail: pedagogy\_dean@twin.nubip.edu.ua

Location: Building № 3, Room 101

The faculty organizes and coordinates the educational process of bachelors in the following specialties:

### **231 Social Work**

Educational-professional Program «**Social Work**»

Guarantor of the program – Tverezovska Nina Trohymyvena

Tel.: (044) 527-83-57 E-mail: socpedagogy@ukr.net

Graduating Department:

Department of Social Work and Information Technologies in Education

Tel.: (044) 527-83-57 E-mail: socpedagogy@ukr.net

Head of department – Doctor of Pedagogy, Associate Professor Sopivnyk Iryna Vitaliyivna

### **035 Phylology**

Educational-professional program "**German and Other Foreign Language**"

Guarantor of the program – Doctor of Philology, Professor Shynkaruk Vasyl Dmytrovych

Tel.: (044) 527-80-83 E-mail: pedagogy\_dean@twin.nubip.edu.ua

Graduating Department:

Foreign Philology and Translation

Tel.: (044) 527-88-46 E-mail: kifip@ukr.net

Head of department – Doctor of Pedagogy, Professor Amelina Svitlana Mykolaivna

### **035 Phylology**

Educational-professional program "**English and Other Foreign Language**"

Guarantor of the program – Snitsar Valentyna Pavlivna

Tel.: (044) 527-85-95 E-mail: krgm@ukr.net

Graduating Department:

Romano-Germanic languages and translation

Tel.: (044) 527-85-95 E-mail: krgm@ukr.net

Head of department – Doctor of Pedagogy, Professor Kravchenko Nataliya Kymivna

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**291 International relations, social communications and regional studios**

Educational-professional Program «**International relations, public communications and regional studios**»

Guarantor of the program – Serhii Bilan, Doctor of Historical Sciences, Professor  
Tel.: (044) 527-81-16 E-mail: kaf\_ist\_pol@ukr.net

Graduating Department:

Department of International Relations and Social Sciences

Tel.: (044) 527-81-16 E-mail: kaf\_ist\_pol@ukr.net

Head of department – Doctor of History, Professor Bilan Serhii Oleksiiiovych

**015 Professional Education**

Educational-professional Program «**Professional Education (Technology of production and processing of agricultural products)**»

Guarantor of the program – Doctor of Pedagogy, Professor Vasiuk Oksana Viktorivna

Тел.: (044) 5278355 E-mail: o.vasiuk@nubip.edu.ua

Graduating Department:

Peagogy

Tel.: (044) 527 - 83 - 55 E-mail: pedagogic@ukr.net

Head of department – Doctor of Pedagogy, Associate Professor Sopivnyk Ruslan Vasylovych

**061 Journalism**

Educational-professional program «**Journalism**»

Guarantor of the program – Doctor of Pedagogy, Professor Kostrytsia Nataliia Mykolaivna

Tel.: (044) 527 - 83 - 63 E-mail: ukr\_eng\_kaf@ukr.net

Graduating Department:

Department of Journalism and Linguistic Communication

Tel.: (044) 527 - 83 - 63 E-mail: ukr\_eng\_kaf@ukr.net

Head of department – Doctor of Pedagogy, Professor Kostrytsia Nataliia Mykolaivna

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### ***053 Psychology***

Educational-professional Program «**Psychology**»

Guarantor of the program – Martinuk Irina Anatoliyvna, candidate of psychological sciences, associate professor

Tel.: (044) 527-83-54 E-mail: marteirene@ukr.net

Graduating Department:

Department of Psychology

Tel.: (067) 6965370 E-mail: shmargun2012@ukr.net

Head of department – Head of the Department – Doctor in psychology, Professor Shmargun Vitaly

### ***017 Physical education and sports***

Educational-professional Program «**Physical education and sports**»

Guarantor of the program – Krasnov Valeriy Pavlovych, candidate of pedagogical sciences, professor

Tel.: (044)-527-85-21, E-mail: krasnovvpl@gmail.com

Graduating department:

Physical education

Head of Department – Kostenko Mykola Petrovych

Tel.: (044)-527-85-21; E-mail: futbol.kostenko@gmail.com

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**Bachelor**  
**Field of Knowledge «Social Work»**  
**In specialty «SOCIAL WORK»**  
**Educational-professional Program «Social Work»**

Form of Training:	Licensed number of persons:
Full-time	50
Part-time	50
Duration of Training	
Full-time educational and professional program	4 years
Part-time	5 years
Credits ECTS	240
Language of Teaching	Ukrainian, English
Qualification	bachelor of social work

### **The concept of training**

The training of a social worker is determined by the need of the state for specialists who carry out work on social and pedagogical assistance, support, protection and rehabilitation of all categories of children and youth in rural areas. The professional activity of such a specialist provides for the solution of production issues in the areas of studying social and pedagogical problems on the socialization of wards of children and youth, organizing their social protection, providing counseling on social and pedagogical issues, organizing leisure activities, and assisting in the process of education for persons directly attitude.

### **Practical training**

Practical training is carried out according to the schedule of the educational process directly on the certified base of practices, including: Centers of social services for families, children and youth; street childcare departments; children's health facilities; territorial centers of social services; pre-school educational institutions; secondary general education institutions; centers of social and psychological rehabilitation.

**The academic rights of graduates** can continue their studies in the specialties and educational programs for the training of masters, the names of which are given in table. 1.2 of section 1.3 of this Catalog.

### **Employment of Graduates**

A social worker may work in the system of educational institutions, houses and centers of children's creativity, centers and schools of art, social and educational services and clubs, child and social organizations, guardianship services, juvenile affairs services, specialized closed institutions for children, state centers and social work services, social protection and assistance units, employment and employment centers.

**Bachelor`s Program and Curriculum  
in Specialty «Social work»  
Educational and professional program «Social Work»**

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
1	2	3	4
<b>1. GENERAL TRAINING CYCLE</b>			
<b>Compulsory components</b>			
OK 1	General and social psychology	4	exam
OK 2	Modern information systems	4	exam
OK 3	Research workshop	4	exam
OK 4	Social ecology	4	exam
OK 5	Valeology and age physiology	6	exam
<b>Compulsory components by decision of the Academic Council of the University</b>			
OK 6	History of Ukrainian statehood	4	exam
OK 7	Ukrainian language in the professional field	4	exam
OK 8	Latin	4	exam
OK 9	Philosophy and Religious Studies	8	exam
OK 10	Physical education	4	credit
OK 11	Foreign language	16	exam
<b>2. SPECIAL (PROFESSIONAL) TRAINING CYCLE</b>			
<b>Compulsory components</b>			
OK 12	Joining Social Work	4	test, exam
OK 13	Social Leadership and Team Building	6	test, exam
OK 14	Fundamentals of General and Social Pedagogy	8	exam
OK 15	Organization of leisure activities	4	exam
OK 16	History of social education and social work	4	exam
OK 17	Maintaining professional documents	4	exam
OK 18	Social work with families, children and youth	4	exam
OK 19	Theory of Social Work	6	exam
OK 20	Private Fundamentals	4	exam
OK 21	Socialization of personality	6	exam
OK 22	Ethics and international standards of social work	10	exam
OK 23	Innovative models for the provision of social services	9	exam
OK 24	The basics of screenwriting and art therapy	4	exam
OK 25	Social work with various groups of clients	9	exam
OK 26	Social Work Technologies	4	exam
OK 27	Social design	5	exam
OK 28	The system of organization and management of social services	5	exam
<b>Optional components</b>			
<b><i>Optional components in the specialty (block 1)</i></b>			
BK 1.1	Group Cohesion Training	6	exam
BK 1.2	Communication and Assertiveness Training		
BK 1.3	Corrective pedagogy		
BK 1.4	The basics of defectology and pathopsychology	6	exam
BK 1.5	Social Diagnostics	6	exam
BK 1.6	Psychology of Personality		
<b><i>Optional components in the specialty (block 2)</i></b>			
BK 2.1	Volunteer training and organization	6	exam
BK 2.2	Social work in the territorial community	6	exam
BK 2.3	Counseling Basics		
BK 2.4	Social Responsibility and Entrepreneurship		
BK 2.5	Social work in the penitentiary system	6	exam
BK 2.6	Social prevention	6	exam
BK 2.7	Social gerontology		
BK 2.8	International social organizations		
BK 2.9	Social Security and Pensions	6	exam
BK 2.10	Socio-psychological work with military personnel and members of		

BK 2.12	their families Digital communications Social Advertising Basics	6	exam
<b>The total amount of optional components</b>			
<b>3. OTHER TYPES OF TRAINING</b>			
IBH 1	Military training		
IBH 2	Educational (familiarization by profession) practice	2	exam
IBH 3	Educational (familiarization and volunteer) practice	3	exam
IBH 4	Educational socio-pedagogical practice	2	exam
IBH 5	Course work 1; 2; 3	3	exam
IBH 6	Internship	5	exam
IBH 7	Design practice	5	exam
IBH 8	State certification	1	exam
<b>THE TOTAL AMOUNT OF EPP</b>		<b>240</b>	

### Annotations of components in the curriculum

#### 1. GENERAL TRAINING CYCLE

##### Compulsory components of EPP

**General and social psychology.** Modern ideas about the psyche, fundamental statements of psychological science about the laws of mental processes, mental activity, emotional-volitional sphere, individual and typological personality traits, features of the organization and functioning of small groups and collectives, the dynamics of the development of interpersonal relationships.

**Modern information systems.** The evolution of information technology. Characterization and classification of computer equipment. Architecture and principles of PC functioning. Technology of work in the environment of graphic operating systems. Technology for creating, editing and showing electronic presentations. Formalization and algorithmization of computational processes. Technology for creating, editing and formatting spreadsheets, diagrams, text documents. User Interface and Internet Technology.

**Research workshop.** Science and scientific thinking. The ability to determine the direction of a scientific result in solving problems and realizing the functions of science. The main categories of science. Ability to formulate and substantiate a scientific hypothesis. Scientific research. The ability to conduct scientific research. Technology of work with scientific literature. Ability to analyze scientific publications. System approach and system analysis. The ability to conduct a system analysis of the subject area of scientific research. Methodology of working with concepts. The ability to formulate definitions of concepts of the studied subject area. Organization of research work of students. The ability to effectively organize research activities.

**Social ecology.** Sustainable environmentally friendly development of society. Environmental imperative and its dimensions. Ecological culture as a component of national culture. Environmental education and upbringing. Basic economic and sociological concepts, economic growth, naturally resource rent, quality of life, moral crisis, etc. are considered adjusted for ecology.

**Valeology and age physiology.** General patterns of growth and development of children and adolescents; structural and functional characteristics of human organs and systems in the age aspect; components and factors in the formation of a healthy lifestyle;

patterns and features of the influence of society, which determine the health of a modern person.

Wellness worldview. Healthy lifestyle. The mechanisms of the organization of life on the principles of a healthy lifestyle.

### **Compulsory components by decision of the Academic Council of the University**

Discipline components: History of Ukrainian statehood, Ukrainian language in the professional field, Latin, Philosophy and Religious Studies, Physical education, Foreign language see Section 2.1.

## **2. SPECIAL (PROFESSIONAL) TRAINING CYCLE**

### **Compulsory components OPP**

**Joining Social Work.** Social work as a science, its object, subject, structure, methods of cognition, functions, its place among other social sciences, the main stages of development; the concept of society as a whole, social development; culture as a mechanism for regulating society. Man in a social context.

**Social Leadership and Team Building.** The problem of leadership in the public sphere. Theories of Leadership. Professional qualities of a manager, organizational and psychological features of his activities. Power and influence as leadership tools. Leadership as a group process. Leader image. The development of leadership potential of the individual. Oratory of the leader. Organization and control of the implementation of management decisions, responsibility system.

Group dynamics and communications. The team and its main functions. Team building and teamwork. Rivalry and collaboration in team building. Conflict management in the process of team building. Team building. Corporate culture and employee motivation. Management culture as an element of corporate culture and team building. Communication in a team: procedures for analyzing problems and making managerial decisions. Psychological training and coaching in team practice. Monitoring the effectiveness of corporate culture in a team.

**Fundamentals of General and Social Pedagogy.** Social formation of personality; social environment as an object and subject of socio-pedagogical impact; socio-pedagogical problems of certain categories of the population; sociopedagogy of the sociocultural sphere; history and prospects of social education.

**Organization of leisure activities.** The structure and functions of free time, its meaningful content in the field of leisure. Theory and practice of leisure. Organization of work in the field of leisure.

**History of social education and social work.** The origin and development of social work from ancient times to the XVIII century. Social work in the 19th-early 20th centuries Features of social work in the twentieth century. Organization of social work at the present stage.

The development of the theory and practice of social education from ancient times to the present.

**Maintaining professional documents.** The history of the formation and development of document management. Modern requirements for the preparation and execution of documents. Classification of business papers. Rules for the presentation of the material and the logical construction of the text of the document.

Registration, basic details of organizational, administrative, personnel documentation, reference and information, economic and contractual and accounting and financial documentation.

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The main professional documents of an employee of a social institution. Normative and reference information documentation. Documentation for official use. Accounting and registration documentation

Features of the preparation and maintenance of basic professional documents of an employee of a social institution. "Intervention Plan." Keeping professional records. Features of the report of the results of work of a social worker. Information and analytical support for social work.

**Social work with families, children and youth.** The basic principles of social work with families, children and youth. The effectiveness of the implementation of the main goals and objectives of social work with families, children and youth. Appropriate forms and methods of working with families, children and youth. The main directions of social work with families, children and youth.

**Theory of Social Work.** The historical reconstruction of the institutionalization of social work as a holistic process. Stages of development of social work in world history. Approaches to the description of reality in the social sciences and the theory of social work. The main components of the structure of the theory of social knowledge. Social work as: multilevel theory, paradigm theory, integrative. Social work in the context of modern scientific paradigms. The main discourses in social work. Concepts of social functioning in the theory of social work. Crisis and task-centered theory of social work.

**Private Fundamentals.** Social inspection as a component of social support in the system of social security and protection. Social inspection in Ukraine: basic concepts and general characteristics. Legislative regulation of social inspection. Violence as a subject of social inspection. Family as an object of social inspection. Indicators of domestic violence and how to identify them during social inspection. Mechanisms for implementing social partnership with various actors of the social protection system in social inspection.

**Socialization of personality.** Процес соціалізації. Стадії соціалізації. Витоки сучасної концепції соціалізації. Органи соціалізації. Механізми включення індивіда в суспільні процеси.

**Ethics and international standards of social work.** The moral foundations of professional social activities to assist people with disabilities, families, social groups and communities. Moral and ethical standards of behavior of social work specialists, social services workers. Professional morality of specialists. Ethical relations, ethical consciousness and ethical actions of a social worker. Normative regulation of relations, behavior and actions of individual representatives of a professional group and their associations.

World trends in the formation of standards of social work. Social policy and management of standards and quality of social services. The role of non-governmental organizations in the implementation of social services standards. Monitoring the quality of social services in communities. Quality planning practices. Quality Control Practices.

**Innovative models for the provision of social services.** Basic principles for the provision of social services. Types of social services and forms of their provision. Organization of activities for the provision of social services. Varieties of institutions for the provision of social services. The purpose and objectives of innovative models for the provision of social services for different categories of customers. Analysis of legislative regulations governing social services. The main provisions of the Ukrainian legislation on the provision of social services in order to acquire and enhance the professional competence of a social worker. Analysis of innovative models for the provision of various social services.

**The basics of screenwriting and art therapy.** Specificity, types, forms, genres of theatrical art, its functions. Technologies for organizing authoring scripts. Organization and management of the team, the features of directing and performing skills in social and educational work.

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Basic concepts of art therapy. Organization of art therapy activities. The structure of art-therapeutic corrections of non-developing classes. Isotherapy. Fairytale therapy. Sand therapy. Phototherapy. Music therapy. Dance therapy. The use of art therapy to work with various groups of clients.

**Social work with various groups of clients.** The formation of social work with various groups of clients. Social work with pre-conscription and draft youth, military personnel and members of their families; low-income groups. Social assistance and support for people with disabilities. The system of providing social assistance to the elderly and single. Social work with people with alcohol and drug problems. Social work with sex workers. Features of social work with HIV-infected and AIDS patients. Organization of work with people without a fixed place of residence. Social work with groups of clients who have experienced domestic violence. Organization of work with victims of "human trafficking". The specifics of social work with people of suicidal behavior. Organization of social support for persons returning from places of deprivation of liberty. Social work with families with children with special needs. Social work with youth and a young family. Social work with children left without parental care. Social work with street children.

**Social Work Technologies.** Basic social and social work technologies. Possibilities for the implementation of pedagogical and psychological methods in social and pedagogical work with various groups of clients. The course is based on the concept of a socio-pedagogical approach to social work as promoting personal self-development, realizing its creative potential, abilities, inclinations, enhancing the efforts of clients (individuals, groups, communities) to solve their own problems.

**Social design.** General idea of design, the history of design knowledge. Design as a means of transforming the surrounding reality. Design competency of the individual.

Social design as a special type of activity. Technology for the development and implementation of a social project. Description of the project management process.

Design culture of a social worker. Designing the social development of personality.

**The system of organization and management of social services.** Forms and methods of organization formation; functions of social services, the legal basis for the activities of social services, their relationship with state and public organizations. The nature and purpose of management consulting, types of consulting organizations. Management information support; social management personnel.

## Optional components

### *Optional components in the specialty (block 1)*

**Group Cohesion Training.** Features of psychological training as a form and method of assisting individuals and groups. Classification of training methods. Basic requirements for the organization and conduct of psychological training. Ethical aspects of conducting psychological training, the procedure for developing a training program for a course and individual training exercises, especially the provision of feedback in a group. Planning the work of the training group, taking into account the characteristics of the target audience, the actual conditions of the training and the level of own competence.

**Communication and Assertiveness Training.** Features of communication, its purpose, tasks and functions. Development of mutual understanding skills. The ability to listen as an important guarantee of effective communication. Development of mutual understanding skills.

The importance of tolerance in effective communication. The role of verbal and non-verbal means in communication. Conflict prevention and the basics of conflict-free interaction.

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Consideration of the main provisions of the theory of assertiveness. Distinguishing the concepts of assertiveness, aggressiveness and shyness. Openness and directness of expressing one's own thoughts and feelings. Constructive criticism and adequate perception of criticism. Role-playing and mastering resilience using adequate feedback, critical comments, and trainer guidance.

**Corrective pedagogy.** The subject of corrective pedagogy and main activities. Categorical-conceptual apparatus of correctional pedagogy. The organization and structure of special education in Ukraine. General characteristics of children with disabilities. Pedagogical education systems for people with hearing impairments. Special education for people with visual impairments. The pedagogical help to children with speech disorders. Special education for people with musculoskeletal disorders. Education of persons with intellectual disabilities. Special education in autism and autistic personality traits. Development and education of children with complex developmental disabilities. Characteristic of deviant behavior. Rehabilitation of an abnormal child. Special pedagogy and humanistic educational systems.

**The basics of defectology and pathopsychology.** Violation of consciousness and self-awareness. The principles of constructing a pathological examination. Impaired attention, sensation, perception. Impaired memory. Impaired thinking. Emotional-volitional disorders. Neurotic disorders. Endogenous psychoses. Reactive psychoses. Mental retardation. Mental developmental disorders.

**Social Diagnostics.** The purpose, tasks of social diagnostics as a science, academic discipline and technology of social work. The principles of social diagnosis. Requirements for the professional level of social diagnostics. Social Diagnostic Methods.

**Psychology of Personality.** The study of the mental properties of a person as a holistic entity, a certain system of mental qualities, has an appropriate structure, internal connections, is characterized by individuality and is interconnected with the surrounding natural and social environment.

### ***Optional components in the specialty (block 2)***

**Volunteer training and organization.** Volunteer assistance is one of the important methods of voluntary social work. The main approaches to volunteer assistance. Volunteering is an instrument of social, cultural, economic and environmental development. Organized and managed process of people's participation in the activities of state authorized bodies of authority in various non-governmental organizations and institutions of the third sector. Stages of training volunteers. Volunteer Motivation Levels.

**Social work in the territorial community.** Society as a center of social work. Legal basis of social work in society. A retrospective review of social work in society. Civil society as a factor in ensuring the vital functions of the social sphere. Resource support and the role of partnerships in organizing community-based social work. Forms of social work with the population in communities. Models of social workers in society. Strategies and tactics of social workers in society. Development and implementation of social projects at the local level. Public councils as a mechanism for participation in the formation of power decisions. Social work with the target audience in a territorial community.

**Counseling Basics.** The concept of counseling. The purpose and objectives of the advisory work. The nature and purpose of counseling. Categories of professionalism and culture of counseling. Management Consulting. Modeling the process of management consulting. Counseling methods. Areas of activity of a sociologist as a consultant.

**Social Responsibility and Entrepreneurship.** Social Responsibility Concept. Social responsibility as a factor in sustainable development. Social responsibility of a person, state and society. Organizational and economic support of social responsibility management. Formation of relations between employers and employees on the principles

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of social responsibility. Formation of business relations with external organizations on the principles of social responsibility. Environmental component of social responsibility. Social partnership as an instrument of social responsibility formation. Monitoring social responsibility. Assessment of the effectiveness of social responsibility. Strategic directions for the development of social responsibility in Ukraine.

**Social work in the penitentiary system.** Historical background of the formation and development of the penitentiary institution. Conceptual foundations of a penitentiary institution in the work of a social worker. Psychological and pedagogical activity of bodies executing punishment. The activities of social workers in the prison sector. The main methods and techniques of social work within the prison system. Socio-psychological methods of influencing group behavior. Interactive forms of social work as the central idea of prison policy. Psychoanalytic methods and techniques of penitentiary psychology. Diagnosis of informal interaction and the place of personality in a subculture. Features of social work with minors who return from places of imprisonment.

**Social prevention.** The subject, concept, levels, types of social prevention. The principles of preventive activities and its current trends. Methods of social prevention. Prevention of delinquent behavior. Preventive work with people with deviant behavior. HIV / AIDS Prevention. Prevention of domestic violence. Prevention of social orphan hood.

**Social gerontology.** Social gerontology as a science. An elderly person as a subject of age-related changes. Social factors determining the status of an elderly person in society. The quality of life of the elderly. Problems of socialization and socio-psychological adaptation of older people.

**International social organizations.** The system of modern international organizations. Typology of international organizations. International organizations in the social sphere. The activities of the international federation of social workers. European Union. Organization for Security and Co-operation in Europe. United Nations. The International Labour Organization. International Association of Schools of Social Work. International experience in social policy and social work

International social standards in the legislation of Ukraine. Social dialogue in the European Union. Socially-oriented non-governmental international organizations

International cooperation on solving social problems. International cooperation in the field of labor protection. International youth cooperation. United Nations Children's Fund (UNICEF). Ukrainian organizations in international social work

**Social Security and Pensions.** Social Insurance Legislation. The history of the emergence and development of social insurance in Ukraine. Compulsory state social insurance. Types of compulsory state social insurance. Voluntary social insurance. A system of rights, obligations and guarantees providing for the provision of social protection.

Normative legal documents, legislative acts on the issues of pension provision.

**Socio-psychological work with military personnel and members of their families.** History of social work with military personnel in Ukraine and the world. The main documents and regulations governing social work with military personnel. Military social work. Tasks, functions and methods of social work with military personnel and their families. Forms of socio-psychological work with military personnel. Social monitoring and patronage of military families.

**Digital communications.** Development of computer communications infrastructure. Current state, prospects for the development and application of information technology; features of using modern software products.

**Social Advertising Basics.** Organization of work with Web-technologies; specifics of using modern software. The problem of using ICT in professional activities.

The main directions, principles of development, manufacture, placement and functioning of social advertising as a type of communication.

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**Bachelor**  
**Field of Knowledge "Human sciences"**  
**Specialty "Philology (German Languages and Literature) (Including Translation)"**  
**Educational-professional program "German and Other Foreign Language"**

Form of Training:	Licensed number of persons:
– Full-time	25
– Part-time	15
Duration of Training:	
– Full-time	4 years
– Part-time	5 years
Tests ECTS	240
Language of Teaching	Ukrainian, German, English, French, Polish
Qualification	Bachelor of Philology, Teacher of German and English

### **The concept of training**

Training in "Philology (Translation)" are stipulated by requirements in the translation of scientific and technical literature and documentation in agrobiolgy, engineering and technology, forestry, ecology, research in product quality and safety, agribusiness, agricultural economics and others.

### **Practical Training**

Practical training is an integral part of the educational process and is carried out according to the educational process schedule directly on authorized practice bases, including: institutions and enterprises of agrarian and environmental profiles of all forms of ownership having translation departments; research institutes and laboratories; translation agencies; secondary education institutions.

**Academic rights of Graduates:** graduates can apply for Master's Degree Specialties and Educational (Educational-professional or Educational-scientific) programs specified in Table 1.2 Section 1.3 this Catalog.

### **Employment of Graduates**

Bachelor of Philology is able to translate scientific, technical (agricultural) and business literature, work as a translator or interpreter at industrial and business establishments, professional and social organizations, publishing houses. Also a graduate can work as a teacher of foreign languages at secondary schools.

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**Bachelor`s Program and Curriculum in Specialty  
"Philology (German Languages and Literature) (Including Translation)"  
Educational-professional program "German and Other Foreign Language"**

Code n/a	Components of the educational-professional program (education disciplines, course projects (paper), practice, qualification work)	Amount of tests ECTS	The final control
1	2	3	4
<b>1. GENERAL TRAINING CYCLE</b>			
<b>Compulsory components of EPP</b>			
CC 1	Psychology	4	exam
CC 2	Fundamentals of Information Technologies and Applied Linguistics	4	test
CC 3	Introduction to Translation Studies	4	exam
CC 4	Latin Language	4	exam
CC 5	Introduction to Linguistics	4	test
<b>Compulsory components EPP by decision of the Academic Council of the University</b>			
CCU1	Pedagogy	4	exam
CCU2	History of Ukrainian Statehood	4	exam
CCU3	Philosophy and Logic	4	exam
CCU4	Modern Ukrainian language	4	exam
CCU5	Ethnocultural Studies, Ethics and Aesthetics	4	test
CCU6	Information Technology in Translation Projects	4	test
CCU7	Physical Education	8	test
<b>2. SPECIAL (PROFESSIONAL) TRAINING CYCLE</b>			
<b>Compulsory components EPP</b>			
CC 2.1	Practical Course of the Main Foreign Language	55	exam
CC 2.2	Stylistics of the Main Foreign language	4	exam
CC 2.3	Comparative Lexicology of the Main Foreign and Ukrainian languages	4	exam
CC 2.4	Comparative Grammar of the Main Foreign and Ukrainian languages	4	exam
CC 2.5	Practice of Translation and Interpretation	16	exam
CC 2.6	Practical Grammar of the Main Foreign Language	8	exam
CC 2.7	History of the Main Foreign Language	4	exam
CC 2.8	Scientific and Technical Translation	4	exam
CC 2.9	Computer Lexicography and Translation	4	exam
CC 2.10	Translation of Business Language and Correspondence	4	exam
CC 2.11	Methodology of Teaching Foreign Languages	4	exam
CC 2.12	Aspect Translation of Agrarian Literature	4	test
CC 2.13	Linguistic and Country Studies of Countries of the Main Foreign Language	4	test
<b>The total amount of compulsory components</b>		<b>171</b>	
<b>Optional components</b>			
<b>Optional components by specialty (block 1)</b>			
OB 2.1	Practical Course of the Second Foreign Language and Translation: English.	42	exam
OB 2.2	Semantic and Stylistic Problems of Branch Texts Translation: a Cycle of Natural Sciences; a Cycle of Technical Sciences.	8	exam
OB 2.3	Practical Phonetics of the Main Foreign Language	4	test
<b>Optional components by specialty (block 2)</b>			
OB 2.1	Practical Course of the Second Foreign Language and Translation: French.	42	exam
OB 2.2	Semantic and Stylistic Problems of Branch Texts Translation: a Cycle of Economic, a cycle of IT specialties.	8	exam
OB 2.3	Polish Language	4	test
<b>Optional components by Student's Choice</b>			
OS1	Subject 1	4	test
OS2	Subject 2	4	test

<b>The total amount of optional components</b>		<b>60</b>	
<b>3. OTHER TYPES OF TRAINING</b>			
CC 3.1	Induction Translation Practice	3	test
CC 3.2	Externship Pedagogical Practice	3	test
CC 3.3	Externship Translation Practice	2	test
CC 3.4	State Examination	1	exam
<b>THE TOTAL AMOUNT OF EPP</b>		<b>240</b>	

## Annotations of Components in the curriculum

### 1. GENERAL TRAINING CYCLE

#### Compulsory components

**Psychology.** General issues of psychology; the peculiarities of psyche development in phylogenesis and ontogenesis; psychological processes; states of mind and person's peculiarities.

**Fundamentals of Information Technologies and Applied Linguistics.** Structure peculiarities and technical characteristics of modern personal computers and other devices, their application in conducting linguistic research and translation.

**Introduction to Translation Studies.** Translation and its types; the history of foundation and development of translation theories in Ukraine and other countries; theory and classification of translation units; lexical, grammatical and syntactic transformations; stylistic characteristics of idioms, proverbs and sayings, slang, phrasal verbs, and colloquial expressions.

**Latin Language.** Mastering the Latin language, as well as skills needed for translating Latin texts and using Latin terminology in teaching, scientific and production activities.

**Introduction to Linguistics.** General issues of contemporary linguistics: general information about language and linguistics as a discipline, nature and essence of language, its origin, regularities of its development and functioning at different historical stages, origin and development of writing, genealogical and typological classification of languages, structural levels and language units, etc.

#### Compulsory components by decision of the Academic Council of the University

**Pedagogy.** The discipline deals with the theory and practice of organization of teaching (didactics), education and management of education (school science).

**History of Ukrainian Statehood.** The content of the educational discipline "History of Ukrainian Statehood" is the study of basic stages of formation and development of statehood on the Ukrainian lands, distinctive state building way of the Ukrainian nation. Building of the independent state needs highly skilled, patriotically inclined, socially oriented professionals able to continue the best traditions of the Ukrainians. The response to these circumstances is the study of this discipline in universities. It will allow mastering the theoretical course, creatively applying their knowledge in practice and comprehending on their own laws of the state building process, orientate in political life and feel their involvement in the state-thousand-year tradition of the Ukrainian people.

**Philosophy and Logic.** The course provides the system of knowledge in such branches of philosophy as ontology, gnoseology, social philosophy, historical types of philosophy that explain the essence of relations “a human being – the world” in its main displays. The course is marked by ideological orientation, which allows synthesizing the acquired knowledge on professional and humanitarian disciplines in a holistic worldview – the theoretical basis of the university level of training specialists. The method of logic, the basic forms and laws of thinking, the preconditions for the emergence of modern logic, the division of classical logic, the typology and analysis of formal logical theories within the logic of utterances and the logic of predicates.

**Modern Ukrainian language.** Orthographic, morphological, lexical, stylistic, syntactic and punctuation norms of the contemporary standard Ukrainian language; genres of professional communication and their main communicative features; culture of dialogue and political speech; the principles of structural-stylistic analysis and correction of the text in accordance with the norms of the standard Ukrainian language.

**Ethnocultural Studies, Ethics and Aesthetics.** The discipline studies the development of cultural (and linguistic-cultural) processes among peoples during their development. One of the aspects of ethnocultural studies is the specifics of everyday, factual and other types of communicative behavior of the ethnic group. The main tendencies in modern international communication, the basis of the international protocol and etiquette, diplomatic and international correspondence are considered as well.

**Information Technology in Translation Projects.** Implementation of translation activities with the use of automated translation systems (CAT-systems), working out collective interaction in the implementation of translation projects with the use of SDL Trados.

**Physical Education.** The purpose of teaching the discipline is the formation of the physical culture of a young specialist and the ability to implement it in the social professional activity and family. The task is to strengthen the students' health and develop physical abilities that correspond to the professional activity of a future specialist.

## 2. SPECIAL (PROFESSIONAL) TRAINING CYCLE

**Practical Course of the Main Foreign Language.** Acquiring knowledge in phonetics, vocabulary, and practical grammar of the foreign language; mastering reading and listening skills as well communication and writing skills.

**Stylistics of the Main Foreign language.** The essence of the language stylistics, communicative and texts stylistics, functioning of language units in the language system; functioning styles and their characteristics, criteria, methods of analysis and texts' interpretation.

**Comparative Lexicology of the Main Foreign and Ukrainian languages.** Theoretical fundamentals of lexicology and lexicography: practical application of the language units in communication; lexical skills and habits mastering.

**Comparative Grammar of the Main Foreign and Ukrainian languages.** Typological peculiarities of the foreign and Ukrainian languages; grammatical constructions in compared languages; similar attributes and distinctions in the systems of grammar categories in various parts of speech, and syntactic units.

**Practice of Translation and Interpretation.** Theoretical and practical fundamentals of translation and interpretation; translation transformations; non-equivalent vocabulary; types of semantic equivalents; contextual meaning of lexical units; types of semantic equivalents; factors of style.

**Practical Grammar of the Main Foreign Language.** Studying grammatical system of the foreign language, acquiring skills of recognition, understanding and use of grammatical forms in oral and written communication.

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**History of the Main Foreign Language.** Processes of language and its structure formation and development; the language historical characteristics and attributes; similarity with other languages of the same language group; its specific peculiarities.

**Scientific and Technical Translation.** Solution of grammatical, lexical, terminological and genre-stylistic tasks; ways of translation of different scientific and technique phenomena.

**Computer Lexicography and Translation.** It is designed to introduce students to the contemporary lexicography and illustrate connection between computer lexicography and translation. The course involves mastering basic concepts of computer lexicography; study of types, kinds and structure of electronic dictionaries; their usage and creating.

**Translation of Business Language and Correspondence.** Basic lexical and grammatical features of the style of business language and speech as well as means of their reproduction in translation, genre classification of business documents are considered within the course.

**Aspect Translation of Agrarian Literature.** Theoretical fundamentals of the translation of texts on agrarian subjects, methods of adequate reproduction of various types of terminology, characteristic of agrarian literature, the formation of skills for adequate translation.

**Methodology of Teaching Foreign Languages.** Objectives, content, principles of teaching foreign languages; methods and forms of teaching; planning of the foreign language teaching-learning process; technologies of formation of language and speech competences at the level determined by the current legislation.

**Linguistic and Country Studies of Countries of the Main Foreign Language.** Language units that reflect national cultural peculiarities, formation of communicative students' competency in intercultural communications through appropriate perception of oral speech and original texts.

### **Optional components**

#### ***Optional components by specialty (block 1)***

**Practical Course of the Second Foreign Language and Translation (English).** Acquiring knowledge on phonetics, vocabulary, practical grammar, mastering skills of listening, reading and literally normalized oral and written speech.

**Semantic and Stylistic Problems of Branch Texts Translation: a Cycle of Natural Sciences; a Cycle of Technical Sciences.** The system of theoretical knowledge and specific patterns of adequate translation of the linguistic units (words, combinations, idioms, free phrases specific by their structural form, sentences, text; familiarization with the semantic-stylistic problems of translating texts of the following branches: natural sciences, technical sciences, economic sciences.

**Practical Phonetics of the Main Foreign Language.** The course of phonetics of contemporary English involves general acquaintance of students with phonemic characteristics, sound changes in the speech flow (accommodation, assimilation, dissimilation, alternation, simplification, elongation, prosthesis, epenthesis, and metathesis). The stress and emphasis, practical composition, and intonation are also included in this course. Students will learn theoretical material, develop practical skills in phonetic and phonological transcription and phonetic analysis of the text.

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***Optional components by specialty (block 2)***

**Practical Course of the Second Foreign Language and Translation (French).**

Acquiring knowledge on phonetics, vocabulary, practical grammar, mastering skills of listening, reading and literally normalized oral and written speech.

**Semantic and Stylistic Problems of Branch Texts Translation:** a Cycle of Economic Sciences, a Cycle of IT specialty. The system of theoretical knowledge and specific patterns of adequate translation of the linguistic units (words, combinations, idioms, free phrases specific by their structural form, sentences, text; familiarization with the semantic-stylistic problems of translating texts of the following branches: natural sciences, technical sciences, economic sciences.

**Polish Language.** Acquiring knowledge on phonetics, vocabulary, grammar and stylistics of the Polish language, mastering skills of translating Polish authentic texts. Orthographical, morphological, lexical, stylistic, syntactic and punctuation norms of contemporary standard Polish language; genres of formal and informal communication and their main communicative features; culture of dialogue and political speech; the principles of stylistic analysis and correcting the text in accordance with the norms of contemporary standard Polish language.

**Bachelor**  
**Field of Knowledge "Human sciences"**  
**Specialty "Philology (German Languages and Literature) (Including Translation)"**  
**Educational-professional program "English and Other Foreign Language"**

Form of Training:	Licensed number of persons:
– Full-time	25
– Part-time	15
Duration of Training:	
– Full-time	4 years
– Part-time	5 years
Tests ECTS	240
Language of Teaching	Ukrainian, German, English, French, Polish
Qualification	Bachelor of Philology, Teacher of English and German

### **The concept of training**

Training in "Philology (Translation)" are stipulated by requirements in the translation of scientific and technical literature and documentation in agrobiolgy, engineering and technology, forestry, ecology, research in product quality and safety, agribusiness, agricultural economics and others.

### **Practical Training**

Practical training is an integral part of the educational process and is carried out according to the educational process schedule directly on authorized practice bases, including: institutions and enterprises of agrarian and environmental profiles of all forms of ownership having translation departments; research institutes and laboratories; translation agencies; secondary education institutions.

**Academic rights of Graduates:** graduates can apply for Master's Degree Specialties and Educational (Educational-professional or Educational-scientific) programs specified in Table 1.2 Section 1.3 this Catalog.

### **Employment of Graduates**

Bachelor of Philology is able to translate scientific, technical (agricultural) and business literature, work as a translator or interpreter at industrial and business establishments, professional and social organizations, publishing houses. Also a graduate can work as a teacher of foreign languages at secondary schools.

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**Bachelor`s Program and Curriculum**  
**Specialty "Philology (German Languages and Literature) (Including Translation)"**  
**Educational-professional program "English and Other Foreign Language"**

Code n/a	Components of the educational-professional program (education disciplines, course projects (paper), practice, qualification work)	Amount of tests ECTS	The final control
1	2	3	4
<b>1. GENERAL TRAINING CYCLE</b>			
<b>Compulsory components of EPP</b>			
CC 1	Psychology	4	exam
CC 2	Fundamentals of Information Technologies and Applied Linguistics	4	test
CC 3	Introduction to Translation Studies	4	exam
CC 4	Latin Language	4	exam
CC 5	Introduction to Linguistics	4	test
<b>Compulsory components EPP by decision of the Academic Council of the University</b>			
CCU1	Pedagogy	4	exam
CCU2	History of Ukrainian Statehood	4	exam
CCU3	Philosophy and Logic	4	exam
CCU4	Modern Ukrainian language	4	exam
CCU5	Ethnocultural Studies, Ethics and Aesthetics	4	test
CCU6	Information Technology in Translation Projects	4	test
CCU7	Physical Education	8	test
<b>2. SPECIAL (PROFESSIONAL) TRAINING CYCLE</b>			
<b>Compulsory components EPP</b>			
CC 2.1	Practical Course of the Main Foreign Language	55	exam
CC 2.2	Stylistics of the Main Foreign language	4	exam
CC 2.3	Comparative Lexicology of the Main Foreign and Ukrainian languages	4	exam
CC 2.4	Comparative Grammar of the Main Foreign and Ukrainian languages	4	exam
CC 2.5	Practice of Translation and Interpretation	16	exam
CC 2.6	Practical Grammar of the Main Foreign Language	8	exam
CC 2.7	History of the Main Foreign Language	4	exam
CC 2.8	Scientific and Technical Translation	4	exam
CC 2.9	Computer Lexicography and Translation	4	exam
CC 2.10	Translation of Business Language and Correspondence	4	exam
CC 2.11	Methodology of Teaching Foreign Languages	4	exam
CC 2.12	Aspect Translation of Agrarian Literature	4	test
CC 2.13	Linguistic and Country Studies of Countries of the Main Foreign Language	4	test
<b>The total amount of compulsory components</b>		<b>171</b>	
<b>Optional components</b>			
<b>Optional components by specialty (block 1)</b>			
OB 2.1	Practical Course of the Second Foreign Language and Translation: German.	42	exam
OB 2.2	Semantic and Stylistic Problems of Branch Texts Translation: a Cycle of Natural Sciences; a Cycle of Technical Sciences.	8	exam
OB 2.3	Practical Phonetics of the Main Foreign Language	4	test
<b>Optional components by specialty (block 2)</b>			
OB 2.1	Practical Course of the Second Foreign Language and Translation: French.	42	exam
OB 2.2	Semantic and Stylistic Problems of Branch Texts Translation: a Cycle of Economic, a cycle of IT specialties.	8	exam
OB 2.3	Polish Language	4	test
<b>Optional components by Student's Choice</b>			
OS1	Subject 1	4	test
OS2	Subject 2	4	test

<b>The total amount of optional components</b>		<b>60</b>	
<b>3. OTHER TYPES OF TRAINING</b>			
CC 3.1	Induction Translation Practice	3	test
CC 3.2	Externship Pedagogical Practice	3	test
CC 3.3	Externship Translation Practice	2	test
CC 3.4	State Examination	1	exam
<b>THE TOTAL AMOUNT OF EPP</b>		<b>240</b>	

## Annotations of Components in the curriculum

### 1. GENERAL TRAINING CYCLE

#### Compulsory components

**Psychology.** General issues of psychology; the peculiarities of psyche development in phylogenesis and ontogenesis; psychological processes; states of mind and person's peculiarities.

**Fundamentals of Information Technologies and Applied Linguistics.** Structure peculiarities and technical characteristics of modern personal computers and other devices, their application in conducting linguistic research and translation.

**Introduction to Translation Studies.** Translation and its types; the history of foundation and development of translation theories in Ukraine and other countries; theory and classification of translation units; lexical, grammatical and syntactic transformations; stylistic characteristics of idioms, proverbs and sayings, slang, phrasal verbs, and colloquial expressions.

**Latin Language.** Mastering the Latin language, as well as skills needed for translating Latin texts and using Latin terminology in teaching, scientific and production activities.

**Introduction to Linguistics.** General issues of contemporary linguistics: general information about language and linguistics as a discipline, nature and essence of language, its origin, regularities of its development and functioning at different historical stages, origin and development of writing, genealogical and typological classification of languages, structural levels and language units, etc.

#### Compulsory components by decision of the Academic Council of the University

**Pedagogy.** The discipline deals with the theory and practice of organization of teaching (didactics), education and management of education (school science).

**History of Ukrainian Statehood.** The content of the educational discipline "History of Ukrainian Statehood" is the study of basic stages of formation and development of statehood on the Ukrainian lands, distinctive state building way of the Ukrainian nation. Building of the independent state needs highly skilled, patriotically inclined, socially oriented professionals able to continue the best traditions of the Ukrainians. The response to these circumstances is the study of this discipline in universities. It will allow mastering the theoretical course, creatively applying their knowledge in practice and comprehending on their own laws of the state building process, orientate in political life and feel their involvement in the state-thousand-year tradition of the Ukrainian people.

**Philosophy and Logic.** The course provides the system of knowledge in such branches of philosophy as ontology, gnoseology, social philosophy, historical types of philosophy that explain the essence of relations “a human being – the world” in its main displays. The course is marked by ideological orientation, which allows synthesizing the acquired knowledge on professional and humanitarian disciplines in a holistic worldview – the theoretical basis of the university level of training specialists. The method of logic, the basic forms and laws of thinking, the preconditions for the emergence of modern logic, the division of classical logic, the typology and analysis of formal logical theories within the logic of utterances and the logic of predicates.

**Modern Ukrainian language.** Orthographic, morphological, lexical, stylistic, syntactic and punctuation norms of the contemporary standard Ukrainian language; genres of professional communication and their main communicative features; culture of dialogue and political speech; the principles of structural-stylistic analysis and correction of the text in accordance with the norms of the standard Ukrainian language.

**Ethnocultural Studies, Ethics and Aesthetics.** The discipline studies the development of cultural (and linguistic-cultural) processes among peoples during their development. One of the aspects of ethnocultural studies is the specifics of everyday, factual and other types of communicative behavior of the ethnic group. The main tendencies in modern international communication, the basis of the international protocol and etiquette, diplomatic and international correspondence are considered as well.

**Information Technology in Translation Projects.** Implementation of translation activities with the use of automated translation systems (CAT-systems), working out collective interaction in the implementation of translation projects with the use of SDL Trados.

**Physical Education.** The purpose of teaching the discipline is the formation of the physical culture of a young specialist and the ability to implement it in the social professional activity and family. The task is to strengthen the students' health and develop physical abilities that correspond to the professional activity of a future specialist.

## 2. SPECIAL (PROFESSIONAL) TRAINING CYCLE

**Practical Course of the Main Foreign Language.** Acquiring knowledge in phonetics, vocabulary, and practical grammar of the foreign language; mastering reading and listening skills as well communication and writing skills.

**Stylistics of the Main Foreign language.** The essence of the language stylistics, communicative and texts stylistics, functioning of language units in the language system; functioning styles and their characteristics, criteria, methods of analysis and texts' interpretation.

**Comparative Lexicology of the Main Foreign and Ukrainian languages.** Theoretical fundamentals of lexicology and lexicography: practical application of the language units in communication; lexical skills and habits mastering.

**Comparative Grammar of the Main Foreign and Ukrainian languages.** Typological peculiarities of the foreign and Ukrainian languages; grammatical constructions in compared languages; similar attributes and distinctions in the systems of grammar categories in various parts of speech, and syntactic units.

**Practice of Translation and Interpretation.** Theoretical and practical fundamentals of translation and interpretation; translation transformations; non-equivalent vocabulary; types of semantic equivalents; contextual meaning of lexical units; types of semantic equivalents; factors of style.

**Practical Grammar of the Main Foreign Language.** Studying grammatical system of the foreign language, acquiring skills of recognition, understanding and use of grammatical forms in oral and written communication.

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**History of the Main Foreign Language.** Processes of language and its structure formation and development; the language historical characteristics and attributes; similarity with other languages of the same language group; its specific peculiarities.

**Scientific and Technical Translation.** Solution of grammatical, lexical, terminological and genre-stylistic tasks; ways of translation of different scientific and technique phenomena.

**Computer Lexicography and Translation.** It is designed to introduce students to the contemporary lexicography and illustrate connection between computer lexicography and translation. The course involves mastering basic concepts of computer lexicography; study of types, kinds and structure of electronic dictionaries; their usage and creating.

**Translation of Business Language and Correspondence.** Basic lexical and grammatical features of the style of business language and speech as well as means of their reproduction in translation, genre classification of business documents are considered within the course.

**Aspect Translation of Agrarian Literature.** Theoretical fundamentals of the translation of texts on agrarian subjects, methods of adequate reproduction of various types of terminology, characteristic of agrarian literature, the formation of skills for adequate translation.

**Methodology of Teaching Foreign Languages.** Objectives, content, principles of teaching foreign languages; methods and forms of teaching; planning of the foreign language teaching-learning process; technologies of formation of language and speech competences at the level determined by the current legislation.

**Linguistic and Country Studies of Countries of the Main Foreign Language.** Language units that reflect national cultural peculiarities, formation of communicative students' competency in intercultural communications through appropriate perception of oral speech and original texts.

### **Optional components**

#### ***Optional components by specialty (block 1)***

**Practical Course of the Second Foreign Language and Translation (German).** Acquiring knowledge on phonetics, vocabulary, practical grammar, mastering skills of listening, reading and literally normalized oral and written speech.

**Semantic and Stylistic Problems of Branch Texts Translation: a Cycle of Natural Sciences; a Cycle of Technical Sciences.** The system of theoretical knowledge and specific patterns of adequate translation of the linguistic units (words, combinations, idioms, free phrases specific by their structural form, sentences, text; familiarization with the semantic-stylistic problems of translating texts of the following branches: natural sciences, technical sciences, economic sciences.

**Practical Phonetics of the Main Foreign Language.** The course of phonetics of contemporary English involves general acquaintance of students with phonemic characteristics, sound changes in the speech flow (accommodation, assimilation, dissimilation, alternation, simplification, elongation, prosthesis, epenthesis, and metathesis). The stress and emphasis, practical composition, and intonation are also included in this course. Students will learn theoretical material, develop practical skills in phonetic and phonological transcription and phonetic analysis of the text.

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***Optional components by specialty (block 2)***

**Practical Course of the Second Foreign Language and Translation (French).**

Acquiring knowledge on phonetics, vocabulary, practical grammar, mastering skills of listening, reading and literally normalized oral and written speech.

**Semantic and Stylistic Problems of Branch Texts Translation:** a Cycle of Economic Sciences, a Cycle of IT specialty. The system of theoretical knowledge and specific patterns of adequate translation of the linguistic units (words, combinations, idioms, free phrases specific by their structural form, sentences, text; familiarization with the semantic-stylistic problems of translating texts of the following branches: natural sciences, technical sciences, economic sciences.

**Polish Language.** Acquiring knowledge on phonetics, vocabulary, grammar and stylistics of the Polish language, mastering skills of translating Polish authentic texts. Orthographical, morphological, lexical, stylistic, syntactic and punctuation norms of contemporary standard Polish language; genres of formal and informal communication and their main communicative features; culture of dialogue and political speech; the principles of stylistic analysis and correcting the text in accordance with the norms of contemporary standard Polish language.

**Bachelor**  
**field of knowledge «International relations»**  
**specialty «INTERNATIONAL RELATIONS, PUBLIC COMMUNICATION AND**  
**REGIONAL STUDIOS»**  
**Educational-professional program ««International relations, public communications**  
**and regional studios»**

Form of education:	Licensed amount:
– full-time	100 people
– external	
Training period: full-time form	4 years
External form	5 years
Tests	240 ECTS
Teaching language	Ukrainian, English
Qualification of graduates	an expert on international relations

### **Concept of training**

Training in the field of international relations, public communications and Regional Studios is a response to a notable request of government and businesses, and therefore society for highly qualified professionals in the context of setting up, development and moving to the new level of partnership and communication between different in structure and functionality subjects of international relations and law. Planned by curriculum systematic mastery of a number of professional and operational knowledge and skills will allow specialists in international relations navigate well in the socio-political, economic and cultural movements and events specific to the different level and scales of relations and cooperation between the subjects of international relations, perform their duties as the professionals.

### **Practical training**

Practical training is carried out according to the schedule of the educational process directly in certified practical institutions, including: trade representations and other representative organizations of Ukraine abroad; foreign states representations and international organizations in Ukraine; Ukraine-foreign joint stock, public and private enterprises; public organizations which have close contacts with foreign countries; structural units of Cabinet of Ministers of Ukraine; Ministry of Foreign Economic Relations of Ukraine; other republican departments, that are a subdivision of Foreign Affairs; domestic and foreign research institutes and laboratories.

### **Proposed Topics for Bachelor theses**

1. Westphalia Agreement: International Legal and Geopolitical Consequences.
2. The Congress of Vienna and Its International Concern.
3. The Main Points of Diplomatic Controversy in Europe XVIII Century.
4. Diplomacy of the American Bourgeois Revolution of 1775-1782.
5. Diplomatic Training by Otto von Bismarck of the German Union under the Auspices of Prussia.
6. Diplomatic Preparation of The First World War by the Leading Countries of Europe.
7. Versailles-Washington Geopolitical System: Essence and Meaning.
8. European Diplomacy on the Eve of The Second World War.
9. International Concern of the Creation of the United Nations.
10. Ukraine is the Founder of the United Nations.

**Academic rights of graduates** - can continue their studies at the Master Program for specializations, basis for which is introduced in the curriculum of undergraduate programs, starting from the second or third course:

- 291 «Diplomacy and Diplomatic Service» (Prelim.)
- 291 «International cooperation in the agro-business sector» (Prelim.)
- 291 «international research and educational projects» (Prelim.)
- 291 «International organizations and multilateral diplomacy» (Prelim.)
- 291 «International Politics Analysis» (Prelim.)

### **Employment of Graduates**

A specialist in international relations, public communication and regional studies can be employed at embassies, consulates, trade representations and other representative organizations of Ukraine; offices of other countries and international organizations in Ukraine; Ukraine joint-stock foreign, public and private enterprises; public organizations that have close contacts with foreign countries; structural units of President of Ukraine Office; Secretariat of the Supreme Council of Ukraine; structural units of Cabinet of Ministers of Ukraine; Ministry of Foreign Affairs of Ukraine; Ministry of Foreign Economic Relations of Ukraine; other national agencies, that are a subdivision of Foreign Affairs; domestic and foreign research institutes and laboratories.

**Bachelor`s Program and Curriculum in Specialty  
«International relations, public communications and regional studios»  
Educational-professional program  
«International relations, public communications and regional studios»**

Code e/d	Components of the educational-professional program (educational disciplines, course projects (work), practice, qualification work)	Amount of tests ECTS	Form of final control
1	2	3	4
<b>1. GENERAL TRAINING CYCLE</b>			
<b>Compulsory components EPP</b>			
CC 1	World Economy and Foreign Economic Relations of Ukraine	4	exam
CC 2	International Economic Relations with Fundamentals of Economic Theory	4	exam
CC 3	Conflictology and Theory of Negotiation	4	exam
CC 4	Fundamentals of World Policy	4	exam
CC 5	Foreign Language	21	test, exam
CC 6	Practical Course of Branch Translation	15	test, exam
CC 7	Private International Law	4	exam
CC 8	Comparative Constitutional and Public International Law	4	exam
CC 9	Theory and History of the State, Law and Political Studies	5	exam
<b>Compulsory components EPP by decision of the Academic Council of the University</b>			
CCU 1.1	History of Ukrainian Statehood	4	exam
CCU 1.2	Ethnic and Cultural Science	4	exam
CCU 1.3	Ukrainian Language for Specific Purposes	4	exam
CCU 1.4	Physical Education	6	залік
CCU 1.5	Philosophy	4	exam
CCU 1.6	Safety Life Activities	4	exam
<b>2. SPECIAL (PROFESSIONAL) TRAINING CYCLE</b>			
<b>Compulsory components EPP</b>			
CC 10	Fundamentals of Geopolitics and Geostrategy	4	exam
CC 11	Fundamentals of Scientific Research	4	exam
CC 12	Actual Problems of International Relations in Asia, Africa and Latin America	4	exam
CC 13	Introduction to Specialty «International Relations»	4	exam
CC 14	Diplomatic and Consular Service	4	exam
CC 15	Diplomatic Protocol and Etiquette	4	exam
CC 16	European Union in International Relations	4	exam
CC 17	Foreign Policy and Diplomacy of Ukraine	4	exam
CC 18	Foreign Policy of Western European and North American Countries	4	exam
CC 19	Foreign Policy of the Former Soviet Union	4	exam
CC 20	Міжнародна інформація та сучасні політичні інформаційні системи і технології International Information and Modern Political Systems and Technologies	7	exam
CC 21	History of International Relations	6	exam, KW
CC 22	Country Studies	9	залік
CC 23	International Relations and World Policy	8	exam, KW
CC 24	International Organizations	4	exam
CC 25	Current Trends in International Relations	4	exam, KW
CC 26	Теорія міжнародних відносин, цивілізацій та міжнародні конфлікти Theory of International Relations, Civilizations and International Conflicts	8	exam
<b>The total amount of Compulsory components</b>		<b>180</b>	

<b>Optional components EPP</b>			
<b>Optional components by specialty</b>			
OB 1.1	Humanitarian Challenges of Our Time	4	exam
	Міжнародне співробітництво в гуманітарній сфері		
OB 1.2	Cultural, Spiritual and Religious Traditions of the World's Countries	4	exam
	Етнокультурні особливості дипломатичного і ділового спілкування		
OB 1.3	Foreign Language II (латинська)	6	test, exam
	Foreign Language II польська)		
OB 2.4	Foreign Language for Specific Purposes (Іспанська)	12	test, exam
	Foreign Language for Specific Purposes (Німецька)		
	Foreign Language for Specific Purposes (Французька)		
OB 2.5	Fundamentals of Agricultural Consulting and Marketing in the International Relations	4	exam
	Основи рослинництва та тваринництва для фахівців-міжнародників		
OB 2.6	Foreign Policy of CEE and SEE Countries	4	exam
	Практична психологія в дипломатії		
OB 2.7	Логіка	4	exam
	Планування та управління проектами міжнародного співробітництва в аграрній галузі		
OB 2.8	Informational and Analytical Activities in International Relations	4	exam
	Fundamentals of Business-Designing		
OB 2.9	The Political Geography of the World's Countries	4	exam
	Сільськогосподарська географія світу		
OB 2.10	Politology and Sociology	4	exam
	Основи національної та міжнародної безпеки		
OB 2.11	Regional Science, Ethnic and Demographic Processes in the World Regions	4	exam
	Проблеми екологічної безпеки в міжнародних відносинах		
<b>Optional components by Student's Choice</b>			
OS 2.1	Дисципліна 1	3	exam
OS 2.2	Дисципліна 2	3	exam
<b>The total amount of Optional components</b>		60	
<b>3. OTHER TYPES OF TRAINING</b>			
CC	Військова підготовка	29	
CC	Культурно-просвітницька підготовка	10	
CC	Educational internship	5	test
CC	Work experience internship	3	test
CC	Final state attestation	4	exam, bachelor's thesis
<b>THE TOTAL AMOUNT OF EPP (without military training)</b>		<b>240</b>	

## Annotations of Components in the curriculum

### 1. GENERAL TRAINING CYCLE

#### Compulsory components

**World Economy and Foreign Economic Relations of Ukraine.** The peculiarities of functioning of the world economic sphere, the system of existing and prospective foreign economic relations of Ukraine, the problems encountered before the state are considered.

**International Economic Relations with Fundamentals of Economic Theory.**

Main forms of international economic relations, international division of labor trends, the main conceptual approaches to the analysis of international economic relations, trends and features of development of integration processes in the global economy. The essence of economic phenomena and processes; economic context of property relations, distribution, exchange and consumption of material and spiritual values in the society and the principles of economic activity, basic laws and principles of functioning of industrial sector and market.

**Conflictology and Theory of Negotiation.** The nature of conflict and possible solutions, including an efficient negotiation process; systematic professional approach to work with conflict and organizing negotiations.

**Fundamentals of World Policy.** Nature of key events, phenomena and processes inherent to world politics, the common patterns; analysis of processes that are inherent to world politics and the strategy and tactics of behavior for different actors in world politics.

**Foreign Language.** Mastering phonetic, lexica, and practical grammar knowledge, as well as skills dealing with audio, reading, oral and written communication.

**Practical Course of Branch Translation.** Overall, phraseology and lexical-morphological and syntactic aspects, and the main task of translation; rules of translation as a kind of communicative activity, guidelines for adequate translation.

**Private International Law.** Types of sources, directives of the national legal system to regulate international private relations and international regulatory documents, principles of regulation of the legal status of individuals and legal persons in private international law.

**Comparative Constitutional and Public International Law.** Fundamentals of constitutional and legal systems of the world; forms of government inherent to different countries, the sources of state law of foreign countries, modern types of constitutions basis of the legal status of a person in foreign countries. Key provisions of international and domestic law, types of liability and sanctions in international public law; relationship between international and domestic law.

**Theory and History of the State, Law and Political Studies.** The nature and essence of the leading political institutions and basic streamlining the legal framework in the country; leading characteristics of the state and socio-political situation in and around it, given the wide range of political and legal knowledge. The set of theories and doctrines aimed at disclosure of political institutions, processes and phenomena; analysis of political institutions, processes and phenomena taking into account historical experience and political precedents.

**Compulsory components by decision of the Academic Council of the University**

Annotations of components: History of Ukrainian Statehood, Ethnic and Cultural Science, Ukrainian Language for Specific Purposes, Physical Education, Philosophy, Safety Life Activities see Section 2.1.

**2. SPECIAL (PROFESSIONAL) TRAINING CYCLE****Compulsory components**

**Fundamentals of Geopolitics and Geostrategy.** The essence of geopolitics and geostrategy as the foundation for international politics, principles of their implementation; planning the strategies of developments of events, given the characteristics of the economic and political situation, mentality and other factors inherent to the object of attention and study.

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**Fundamentals of Scientific Research.** Strategy, principles and methods of organization and research.

**Actual Problems of International Relations in Asia, Africa and Latin America.** The combination of the current problems in the context of international relations faced by the countries of Asia, Africa and Latin America, its genesis and directions of a solution.

**Introduction to Specialty «International Relations».** The specifics of the specialty "International Relations", determine the fundamental concepts and principles of international relations and their proceedings.

**Diplomatic and Consular Service.** Particularities of diplomatic and consular service, facts and historical knowledge accumulated in the context of diplomatic and consular service; Analysis of diplomatic activities of international actors in the process of bilateral and multilateral diplomacy to resolve the political-administrative, organizational, legal, information and analysis, staffing and other problems within the government units of External Relations to implement foreign politic interests of Ukraine.

**Diplomatic Protocol and Etiquette.** The history of diplomatic protocol and etiquette, specifics of diplomatic negotiations protocol; major diplomatic documents, their analysis.

**European Union in International Relations.** Key features of the European Union as a subject of international relations, history of its creation, its strengths and weaknesses.

**Foreign Policy and Diplomacy of Ukraine.** Particularities of foreign policy and diplomacy of Ukraine, the challenges of internal and external nature, that arise from national interests and national security of Ukraine; analysis of internal and external factors and their influence on politic and diplomatic activities of Ukrainian state.

**Foreign Policy of Western European and North American Countries.** Particularities of the foreign policy of Western European and North American Countries, the specifics of foreign policy of countries of the region, role and place of Western European and North American Countries in world policy.

**Foreign Policy of the Former Soviet Union.** Particularities of the organization of political, socio-economic and cultural life of the countries that arose in the territory of the former USSR; specificity of interaction between Former Soviet Union: interstate relations, contradictions, conflicts, ways of their solution; CIS as a subject of international law and relations, peculiarities of its functioning; the role of the Russian Federation in the life of the Former Soviet Union, in particular as successor to the USSR; the position of Ukraine in the Former Soviet Union: friends and rival states; Baltic-Black Sea Union, its destiny; GUAM, principles and perspectives of functioning; peculiarities of diplomatic activity and foreign policy activity of Former Soviet Union.

**International Information and Modern Political інформаційні Systems and Technologies.** The essence and peculiarities of international cooperation in the field of information and communication, the role and functions of international organizations in shaping and implementing the ideology of information society; current status and trends of global communication processes and their impact on the global, regional and national politics, research and prediction of problems of the international community in the field of information and communication. The essence of information and information processes, information sources, especially the interaction of information sources. The rules and principles of operating information, defending your rights and freedoms as a carrier and recipient of information, organization and management of communication flows and channels.

**History of International Relations.** Features and basics of diplomacy, patterns of its development in different historical periods. Understanding the historical trends of diplomacy, basics of knowledge in the field of diplomacy for analyzing situations and diplomatic conflicts. International relations, their laws, the major international conflicts, diplomatic events, peace talks, conference documents and materials that characterize international relations.

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**Country Studies.** Classification and typology of countries, regional division of the world, and the historical development of the culture, especially the political and state structure of the country, the main directions of economic development of foreign countries.

**International Relations and World Policy.** The nature of the main features of the driving forces and mechanisms of international relations in the political, economic and cultural spheres from antiquity to the present.

**International Organizations.** The nature of the international organizations, the history of their origin and classification; the role of international organizations in streamlining global political and economic space, and in the life of Ukraine.

**Current Trends in International Relations.** Features of the system of international relations from the end XX century until now, the specifics and trends in contemporary international relations, especially the role of countries and regional and international organizations; features of the modern world order, international relations, political realities of the regions and the world at large, expert evaluation of events and phenomena of political life.

**Theory of International Relations, Civilizations and International Conflicts.** Basic theory of international relations, types of international systems, their structure and basic properties; analysis of processes and phenomena in the international environment, predictions about the likely situations in international and world politics. Common features in the development of civilizations in the world, global problems of today and their impact on the development of future civilizations, analysis of civilizational cycles facts about the historical development of civilizations of past and present, their material and spiritual culture, religion, etc. The essence and nature of international conflicts, especially their flow and the mechanisms that led to their solution; modern conceptual framework and modern approaches of foreign and domestic thinkers associated with the study of the nature of conflict, especially their escalation and settlement, controlling the conflict.

## **Optional components**

### ***Optional components by specialty***

**Humanitarian Challenges of Our Time.** The essence and role of humanitarian factor in human existence and humanity, and safeguard mechanisms to stabilize the socio-political and economic systems from excessive exposure to humanitarian factor; the ability to determine the role of humanitarian factors in each situation and globally, as well as features of its sources and methods and ways to neutralize its influence or lead it in the desired direction.

**Cultural, Spiritual and Religious Traditions of the World's Countries.** Major cultural and religious heritage and traditions of ethnic groups in the world, including Ukrainian, the principles on which there is distinction and classification of cultural achievements. Searching and providing comprehensive characteristics of a particular ethnic heritage.

**Fundamentals of Agricultural Consulting and Marketing.** The principles and rules for consulting support, basic information on the functioning of the agricultural sector. The rules and ways of providing consulting services, comprehensive analysis of the peculiarities of the agricultural sector and the international market of agricultural products and related products and services. The essence and principles of management and decision making; structure of economic and exchange domains, rules of their operation.

**Foreign Policy of CEE and SEE Countries.** Particularities and key principles of foreign policy countries of the region, the role and the place of CEE and SEE in world policy; differences and similarities in the foreign policy countries of the region.

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**Informational and Analytical Activities in International Relations.** Information flows, new technologies of information analysis; analysis of relations between the subjects of international law and relations; current trends and issues of international communications and information.

**Fundamentals of Business-Designing.** The peculiarities of the fundamentals of business-designing, basic information on starting own occupation and own business are considered. The essence of economic phenomena and processes in business-designing, a comprehensive analysis of the agrarian sector and the international market of agricultural products, the exchange and consumption of material and spiritual goods in society.

**The Political Geography of the World's Countries.** Modern political map of the world, basic schools, trends and paradigms of geopolitics. Analysis of the main regional geopolitical problems in the world, expert assessment of the geopolitical situation of the country.

**Politology and Sociology.** Theoretical and methodological problems of political knowledge, the development of views of prominent thinkers of foreign and domestic politics, the place and role of political actors in the system of political and power relations of society; state politics principles. The structure of sociological knowledge based on the sociological analysis of society, analysis of social phenomena and processes in terms of sociology, basic methodological principles of organizing and conducting sociological research.

**Regional Science, Ethnic and Demographic Processes in the World Regions.** The main theoretical approaches to the analysis of regionalism concept of socio-politically distinction, especially political regionalization. Expert review of the socio-economic features and political development of specific regions. Basic demographic processes in the world and in Ukraine, their characteristics, causes, conditions and circumstances, given the specificity of ethnic and cultural spirit of the people; systemic vision of events in different regions and countries and development of projects to achieve certain goals in a given region.

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**Bachelor**  
**Field of Knowledge «Education/ Pedagogy»**  
**in Specialty «PROFESSIONAL EDUCATION. AGRICULTURAL PRODUCTION, PROCESSING OF AGRICULTURAL PRODUCTS AND FOOD TECHNOLOGIES»**  
**Educational-professional program «Professional Education (Technology of production and processing of agricultural products)»**

Form of Training:	Licensed number of persons:
– Full-time	20
– Part-time	-
Duration of Training	3 years 10 months
Tests ECTS	240
Language of Teaching	Ukrainian, English
Qualification	Bachelor of professional education (Agricultural production, processing of agricultural products and food technologies)

### **Concept of training**

Training of pedagogue of professional education is determined by demand in professional who conduct activity of teaching and educational process organising, methodological and scientific activity in technical colleges and agricultural colleges, and conduct different arrangements which promote social development of youth in agricultural establishments of higher education.

### **Practical training**

Practical training is conducted according to the plan of studying process on such practice bases as technical colleges and establishments of higher education.

**Academic rights of Graduates:** graduates can apply for Master's Degree Specialties and Educational (Educational-professional or Educational-scientific) programs specified in Table 1.2 Section 1.3 this Catalog.

### **Employment of Graduates**

Graduate with qualification «pedagogue of professional training» may work as teacher in technical college, methodologist of correspondence schools and departments; junior scientific researcher; teacher-methodologist; inspector of special and technical colleges; inspector-methodologist.

**Bachelor`s Program and Curriculum in Specialty  
«Professional Education. Agricultural production, processing of agricultural  
products and food technologies»  
Educational-professional program «Professional Education  
(Technology of production and processing of agricultural products)»**

Code n/a	Components of the educational and professional program (education disciplines, course projects (paper), practice, qualification work)	Amount of tests ECTS	The final control
1	2	3	4
<b>1. GENERAL TRAINING CYCLE</b>			
<b>Compulsory components EPP</b>			
CC 1	Valeology and basic medical knowledge	4,0	exam
CC 2	Psychology	12,0	test, exam
CC 3	Age pedagogy	4,0	exam
<b>Total</b>		<b>20</b>	
<b>Compulsory components EPP by decision of the Academic Council of the University</b>			
CCU 1	Ukrainian language in professional communication	3,0	exam
CCU 2	History of Ukraine	4,0	exam
CCU 3	Ethnoculturology	4,0	exam
CCU 4	Philosophy	7,0	test, exam
CCU 5	Foreign language	18,0	test, exam
CCU 6	Legal culture	3,0	exam
CCU 7	Latin language	3,0	exam
CCU 8	Physical training	6,0	test
<b>Total</b>		<b>48</b>	
<b>2. SPECIAL (PROFESSIONAL) TRAINING CYCLE</b>			
<b>Compulsory components EPP</b>			
CC 4	General and professional pedagogics	7,0	exam
CC 5	Educational work organising	4,0	exam
CC 6	Basics of scientific and pedagogic research	4,0	exam
CC 7	Basics of pedagogic mastery	4,0	exam
CC 8	Pedagogical technologies	4,0	exam
CC 9	Legislation of Management of educational establishments	3,0	exam
CC 10	New innovation technologies	4,0	exam
CC 11	Introduction to speciality	5,0	exam
CC 12	Pedagogics of family education.	3,0	exam
CC 13	History of pedagogics (History of pedagogics and education in Ukraine, Foreign history of pedagogics and education)	8,0	test, экзамен
CC 14	Teaching technologies of professional subjects	11,0	coursework, test, exam
CC 15	Comparative pedagogics	8,0	test, exam
CC 16	Leadership and administration	5,0	exam
CC 17	Technology of production and processing of agricultural products		
	Technology of production and processing of crop production	4,0	exam
	Technology of production and processing of livestock production	4,0	exam
	Technology of storing and standardization of plant growing products	4,0	exam
	Forage producing and grass-farming	4,0	exam
CC 18	Chemistry	3,0	exam
<b>Total</b>		<b>89</b>	
<b>The total amount of Compulsory components</b>		<b>157</b>	

**CURRICULA AND PROGRAMS OF BACHELOR DEGREE**

<b>Optional components EPP</b>			
<b><i>Optional components by specialty (block 1)</i></b>			
OB 1.1	Basics of economical knowledge	3,0	exam
	Educational Measurements		
OB 1.2	Pedagogical ethic	4,0	exam
	The basics of happiness		
<b>Total</b>		<b>7</b>	
<b><i>Optional components by specialty (block 2)</i></b>			
OB 2.1.	Informational and communicational technologies of training	7,0	exam
	Methods of work of the student group mentor		
	Organization of practical training		
	Methods of forming student team		
OB 2.2.	Management of the educational establishment	4,0	coursework, exam
	Philosophy of education		
OB 2.3.	Fundamentals of Business-Designing	4,0	exam
	Social work in entertainment sphere		
OB 2.4.	Farming	3,0	exam
	Biology		
	Geodesy		
	Financial Accounting		
	Painting		
OB 2.5.	Soil science	3,0	exam
	General ecology		
	Economics of enterprise		
	Aesthetics		
OB 2.6.	Selection and seed growing	4,0	exam
	Monitoring of environment		
	Mechanization of forestry		
	Management		
	Phytodesign		
OB 2.7.	Agrochemistry	4,0	exam
	Chemistry and biogeochemistry		
	Forest phytopathology and entomology		
	Marketing		
	Composition and colour study		
OB 2.8.	Commodity science of raw materials and products of crop production	6,0	exam
	Ecological analysis		
	Forestry		
	Organizing of production		
	Basics of arrangement		
OB 2.9.	Horticulture	6,0	exam
	Ecological protection of agrosytsems		
	Forest melioration		
	Agricultural management		
	Theory and methodology of design		
OB 2.10.	Vegetable growing	6,0	exam
	Environmental protection and sustain environmental management		
	Forest crops		
	Finances		
	Decorative floristic		

**CURRICULA AND PROGRAMS OF BACHELOR DEGREE**

OB 2.11.	Machinery in crop production	5,0	exam
	Management of quality of agricultural products		
	Organising of forestry production		
	Tax system		
	Decorative art		
OB 2.12.	Machinery in animal husbandry	3,0	exam
	Ecological legislation		
	Basics of forest exploitation		
	Auditing		
	Computers and computer technology in agriculture		
<b>Optional components by Student's Choice</b>			
OS 3.1.	<i>Subjects 1</i>	3,0	test
OS 3.2.	<i>Subjects 2</i>	3,0	exam
<b>The total amount of Optional components</b>		<b>67</b>	
<b>3. OTHER TYPES OF TRAINING</b>			
CC 19	Studying pedagogical practice	3,0	
CC 20	Studying technological practice	4,0	
CC 21	Industrial technological practice	4,0	
CC 22	Industrial pedagogical practice	4,0	
	State Attestation	1,0	
<b>THE TOTAL AMOUNT OF EPP (without military training)</b>		<b>240</b>	

## Annotations of Components in the curriculum

### 1. GENERAL TRAINING CYCLE

#### Compulsory components

**Valeology and the Science and fundamentals of medical knowledge.** Health culture; the formation, preservation and strengthening of health of the person in spiritual, mental and physical aspects, hardening of the body, strengthening of physical and mental health; balanced nutrition, organization of work and rest. The first aid in threatening life conditions, occurring at diseases of internal organs, infectious diseases, injuries, and accidents.

**Psychology.** General issues of psychology, especially the development of psyche in phylogenesis and ontogenesis, the driving force of development of psyche, mental processes, mental states and personality traits.

**Age pedagogy.** The course provides knowledge of the peculiarities of mental, personal development at different stages of life, the use of psychological potential of a teacher and a student in the process of learning, upbringing, acquiring social experience.

#### Compulsory components by decision of the Academic Council of the University

Annotations of disciplines «Ukrainian language in professional communication», «History of Ukrainian Statehood», «Ethnocultural», «Philosophy», «Foreign language», «Legal culture of a personality», «Latin language», «Physical education» see section 2.1.

## 2. SPECIAL (PROFESSIONAL) TRAINING CYCLE

### Compulsory components

**General and professional pedagogy.** Theoretical foundations of pedagogy as a science about education of the person, basic categories, laws and principles; the nature and pedagogical requirements for the content of general and vocational education, the general methods and means of training and education, forms of organization of teaching process in secondary and vocational schools; fundamentals of management of educational process in secondary and vocational schools; formation of readiness of students to pedagogical activity, interest in the teaching profession.

**Organization of educational work.** The formation of students' scientific concepts about the theory and methodology of teaching, its aims and objectives; assistance to trainees in mastering the basic theoretical knowledge and practical skills in the education of the individual and of the team and training them to apply these knowledge and skills in future teaching activities; introducing the future teachers to the methodologies of research and education of the individual, the work of supervisor of student group on team-building, developing and carrying out educational activities.

**Basics of scientific and pedagogic research.** Introducing students to contemporary methodological problems of science; the main stages of scientific and pedagogical research; methods of socio-pedagogical research; forming in students the concept of methodology of scientific research; mastering the basic theoretical knowledge and practical skills of organizing, conducting scientific and pedagogical research; developing the ability to summarize the results of scientific research; developing the scientific worldview of students.

**Basics of pedagogical mastery.** The course aims to develop skills of pedagogical activity, to promote the enrichment of the educational experience of future teachers, knowledge of pedagogy and psychology, innovative educational technologies, culture of pedagogical communication; to create conditions for the accumulation of experience of the optimal combination of basic education with learning the art of communication; formation of practical teaching skills, pedagogical culture and erudition. The course provides familiarization with the basics of the teaching process; the study of the peculiarities of pedagogical interaction; the improvement of pedagogical abilities of students; mastery of methods of training and education; familiarization with the basics of teaching in higher education.

**Pedagogical technologies.** The aim of the course is to develop the students' scientific knowledge about educational technologies in education, their goals and objectives; to help future teachers in mastering the basic theoretical knowledge and practical skills to apply new pedagogical technologies in the educational process and to teach them to apply the knowledge and skills in future teaching activities.

**Legislation of Management of educational establishments.** The purpose of discipline is to provide the students with advanced theoretical and practical knowledge on the legal bases of foundation and activities of educational institutions of Ukraine of all levels, as well as the formation of skills of practical application of norms of the current legislation at positions in educational institutions.

**New innovation technologies.** The course program reveals the use of basic innovative educational technologies, their principles, methods, types and activities. It deals with the regularities and fundamental problems of the use of innovative educational technologies by the future teacher. Much attention is paid to pedagogical culture, communication styles, advanced educational technologies, teaching techniques in higher education in the form of mini-lectures with multimedia presentations, training exercises, and the creation of a program for professional development.

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**Introduction to speciality.** The discipline outlines the main tasks and functions of the professional learning teacher, requirements to his personality and the organization of labour conditions.

**Pedagogics of family education.** The aim of teaching the discipline is to develop scientific knowledge on the theory and methodology of family education, its goals and objectives, problems and prospects of development of the modern family, its functions and types, characteristics of social work with problem and young families; assistance in mastering the basic theoretical knowledge and practical skills to educate the individual in the family.

**History of pedagogics. *History of pedagogics and education in Ukraine.*** The academic discipline discloses the process of the development of education, school and pedagogical thought from ancient times to the present day in Ukraine in the context of the development of the world's historical and pedagogical process, the regularities of the historical development of schools and education in Ukraine, peculiarities of formation and nature of the major pedagogical theories in the different stages of social development.

***Foreign history of pedagogics and education.*** The discipline studies the relationship between the educational ideas of theorists and practitioners, tradition and innovation in the development and implementation of pedagogical ideas; ideas and contribution of an outstanding teacher in the theory and practice of training and education; socio-historical conditions that have affected the worldview and pedagogical beliefs of a scientist-teacher, led to his contribution to the development of the theory of pedagogy.

**Teaching technologies of professional subjects.** The purpose of the discipline is to provide students with the knowledge and skills of the organization of the educational process for the study of professionally oriented disciplines at higher educational institutions

**Comparative pedagogics.** The purpose of the discipline is formation of theoretical knowledge of major paradigms, trends of the development of education in the world, skills to apply the obtained knowledge in pedagogical activity, creative approach to solving any educational problem. An important emphasis in the course is put on the study of forms and methods of socializing influence of the modern school.

**Leadership and administration.** Deals with the theoretical and practical bases of formation of leadership qualities of future specialists. Analyzes source base of the study of leadership, in particular methods of developing leadership potential of the individual.

#### **Technology of production and processing of agricultural products**

***Technology of production and processing crop products.*** The main objective of the subject is to provide knowledge on creating optimal technological (agro-environmental) prerequisites for producing the required amount of high-quality crop products based on intense photosynthesis in field crops while maintaining or increasing soil fertility. The main objective is: to acquire practical skills in producing high quality, environmentally friendly products with minimal energy and labor costs at high efficiency. This requires the implementation of intensive, energy-saving and resource-saving technologies. The course examines the basic principles of storage of crop products both fresh and processed; technologies of its processing; and methods of quality control and food safety. During this course students develop skills to determine the quality of raw materials; to design production lines and to introduce high-efficiency technologies of processing of crop products into quality food; to control the quality of products in the process of long-term storage and the quality of processed products.

***Technology of production and processing of livestock production.*** Fundamentals of organization of livestock industries, activity of agricultural enterprises, planning of production technology for the main types of livestock products. The current state of animal husbandry in Ukraine and the introduction of new technologies for the production of livestock products require the ability to evaluate the effectiveness of a particular technology, taking into account its components. Theoretical bases of labor

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protection. Legal basis of labor protection of livestock workers and veterinary service. Fundamentals of industrial sanitation. Safety in livestock and poultry. Fire safety in livestock and poultry.

**Technology of storing and standardization of plant growing products.** The course studies technologies of postharvest treatment of cereals, legumes, cereals, oilseeds, sugar beet, bast-fibre, hops, tobacco, fruit and vegetable, short-term and long-term storage, principles of processing, and finalizes the study of technologies of cultivating cereals, legumes, technical, vegetable, fruit and berry crops.

**Forage producing and grass-farming.** The course provides knowledge about science-based system of organizational, biological, technological and economic approaches to production, harvesting and fodder storage; the system of organizational measures and technological methods aimed at improving productivity of natural grasslands, cultivating seeded grasslands and pastures and their rational use.

**Chemistry.** Theoretical principles of modern inorganic chemistry and peculiarities of chemistry of biogenic elements. The chemical processes involving these elements and their compounds are considered from the standpoint of electrolytic dissociation, hydrolysis, redox processes and possibility of forming complex compounds. The basics of qualitative and quantitative chemical analysis. Quantitative methods of gravimetry, acid-base titration, redoxmetry, complexometry. The study of physical and colloid chemistry includes the issues of thermodynamics, thermochemistry, theory of solutions, chemical kinetics and catalysis, the principles of highly dispersed state of substances, surface phenomena and adsorption.

### Optional components

#### *Optional components by specialty (block 1)*

**Basics of economic knowledge.** The theoretical part of the course provides students with the knowledge of the basic principles and regularities of the economic system of the country, the applied part deals with the basic provisions of the methods of analysis and calculation of microeconomic and macroeconomic measure.

**Educational Measurements.** The subject provides in-depth training for future professionals in education sector to understand the specifics of educational measurement as a tool to assess students' level of knowledge and quality of organization of the educational process in educational institutions. It is also the basis of expert activities in providing quality education.

**Pedagogical ethic.** The objective of the course is to familiarize students with the definition of the essence of a number of concepts (ethics, moral consciousness of the high school teacher, the ethical principles and values of pedagogical activity, moral duty and responsibility of the teacher, pedagogical justice); historical characteristics of the development of pedagogical ethics, peculiarities of the moral consciousness of the teacher; the basic moral and personal qualities that should be developed in the teacher; ethics and principles of professional activities of teachers; psychological and pedagogical foundations of moral self-improvement of teachers.

**The basics of happiness.** This subject examines the idea of happiness, understanding of its essence, which significantly affects the life of the individual. The concept of "happiness" as a result of knowledge. The basis of happiness, as a measure of human virtue, a set of factors that determine its well-being (health, material well-being, luck, etc.). Objective basics of happiness.

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***Optional components by specialty (block 2)***

**Informational and communicational technologies of training.** The development of computer communication infrastructure. The current state, prospects for the development and application of information technology; features of the use of modern software; organization of work with Web-technologies; specifics of using modern software. The problem of using ICT in professional activities.

**Methods of work of the student group mentor.** The subject studies the history of mentoring, current research of the problem of mentoring, regulatory and methodological materials, the role of the mentor (supervisor) of the student group, his rights, duties and responsibilities, functions and directions of his work. It is also studies the types of educational work plans, methods of educational work planning and requirements, peculiarities of mentoring abroad, analysis and development of educational work plans.

**Organization of practical training.** The issues of organization of practical training, types of practices, preparation of a work program, writing and defense of a report, occupational safety and health enforcement instructing, development of guidelines for practical training, methods of conducting practical training are covered.

**Methods of forming student team.** The subject involves mastering the knowledge of the problem of team formation in psychological and pedagogical studies, differentiation of such concepts as «group», «collective», «community», characteristics of the collective, its types and functions, stages of development of the team, Makarenko's methods, interpersonal relationships in the team, modern views on the principle of individual's upbringing in the collective and with the help of it, ways of uniting members in the collective, the reasons for the decline of team cohesion and ways to combat it.

**Management of the educational establishment.** Providing a more holistic model of a specialist – the head of the institution through the acquisition of legislative-normative, methodological, theoretical, organizational, and technological knowledge and acquisition of diagnostic and predictive (modeling), organizational, regulatory, control and corrective skills that correspond to basic management functions.

**Philosophy of education.** This subject forms students' ability to adequately understand and solve the theoretical, methodological, ideological problems of modern education. It provides a holistic view of the content and issues of the philosophy of education, its basic concepts and categories; it reveals the specifics of education as a phenomenon of culture and social institute in its historical and socio-cultural dynamics; deepens the study of current socio-philosophical problems of modern education; provides a philosophical analysis of the current state of global education and national one in particular, the prospects of its development and interaction with other spheres of society.

**Fundamentals of Business-Designing.** The peculiarities of the fundamentals of business-designing, basic information on starting own occupation and own business are considered. The essence of economic phenomena and processes in business-designing, a comprehensive analysis of the agrarian sector and the international market of agricultural products, the exchange and consumption of material and spiritual goods in society.

**Social work in entertainment sphere.** The course examines conditions of social formation of personality engaged in leisure activities, peculiarities and organization of social and educational activity with different groups of children and young people who need assistance, support and protection through leisure activities.

**Farming.** The course covers the scientific principles of arable farming and their practical implementation; soil fertility reproduction, general concepts about weeds and methods of crop protection; theoretical principles of crop rotation and their practical application in different soil-climatic zones of Ukraine and in farms with different forms of

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ownership; theoretical principles of soil tillage and protection from erosion; arable farming systems and their zonal characteristics.

**Biology.** The course provides the knowledge about the impact of economic activities on natural habitats, most common higher plant species of flora and regional plant communities, methods of floristic and phytocenological research; skills of conducting geobotanical description of meadow, forest and anthropogenic phytocenoses, the study of plants-indicators of various types and habitats; identifying reservoirs of viral infections in agroecosystems.

**Geodesy.** General geodesic concepts; orientation of lines on the locality; coordination in geodesy; theodolite survey; ways of calculation of plots area; geometric levelling; engineering projecting according to the profile; levelling of surface; locality relief; topographic map; classification of maps; task solving on a topographic map; tachometric survey; the principles of aerial mapping and decoding of aerial photographs; topographic and geodesic works in forest management.

**Financial Accounting.** Methods and organizations of the financial accounting of assets at the enterprise using advanced forms of national standards. Methods and organizations of the financial accounting of the capital and obligations at the enterprise using advanced forms of national standards.

**Painting.** The curriculum reveals the most essential things that a beginner-artist should know; the intricate details of the landscape: water, mountains, atmospheric phenomena, sky, forest, separate tree. It reveals skills to use art of color, technique of painting, still life, images of human being and landscape.

**Soil science.** The course studies the origin, development, structure, composition, properties and regularities of geographical distribution of soils, ways of their rational use and restoration of fertility.

**General ecology.** Ecology gives an idea of how to achieve the symbiosis of technology, production and nature – nowadays these are not coordinated enough biosphere and sociosphere components. The program shows the contents of general ecology, its place in the natural sciences is determined; history of environmental science has been submitted. The sections of the discipline are set out in hierarchical order: autecology (organism ecology), population ecology, biocenology (synecology), biogeocenology (ecosystemology) and biospherology (global ecology). The course considers applied environmental issues – natural, social and technological.

**Economics of enterprise.** Economic mechanism of functioning of an enterprise, formation and use of its resource potential with aim of optimization of economic performance.

**Aesthetics.** At the level of the modern scientific understanding of the aesthetic and artistic knowledge the history of world and aesthetic thought, peculiarities of its status at the Ukrainian groundwork has been highlighted; the subject content, its goals, objectives and functions of aesthetics as a science have been defined. Aesthetics categories, specific structure of aesthetic activity and features of aesthetic consciousness have been characterized. Art as a social phenomenon, its morphology, development patterns and historical typology have been analyzed. The nature, characteristics and personal aesthetic culture and system of aesthetic education has been revealed. The importance of aesthetic culture in common human culture has been founded.

**Selection and seed growing.** The course focuses on the current status and achievements of selection, the requirements to agricultural production of varieties and hybrids, tasks and directions of selection, technologies of selection process, modern methods of creating new varieties and hybrids of field crops.

**Monitoring of environment.** Formation of knowledge about the system of state monitoring of the environment, monitoring of atmospheric air, water objects of agro sphere, soil ecological monitoring, phytosanitary monitoring of pests in agroecosystems;

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skills and ability to conduct ecological and land reclamation monitoring of irrigated and dried soils, to determine the extent of diseases prevalence.

**Mechanization of forestry.** Construction of soil cultivation and seed gathering, sawing, forest planting machines. Machines for forest preservation and protection. Mechanization of cutting of forest inspection. Gathering of machine and tractor aggregates.

**Management.** The system of knowledge of management essence in enterprises and organizations of agroindustrial complex and production processes management skills; conditions for business structures efficiency; diagnosis and designing system of agricultural management, adequate to goals and objectives of market economy in agriculture. The objective of discipline is to train future professionals able to streamline the organizational structure and to develop management system in enterprise (organization), to maintain their resilience and capacity, to ensure enterprise dynamic development and competitiveness, which precedes theoretical training of students for management and agricultural management.

**Phytodesign.** The discipline reveals the issues related to chromatics, composition, color characteristics of plants, methods of designing and constructing in phytodesign, features of ornament use, planting principles of various types of accommodation with plants and cut crops, varieties of flowers and ornamental plants, arranging methods of winter gardens, balconies etc.

**Agrochemistry.** The course focuses on theoretical and practical nutrition and fertilisation of crop plants. The discipline studies the chemical melioration of soil, characteristics of organic and mineral fertilizers and their use, the balance of nutrients, the use of fertilizers in crop rotation, the combination of fertilizers and plant protection means, the environmental aspects of fertilizer application.

**Chemistry and biogeochemistry.** Formation of knowledge in bio geo chemical aspects of biosphere and their functioning principles, migration types, biological circulation and bio geo chemical cycles of live matter; ability to apply methods of bio indication of the environment for bio geo chemical division into districts, forecast measures as to getting high quality ecofriendly agricultural products; to analyze bio geo chemical situation of endemic regions; to work out the recommendations for optimization of anthropogenic landscapes with the aim to minimize the negative effect of human activity and keep balance between the components of ecosystems.

**Forest phytopathology and entomology.** Pathogenic agent of seedlings, plantations, needles, leaves and their symptoms. Root and trunk rotten. House, edible and poisonous mushrooms. Methods and measures of forest protection. Technology of forest protection. Biology, systematization and classification of insects. Ecological factors and trophic relations. Methods and measures of plantation protection. Needle and leaf suckers, trunk pests. Seeds, seedlings, young plantations and wood pests.

**Marketing.** Studying and mastering in theoretical knowledge and practical skills as to application and use of market tools; organization, planning, managing agro marketing activity of AIC enterprises. The aims of the discipline «Marketing» are to obtain knowledge in the sphere of agrarian marketing; market research of agricultural products and foodstuff market; forecasting of market conditions; management of product range of AIC enterprises and their quality; pricing; systems of distribution of agricultural and foodstuff products; promotion of foodstuff on domestic and foreign markets; as well as obtaining knowledge in the sphere of planning of agrarian marketing, management and control of agro marketing activity.

**Composition and colour study.** Composition, painting, anatomy, perspective, drawing and chromatics are studied by future artists.

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**Commodity science of raw materials and products of crop production.** The subject studies the processing technologies of cereals, legumes, oilseeds, sugar beets, hops, tobacco, fruit and horticultural products, its short-term and long-term storage; the classification, range, basic properties, conditions of use, labeling principles, rules for the transportation and storage of major groups of raw materials and products of crop production.

**Ecological analysis.** Formation of knowledge about normative and legal support of ecological expert activity, general requirements to conducting ecological expertise, the peculiarities of conducting geo ecological expertise as the new research and practical activity in evaluation of mechanism of co-adaptation of natural end economic subsystems, procedures and methods of conducting of geo ecological expertise; ability to conduct ecological expertise of technologies, raw materials and products.

**Forestry.** Practical silviculture. Systems and ways of forest cutting. Cutting inspection. Increase of forest productivity.

**Organizing of production.** The purpose of the discipline is to give future specialists and managers of agricultural sector in agribusiness scientific knowledge on effective organization of agricultural production in the conditions of mixed economy and the development of market relations. Knowledge of organizational, economic, legal and social aspects of new types of businesses, farming methods, internal economic relations in enterprises, which this discipline teaches, is particularly important nowadays.

**Basics of arrangement.** The purpose is to master skills of creating floral arrangements due to the laws and principles of design using natural living, canned or artificial plant material. Getting theoretical and practical knowledge of the plants selection, their preparation, conservation and modification rules, composition basis of flower arrangement. Objectives: During the course students must learn the layout of the plant material according to the basic rules of composite decisions in the European flower design.

**Horticulture.** The study of discipline involves the formation of knowledge and skills in the production of fruits and berries, which are the basis of nutrition and raw materials for processing enterprises, the study of fruit and berry plants - their importance, morphological and biological features, methods of reproduction, rootstock, structure of fruit nursery and technology of cultivation saplings, planting of fruit plantations, systems of maintenance and cultivation of soil in gardens, fertilizers and irrigation of plantations, formation and pruning of fruit trees, care of the crop and others types of work in gardens, preparation and technology of harvesting, biological features and technology of growing berry crops.

**Ecological protection of agrosytsems.** Formation of knowledge about structure and functioning of agricultural ecosystems, methods of optimization of agricultural landscapes, prognosis of the development of crop diseases in agrocoenosis; ability to identify and keep records of pests and pathogenic agent, forecast their development, optimize agro landscape based on contour land reclamation organization of agricultural lands.

**Forest melioration.** The key forestry and forest melioration principles that determine technology of creation and growing of protective forest plantations. Soil erosion and its prevention. Agro technical peculiarities of creation and growing of forest melioration plantations on erosion soils. Sands, their fastening and assimilation.

**Agricultural management.** The main goal of the discipline is to develop the students' managerial thinking and systems of specific knowledge in the field of agricultural management, to form an understanding of the conceptual bases of agricultural organizations management; to acquire skills of internal and external environment analysis.

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**Theory and methodology of design.** The course aims to examine issues of industrial (technical) aesthetics and design development, issues of science synthesis, technology and art, correlation of beauty and functionality in material culture, principles of color design, use of qualimetric methods for aesthetic evaluation of design objects.

**Vegetable growing.** The lecture course of the discipline highlights issues of biological bases of vegetables crops, peculiarities of soil preparation and fertilization, plant propagation, seedlings growing, general measures of plant protection, harvesting and the principles of vegetables crops rotation. When considering vegetable growing in the open, technology of growing cabbage, carrot, table beet, onion, tomato, eggplant, cucumber, lettuce, dill, sorrel, horseradish is shown. At the laboratory-practical classes morphological characteristic of vegetable crops and their classification are studied. Study of species composition of seeds, their germination is carried out. Methods of propagation, accounting of seedlings quantity for different crops both field and greenhouse have been studied.

**Environmental protection and sustain environmental management.** The course provides acquisition of knowledge and professional skills in fundamental and applied ecology, protection of environment (in different sectors of the economy), ability to respond to environmental challenges through implementation of environmental scientific research and expert control methods for ecological forecasting, environment engineering, environmental control, monitoring, certification, auditing, assessment and inspection of various components of the environment, to predict, prevent and eliminate environmental risks and hazards on the local, regional, national and global levels.

**Forest crops.** Issues of forest seed business, organization of forest seedbeds, the peculiarities of growing of planting stock, forest cultures division into districts, creation and growing of cultures of main forest creation and precious tree species. Forest seed business, planting stock, forest cultures division into districts and technology of creation of artificial forest plantations.

**Finances.** The purpose of the discipline «Finance» is to develop basic knowledge in finance theory, to learn the laws of their functioning on macro and micro levels as the theoretical basis of financial policy and financial system development. The educational purpose of the discipline involves the knowledge gaining in all areas of financial mechanism functioning, namely to form students' conceptual apparatus in finance category to use it in practice; provide information on finances, financial system of the state and its role in economy functioning; to study how to apply their knowledge in practice, to make informed decisions and to solve tasks.

**Decorative floristic.** Varieties of decorative art and design, which is embodied in creating the floral works: bouquets, compositions, pictures, collages and similar works from different natural materials that can be live, dried or canned.

**Machinery in crop production.** Training of a specialist that is capable of using mechanical equipment on the farmsteads and on individual farms, leased enterprises or farmers unions. The subject of the study is the mechanized technological processes of crop production; methods of experimental determination and theoretical calculation of the main technical and operational indicators of machine-tractor units and of complete equipment, its adjustment in the conditions provided by the manufacturer.

**Management of quality of agricultural products.** Mastering of educational principles of technological methods that form quality coefficient of plant products, skills formation in monitoring and application chemicalization means in technological processes of obtaining plant products, preservation and fertility increase of soils considering natural conditions, production market, application of agricultural chemicals with the aim of optimization crop nutrition, productivity increase and obtaining of high quality plant products.

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**Organising of forestry production.** Organization of production as applied economic discipline. Forestry enterprises. Labour organization. Remuneration. Organization of the use of production facilities. Organization of forest use, preservation and protection of forests, reforestation, forest industry activity. Operation planning of production activity. Financial support of production. Operation analysis of production activity.

**Tax system.** The purpose of the course is to study out the economic nature of taxes, their essence, functions, objectivity in market conditions; to reveal the contents of tax policy, tax system, tax mechanism and their components, to examine practical mechanism for the application of certain taxes and fees, to master requirements for filling tax returns and tax calculation mechanism. Objectives: To study theoretical and organizational bases of taxation, tax calculation methodology, procedure of tax payment and obligatory payments for legal entities and individuals.

**Decorative art.** For centuries various art handicrafts have been formed: they are wood and bones carving, painting, embroidery, vybiyka, ceramics, casting, stamping, weaving, vytynannya. The best examples of Ukrainian decorative and applied art of different regions absorbed the richness of the human soul and folk talent into their designs, shapes and colors. The course introduces the history and practice of arts and crafts.

**Machinery in animal husbandry.** To acquaint students with the basics of designing flow-technological lines in animal husbandry, installation and commissioning, production and technical operation, research of equipment and technological processes.

**Ecological legislation.** Study of the system of current ecological legislation as well as ecologic and law issues of the science of ecological law; study of the system of current nature resources legislation, key issues concerning the land use, water use, resource use, forest use, the use of atmospheric air, flora and fauna; study of the system of current nature resources legislation, key issues concerning land, water, resources, forests, atmospheric air, flora and fauna protection.

**Basics of forest exploitation.** Logging resources. The main phases of forest exploitation. Organization of logging works. The principles of theory of wood processing. Ways of wood transportation. Efficiency of lumbering and wood processing machines and mechanisms.

**Auditing.** Peculiarities of application of element of organization, registers of synthetic and analytic accounting. Accounting of finance, calculations, tangible resources, main instruments, intangible assets, salary and wage, systems, alternative spending on production, calculation of product cost. Functions of audit: verification of accuracy of balance statement and income and losses statement, analysis of the state of accounting, its conformity to the legal requirements; compliance of equality of shareholders' rights when distributing dividends and voting.

**Computers and computer technology in agriculture.** The study of the subject involves theoretical and practical training of students in the use of computers and computer technologies for solving specific agricultural problems. The objectives of the discipline are to master the methods and tools of modern information analytical technologies and systems used in agriculture and based on knowledge of hardware and software, methods and tools for data structuring, multidimensional analysis, modeling, forecasting, preparation of information for decision making, preparation of reports and visualization of the obtained results.

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**Bachelor**  
**Field of Knowledge «Journalism»**  
**Specialty «JOURNALISM»**  
**Educational-professional program «Journalism»**

Form of Training:	Licensed number of persons:
– Full-time	50
– Part-time	-
Duration of Training	4 years
Credits ECTS	240
Language of Teaching	Ukrainian, English
Qualification	Bachelor in Journalism

### **Concept of training**

Training of specialists in the field of "Journalism" is determined by the urgent need to provide the agrarian sector with highly qualified journalists, competitive in the national and international labor market, the formation of key competencies necessary for self-fulfillment, active citizenship, which meet the needs of the state, the economy and the goals of the Ukrainian village, national, cultural and universal values.

### **Practical training**

Practical training is an integral part of the training of journalists and is carried out according to the schedule of the educational process. Practical training of students is carried out on appropriately equipped bases, among which the SSD NULES of Ukraine "Velykonytinske educational and research farm named after O.V. Muzychenko", "Educational and Research Farm "Vorzel", "Agronomic Research Station", "Boyarska Forest Research Station"; TRC Branch of the National Television Company of Ukraine "Ivano-Frankivsk Regional Directorate" KARPATY", "Literary Ukraine" newspaper, All-Ukrainian cultural weekly "Word of Enlightenment", LLC "General policy publication "Rural News", newspaper of protection of Ukrainian peasants' interests", the National public policy magazine "Volunteer", Translation Agency "Lingvo-Apostille", Ministry of Agrarian Policy and Food of Ukraine, Ukrainian Research Institute of Agro-Industrial Complex, Informational Agency "GO AZOV-PRESS", Apollo (Exchange Program in Agriculture and Ecology, Germany), StizhtingUtwisseling (SUSP) Netherlands Educational Programs Agency, Association "Friendship Without borders "(France).

### **Proposed Topics for Bachelor theses**

1. The discourse of news on the radio in the post-truth era.
2. Special analytical talk-shows on Ukrainian television.
3. Podcasts of the Ukrainian market: typologization, topics, features.
4. The theory of frames and news on television.
5. The propaganda of Russia narratives in the Ukrainian media.

**Academic rights of Graduates:** graduates can apply for Master's Degree Specialties and Educational (Educational-professional or Educational-scientific) programs specified in Table 1.2 Section 1.3 this Catalog.

### **Employment of Graduates**

A journalism specialist can work in mass media: newspapers, magazines, television and radio companies, online publications, press and news agencies, press centers, public relations services.

**Bachelor`s Program and Curriculum  
in Specialty «Journalism»  
Educational-professional program «Journalism»**

Code n/a	Components of the educational and professional program (education disciplines, course projects (paper), practice, qualification work)	Amount of tests ECTS	The final control
1	2	3	4
<b>1. GENERAL TRAINING CYCLE</b>			
<b>Compulsory components EPP</b>			
CC 1	Ukrainian and world culture	4	exam
CC 2	Information and civil law	4	exam
CC 3	Practical stylistic	4	exam
CC4	Oral Broadcasting Technique	4	exam
CC5	Culture of broadcasting	4	exam
CC6	Modern Ukrainian language in media	13	exam
CC7	Contemporary Ukrainian literature and critique	6	exam
<b>Total</b>		<b>39</b>	
<b>Compulsory components EPP by decision of the Academic Council of the University</b>			
CCU 1	History of Ukrainian Statehood	4	exam
CCU 2	Foreign language (for professional purposes)	14	exam
CCU 3	Philosophy and logic	4	exam
CCU 4	Safety of Vital Activity	4	exam
CCU 5	Basics of the scientific research	4	exam
CCU 6	Physical education	8	exam
<b>Total</b>		<b>38</b>	
<b>2. SPECIAL (PROFESSIONAL) TRAINING CYCLE</b>			
<b>Compulsory components EPP</b>			
CC8	Introduction	4	exam
CC9	New Media	6	exam
CC10	Audiovisual Production	8	exam
CC11	Radiojournalism	6	exam
CC12	Television Production	7	exam
CC13	Journalism Ethics	4	exam
CC14	The History of Ukrainian and World Journalism	10	exam
CC15	Literary editing	8	exam
CC16	Media Regulation	4	exam
CC17	The theory of mass communication	7	exam
CC18	The Theory of Journalism	5	exam
CC19	Theory of work and text	4	exam
CC20	Media Criticism	6	exam
CC21	Information genres in journalism	4	exam
CC22	Analytical journalism	6	exam
CC23	Latin language	4	exam
<b>Total</b>		<b>93</b>	
<b>The total amount of Compulsory components</b>		<b>172</b>	
<b>Optional components EPP</b>			
<b>Optional components by specialty (block 1)</b>			
OB 1.1	Java Programing	6	exam
OB 1.2	Media Management	6	exam
OB 1.3	Media convergence	7	exam
OB 1.4	International Journalism	6	exam
OB 1.5	Media Analysis and Media Psychology	9	exam
OB 1.6	International Human Law	6	exam
OB 1.7	Advertising and PR	7	exam
OB 1.8	Visual Communication	7	exam
<b>Total</b>		<b>54</b>	

<b>Optional components by specialty (block 2)</b>			
OB 2.1	New media and Technologies	4	exam
OB 2.2	Marketing and Political Communications	8	exam
OB 2.3	Digital Humanities	6	exam
OB 2.4	International Human Law	6	exam
OB 2.5	Internet news	7	exam
OB 2.6	Media Analysis and Media Psychology	9	exam
OB 2.7	Visual Communication	7	exam
OB 2.8	Advertising and PR	7	exam
<b>Total</b>		<b>54</b>	
<b>Optional components by Student's Choice</b>			
OS 1	Course 1	3	test
OS 2	Course 2	3	tes
<b>Total</b>		<b>6</b>	
<b>The total amount of Optional components</b>		<b>60</b>	
<b>3. OTHER TYPES OF TRAINING</b>			
CC25	Academic (orientation) practice	2	
CC26	Production practice	2	
CC27	Production (journalistic) practice	1	
CC28	Production (pre-diploma) practice	1	
CC29	Complex state exam	2	
<b>THE TOTAL AMOUNT OF EPP (without military training)</b>		<b>240</b>	

## Annotations of Components in the curriculum

### 1. GENERAL TRAINING CYCLE

#### Compulsory components

**Ukrainian and world culture.** Culture of primitive time. Culture from the times of the Ancient East to the time of the Enlightenment. European culture of the nineteenth and twentieth centuries. Culture of Kievan Rus. Ukrainian culture of the Lithuanian-Polish period (XIV-first half of the XVII century). Culture of Ukraine from the second half of the XVII century. to the beginning of XX century. Culture of Ukraine in 1917 - the first half of the 40-ies.

**Information and Civil law.** Information law as an independent branch of legal science in the context of human rights and freedoms and in the implementation of European standards in modern media. The concept of civil law of Ukraine, its subject and methods of legal regulation. Sources of Information and Civil Law of Ukraine. Trends of development of civil legislation of Ukraine. The concepts, classification, content and the grounds for the emergence and termination of civil legal relations. Subjects and objects of civil legal relations, their types. Features and procedures for the exercise and protection of civil rights and duties. Concepts and types of transactions.

**Practical stylistic.** Theoretical basis of stylistics, actual problems of modern science; stylistic standards of the Ukrainian language.

**Oral Broadcasting Technique.** Features of spoken interaction. Types of mistakes that occur in oral speech. Deficiencies in speaking. Method of oral speech preparation.

**Culture of broadcasting.** Functions and features of broadcasting. Knowledge of orthographic, accentuation and lexical norms of modern Ukrainian literary language. Requirements for the work of the journalist on the air. The technique of broadcasting. Development of skills and abilities of phonetic respiration, articulation, speech accent, diction.

**Modern Ukrainian language in media.** The objective of the discipline is the improvement of the level of general language training, communicative competencies of students, practical mastering in the principles of stylistics of Ukrainian language that will provide professional communication at proper language level. The discipline is aimed at generalization and systematization of the knowledge in Ukrainian language, to form abilities and skills for optimal language behavior in professional sphere.

**Contemporary Ukrainian literature and critique.** This course offers a survey of selected phenomena in contemporary Ukrainian literature. The course examines works in all genres—poetry, drama, and prose—but will concentrate on works of long prose. Readings will include a number of trend-setting works and a few that have become classics.

### **Compulsory components by decision of the Academic Council of the University**

**History of Ukrainian Statehood.** The content of the educational discipline "History of Ukrainian Statehood" is the study of basic stages of formation and development of statehood on the Ukrainian lands, distinctive state building way of the Ukrainian nation. Building of the independent state needs highly skilled, patriotically inclined, socially oriented professionals able to continue the best traditions of the Ukrainians. The response to these circumstances is the study of this discipline in universities. It will allow to master the theoretical course, creatively apply their knowledge in practice and comprehend their own laws of the state building process, orientate in political life and feel their involvement in the state-thousand-year tradition of the Ukrainian people.

**Foreign language (for professional purposes).** The course develops communicative competency in students, especially the use of skills, abilities and knowledge of foreign language during business communications with the representatives from other countries specialized in various issues concerned business and labor market in agriculture, preparation to the participation in international conferences, projects and discussions as well as making presentations, business correspondence (formal and informal letters, c.v., various kinds of research articles and reports), in such way contributing into versatile development of student's personality and his/her socialization in a society speaking another language.

**Philosophy and logic.** The course provides the system of knowledge in such branches of philosophy as ontology, gnoseology, social philosophy, historical types of philosophy that explain the essence of relations "a human being – the world" in its main demonstration. The phenomenon of religion, its origin, the main religious concepts, the history and present situations of tribal, early and late national religions, the main principles of religious doctrine and cult of the most influential religions in the world. Method of logics, the main forms and laws of thinking, prerequisites of the origin of current logics, the division of classical logics, typology and analysis of formal and logical theories within the logics of dictum and the logics of predicates.

**Safety of Vital Activity.** General causes of occurrence and evolution of hazards, emergencies. Their properties, the possible impact on human life and health. Safety of life in emergency situations. Organization and management of life safety. Legislation on labor protection. Fundamentals of Occupational Hygiene and Industrial Sanitation. Providing the first medical aid. Ensuring healthy working conditions in the national economy.

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**Basics of the scientific research.** Principles and methods of organization and implementation of scientific research. General requirements for the execution of scientific research. Ability to work with scientific sources.

**Physical education.** The aim of the discipline is formation of physical culture of junior specialist and the ability to realize it in social and professional training and in family life. The objectives of the discipline are to improve students' health and develop physical abilities in accordance with the professional activity of a future specialist.

## 2. SPECIAL (PROFESSIONAL) TRAINING CYCLE

### Compulsory components

**Introduction.** The modern system of world and Ukrainian information markets. The theory of the functioning of the press (the interaction of the press and authorities, the press and society). Basic functions and principles of journalism. Methods of collecting information. Characteristics of genres and genre system of modern press.

**New media.** This course interrogates the impact of digital technologies on individuals and society and provides students with the skills and knowledge to be able to think critically and creatively about new media. Students will learn about diverse digital media techniques and processes, including coding and hacking, web design, animation, digital ethnography and more. Through a hands-on approach, student will gain an understanding of the social, cultural and economic roles of new media, and explore what it is like to work in the new media industries.

**Audiovisual Production.** The course prepares students to create different kinds of audiovisual media, such as interactive media and films. This course focuses on audiovisual theory and practice with classes such as documentation and audiovisual communication, digital culture, analysis of image significance and audiovisual production. It also gives students the technical knowledge needed to be involved in both the creation and dissemination of audiovisual media.

**Radio journalism.** Specificity of broadcasting, its functionality and place in the media system. Principles of radio journalist's activities. Genre-stylistic spectrum of radio journalism. Features of Interaction with Radio Audience. Technologies for creating high-quality software radio products.

**Television Production.** Phenomenology of television - evolution, functions, specifics. System of genres of modern television. The main directions of modern TV production in Ukraine and in the world. European standards for information broadcasting. Technology for creating a television story. Information package and its structure.

**Journalism Ethics.** The functions of the journalism in society. Fundamental principles of the journalistic profession. Requirements for the submission of the information: efficiency, accuracy, completeness, balance of opinions and variety of points of view, separation of facts from comments and evaluations, authenticity, simplicity. Journalistic ethics as a specific branch of professional ethics. Sources of journalistic ethics. The journalist's moral consciousness and his position. Categories of journalistic ethics. Ethical values and ethical standards of the journalist. Information rights of a journalist. Professional activity of a journalist and private life of a person. Journalistic activity and informational and psychological safety of society. Corrupt media practices. Network journalist ethics. The ethics of controversy and criticism in the media. The ethics of advertising in the media. Journalistic etiquette.

**The History of Ukrainian and World Journalism.** Periodization of the journalism formation on Ukrainian lands. Information about the main personalities, individual periods, about their works. Trends in the press systems development. Features of the journalism development. Features of press editions evolution from the initial prototypes to the modern

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form. History of journalism XVII - XIX century. National features of foreign journalism. European journalism of the twentieth century.

**Literary editing.** Basic concepts of the course "Literary editing"; literary editing and text style; genre text form; linguistic norm and variances; text segmentation and literary editing; clarity of the text; verbalization of the emotional in the text; literary editing of text elements.

**Media Regulation.** Legal bases of mass communication. International documents on the protection of human rights and freedoms. Activities of international organizations on the functioning of mass media, journalists' rights and freedom. Legal principles of mass media activity and development of information space of Ukraine. Domestic legislation on legal regulation of mass media. Activities of state authorities on ensuring the information needs of the society and the development of the information sphere in Ukraine. Freedom of speech in Ukraine: state, problems, prospects of development.

**The theory of mass communication.** The theory of mass communication is the first fundamental-professional discipline that studies the functions of communication, its role and place in the life of society, the natural channels of information transmission, the methods of influence through different sign systems, the state of development of modern mass media, and directs for the conduct of media research, critical thinking, orientation in the problems of the national information space of Ukraine and issues of Ukraine's joining the international information space. Communicative activity. Communication models. Typology of communicative effects. Criteria for effective communication. Structuring information as a condition for the effectiveness of communication. Information comfort. Types and forms of communication technology.

**The Theory of Journalism.** Basic concepts in the field of journalism. Methodical features of the specialty. Fundamentals of professional ethics and journalism genreology. Legal principles of communicative activity. Methodology of journalism. Types and rules for collecting information. Contemporary philosophical concepts, the subject of which is journalism.

**Theory of work and text.** Concept of the text. Categories of text. The integrity of the text. Linguistic analysis of journalistic text. Linguistic personality, artistic image and image of the author. The main features of journalistic work. The composition of the work. Genre types of journalistic creativity.

**Media Criticism.** History of the establishment and development of media criticism as a special field of journalism in Ukraine and abroad. Forms and genres of works of national media criticism. Functions of media criticism, their correlation with the basic functions of journalism. Specialized editions, sites, web pages.

**Information genres in journalism.** The principles and functions of mass media activities are considered; the most important state-building aspects of the functioning of mass communication in Ukraine; the main principles of the journalist's creative process; criteria for the division of journalistic works into genres; destination, genre features, varieties of information genres; basic requirements for materials of information genres; factors of the influence of mass media on the creation and establishment of the Ukrainian information space; the most important aspects of propaganda by means of mass communication of the essence of the Ukrainian national idea of state formation and the formation of people's sense of patriotism, national dignity, civic courage.

**Analytical journalism.** Formation and professionalism. The traditional system of journalistic genres and the modern classification of analytic genres. Review, correspondence, article, letter, modern genres.

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## Optional components

### *Optional components by specialty (block 1)*

**Java Programing.** Structure of programming system Java. Java-machine. Basic data types and operations with it. Instruction syntax and semantics. Characteristics of basic constructions. Means of object-oriented programming language Java. Classes, methods, properties. Syntax of class definition. Class attributes. Class fields. Creation of a particular class object. Abstract classes. Inheritance and interfaces. Syntax of interface. The concept and application of packages. The concept of exceptional situation in Java and its processing. Standard packages of Java programming system. Java - technologies.

**Media Management.** The course will enable students to identify and analyze strategic and operational problems and opportunities, understand, quantify and access national and international media markets, and use foresight and planning techniques to understand and respond to change. As well as being able to manage complex media projects, students will also have the skills to engage in strategic direction setting, deploy business-planning skills, and excel in leadership and implementation.

**Media convergence.** Multimedia genres. Multimedia formats. Formation of informational content for Internet media. Features, methods and techniques for creating multimedia news, reports and interviews. Technology for creating publications for various media platforms. Promotion of the media product.

**International Journalism.** Social position of the journalist. Freedom of the press and journalism. Social position and opportunities for its free sale. Journalism in the system of social institutes, information space. The effectiveness and efficiency of journalism. World trends in journalism. Information sources of foreign mass media. World news agencies. Legal regulation of journalistic activities abroad.

**Media Analysis and Media Psychology.** The course offers an introduction to the ideology, rhetoric and modes of address adopted by the media, and emphasises appropriate analytic strategies for encountering various media genres and formats. Attention is particularly paid to visual culture, demonstrating how fiction, fact and everyday imagery operate in audiovisual as well as textual contexts, across different platforms.

**International Human Law.** The discipline involves studying the standards of objective, impartial journalism, oriented to the protection of human and citizens' rights and freedoms, communication and legal sphere. The discipline involves studying the standards of the Council of Europe, its criteria and practices for the protection of human rights, the place and role of journalists in maintaining these standards.

**Advertising and PR.** Advertising: concept, function, purpose and types. Non-verbal means of creating promotional text. Psychological technologies of advertising on different media. Psychology of advertising. Psychology of attitude to advertising. Basic processes of PR. Features of PR in a business organization. Crisis PR. International PR. Technique for writing and giving speeches. PR know how.

**Visual Communication.** The course focuses on communication through visual aids. The diverse field of Visual communication includes drawing, animation and multimedia, sketching, advertising, graphic designing, writing, editing, video editing, photography, film production and editing etc.

### *Optional components by specialty (block 2)*

**New media and Technologies.** This course interrogates the impact of digital technologies on individuals and society and provides students with the skills and knowledge to be able to think critically and creatively about new media. Students will learn about diverse digital media techniques and processes, including coding and hacking, web

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design, animation, digital ethnography and more. Through a hands-on approach, student will gain an understanding of the social, cultural and economic roles of new media, and explore what it is like to work in the new media industries. The course covers the range of journalists' duties, methods, forms and methods of activity on the Internet as well as legal basis of journalistic activity in Ukraine.

**Marketing and Political Communications.** The course gives to students a systematic description of the basic concepts, theories and activities related to marketing and political communication.

**Digital Humanities.** As primary sources of information are more frequently digitized and available online than ever before, how can we use those sources to ask new questions? This course will show students how to manage the many aspects of digital humanities research and scholarship. The course will help them bring their area of study or interests to new life using digital tools.

**International Human Law.** The discipline involves studying the standards of objective, impartial journalism, oriented to the protection of human and citizens' rights and freedoms, communication and legal sphere. It The discipline involves studying the standards of the Council of Europe, its criteria and practices for the protection of human rights, the place and role of journalists in maintaining these standards.

**Internet news.** This course will develop and enhance an understanding of the global field of journalism. Students will learn best practices and ethical standards for newsgathering processes and compiling a news report through hands-on projects, peer-to-peer feedback, and issue exploration. Student will also study journalism's impact on societal issues and trends, plus explore career opportunities in social media and Internet multimedia.

**Media Analysis and Media Psychology.** The course offers an introduction to the ideology, rhetoric and modes of address adopted by the media, and emphasises appropriate analytic strategies for encountering various media genres and formats. Attention is particularly paid to visual culture, demonstrating how fiction, fact and everyday imagery operate in audiovisual as well as textual contexts, across different platforms.

**Advertising and PR.** Advertising: concept, function, purpose and types. Non-verbal means of creating promotional text. Psychological technologies of advertising on different media. Psychology of advertising. Psychology of attitude to advertising. Basic processes of PR. Features of PR in a business organization. Crisis PR. International PR. Technique for writing and giving speeches. PR know how.

**Visual Communication.** The course focuses on communication through visual aids. The diverse field of Visual communication includes drawing, animation and multimedia, sketching, advertising, graphic designing, writing, editing, video editing, photography, film production and editing etc.

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**Bachelor**  
**Field of Knowledge «Social and behavioral sciences»**  
**in Specialty "PSYCHOLOGY "**  
**Educational-professional program «Psychology»**

Form of Training:	Licensed number of persons:
– Full-time	50
– Part-time	50
Duration of Training:	
– Full-time	4 years
– Part-time	5 years
Credits ECTS	240
Language of Teaching	Ukrainian, English
Qualification	Technologist in Agronomy

### Concept of training

The training of a psychologist is determined by the demand of our State for specialists providing psychological assistance to an individual and a group. The professional activity of a specialist of this type involves diagnostics, examination and correction of psychological properties and states, mental processes, various types of human activities in norm and pathology taking into account the features of age stages, developmental crises, risk factors, belonging to gender, ethnic, professional and other social groups.

### Practical training

Practical training is carried out in accordance with the curriculum schedule, on the basis of certified practice bases, including: centers of practical psychology, counseling centers, social services, law institutions, health and care institutions.

### Proposed Topics for Bachelor theses

1. Psychological means of development of emotional intelligence in younger students
2. Emotional intelligence as a factor of social and psychological adaptation of personality.
3. Typical Intra-Personal Conflicts at a Young Age.
4. Psychological-pedagogical means of development of soft-skills competencies in the students of scout organizations
5. Gender features of frustration tolerance in adolescence.

**Academic rights of Graduates:** graduates can apply for Master's Degree Specialties and Educational (Educational-professional or Educational-scientific) programs specified in Table 1.2 Section 1.3 this Catalog.

### Employment of Graduates

A graduate can work in educational institutions of all levels and types, enterprises and organizations, health care institutions, centers of practical psychology, social services, consulting centers, research institutions, penitentiary and law institutions for the provision of expert services at the job-place (according to the classification of professions in Ukraine): 2445.2 - psychologist, 2445.2 - practical psychologist, 1232 - chief psychologist, 2412.2 - professional on personnel development, 5131 - tutor.

**Bachelor`s Program and Curriculum  
in Specialty «Psychology»  
Educational-professional program «Psychology»**

Code n/a	Components of the educational and professional program (education disciplines, course projects (paper), practice, qualification work)	Amount of tests ECTS	The final control
1	2	3	4
<b>1. GENERAL TRAINING CYCLE</b>			
<b>Compulsory components EPP</b>			
CC 1	Ukrainian for Professional Studies and Documentation	4	exam
CC 2	History of Ukrainian Statehood	4	exam
CC 3	Philosophy	16	exam
<b>Total</b>		<b>24</b>	
<b>Compulsory components EPP by decision of the Academic Council of the University</b>			
CCU 1	Foreign language for Professional Studies	12	exam
CCU 2	Ethnocultural studies	4	exam
CCU 3	Personality Law Culture	4	exam
CCU 4	Fundamentals of Human Biology and Genetics	4	exam
CCU 5	Philosophy	4	exam
CCU 6	Physical Education	8	exam
<b>Total</b>		<b>52</b>	
<b>2. SPECIAL (PROFESSIONAL) TRAINING CYCLE</b>			
<b>Compulsory components EPP</b>			
CC 1	General Psychology	6	exam
CC 2	History of Psychology	4	exam
CC 3	Psychology of Age	6	exam
CC 4	Pedagogical Psychology	5	exam
CC 5	Social Psychology	5	exam
CC 6	Psychology of Pathology	5	exam
CC 7	Psychological Correction	6	exam
CC 8	Psychology of Communication	6	exam
CC 9	Psychology of Personality	4	exam
CC 10	Clinical Psychology	4	exam
CC 11	Psychology of Conflicts	7	exam
CC 12	Gender Psychology	6	exam
CC 13	Ethics and Psychology of Family Life	5	exam
CC 14	Psychology of Giftedness and Creativity	4	exam
CC 15	Psychological Consulting Fundamentals	4	exam
CC 16	Social Psychology Training	5	exam
CC 17	Psychological Service in Educational System	5	exam
CC 18	Psychological Assistance in Crisis and Extreme Situations	5	exam
Cc 19	Psychology of Management	5	exam
Cc 20	Fundamentals of Psychotherapy	6	exam
<b>Total</b>		<b>87</b>	<b>exam</b>
<b>The total amount of Compulsory components</b>		<b>163...</b>	
<b>Optional components EPP</b>			
<b>Optional components by specialty (block 1)</b>			
OB 1.1	Anatomy and physiology of higher nervous activity	6	exam
OB 1.2	Psychology of Religion	7	exam
OB 1.3	Psychology of Sport	6	exam
OB 1.4	Psychology of Law	7	exam
OB 1.5	Non-governmental sector and volunteering	7	exam
OB 1.6	Social Tutorship	6	exam
OB 1.7	Psychology of Giftedness and Creativity	7	exam
OB 1.8	Psychological Consulting Fundamentals	7	exam
<b>Total</b>		<b>54</b>	<b>exam</b>

<b>Optional components by specialty (block 2)</b>			
OB 2.1	Psychological Service in Educational System	6	exam
OB 2.2	Psychological Assistance in Crisis and Extreme Situations	7	exam
OB 2.3	Psychology of Management	6	exam
OB 2.4	Fundamentals of Psychotherapy	7	exam
OB 2.5	Methodology of Psychological Expertise Procedure in Different Fields.	7	exam
OB 2.6	Psychological Service in Educational System	6	exam
OB 2.7	Psychological Assistance in Crisis and Extreme Situations	7	exam
OB 2.8	Psychology of Politics	7	exam
<b>Total</b>		<b>54</b>	exam
<b>Optional components by Student's Choice</b>			
OS 1	Course 1	3	test
OS 2	Course 2	3	exam
<b>Total</b>		<b>6</b>	
<b>The total amount of Optional components</b>		<b>60</b>	
<b>3. OTHER TYPES OF TRAINING</b>			
CC 1	Military Training		test
CC 2	Culture and Education Training	2	test
CC 3	Educative (Professional) Practice	3	test
CC 4	Educative (Diagnostics and Correction) Practice	2	test
CC 5	Educative (Rehabilitation) Practice	5	test
CC 6	Job Placed (Consultative) Practice	4	test
CC 7	Job Placed (Ab Initio Diploma) Practice	1	test
CC 8	Protection of the bachelor's work		test
CC 9	certification exam		exam
<b>THE TOTAL AMOUNT OF EPP (without military training)</b>		<b>240</b>	

## Annotations of Components in the curriculum

### 1. GENERAL TRAINING CYCLE

#### Compulsory components

**Ukrainian for Professional Studies and Documentation.** Lexical, spelling, morphological, syntactic norms of modern Ukrainian literary language. Voice over speech and its features. Speech composition. Lexical and grammatical means of the relevant reproduction of communicative intentions in writing. Requirements for professional texts: objectivity of presentation, logic, consistency, completeness of information, accuracy, conciseness, standard.

**History of Ukrainian Statehood.** The study of discipline involves a deep understanding of the history of the emergence and formation of the Ukrainian people and Ukrainian statehood by students, the establishment of a national identity, the coverage of the political activity of classes and social groups in Ukraine at certain stages of historical development. The general mission of the course – to maintain the processes of humanization of higher education, the integration of professional, social and humanitarian training; to improve the content of the course structure, using the achievements of world and national philosophy, universal values and train highly skilled specialists in the agro-industrial complex.

**Philosophy.** The course teaches a system of knowledge of such sections of philosophy as ontology, epistemology (theory of knowledge), social philosophy, historical types of philosophy, revealing the essence of the relation "man - the world" in its most basic manifestations. The phenomenon of religion, its origin, the main religious studies concepts, the history and the present situation of the tribal, early and late national religions, the main provisions of the doctrine and cult of the most influential religions in the world.

### **Compulsory components by decision of the Academic Council of the University**

**Foreign language for professional purposes.** Phonetic rules of a foreign language. Audition and Speaking. Lexical minimum (categories of being, their properties and relations, geographical, demographic, economic and political data) of a specific country of the world, the language of which is being studied. The lexical minimum of regional and social differences between Ukraine and the country of study. Reading for a grasp and reading for the gist at a specified time without a dictionary. Studying reading with a certain number of unknown words (using the dictionary). Abbreviations of foreign-language professional terms in a specific professionally-oriented field. Structure of dialogue of general scientific character. Features of the dialogue of professionally-oriented character. Lexical minimum on business contacts, business meetings, meetings. Elements of foreign language information interpreting in the process of business interaction.

**Engineering Psychology.** Information interaction between a person and a machine. The operator's activity in the system "man - machine". Mental phenomena and their characteristics in the operator's activities. Operation in special conditions. The perception of information by the operator. Psychophysiological peculiarities of the receiving information process. Saving and processing information by the operator. Psychological aspects of the problem of decision making. General characteristic of the functional states of the operator. Emotional states of the operator. Fatigue of the operator. Control of the functional state of the operator. Taking into account the operator's limiting possibilities and questions of his psychological support.

**Psychology of inclusive education.** The purpose is to get acquainted with the methods of psychological support of children with special needs in the adaptation period of their entry into the educational space. The important directions and methods of work of psychologist on formation of educators' and tutors tolerance in treating children with special needs are considered. Formation of comprehension of individual peculiarities in development and educational needs of children, ways of establishing a productive interaction of children with special needs with a group of peers (in the preschool group, school class, student group).

**Anthropology.** Properties of people as members of the same species and their ways of adapting to different environments. Branches of anthropology. Physical anthropology. Linguistic anthropology. Anthropology of cultures. Social Anthropology. Applied anthropology. History of Anthropological Thought. Modern anthropology.

**Psychophysiology.** The problem of the correlation of the brain and the psyche. Consciousness as a psychophysiological phenomenon. Psychophysiology of the cognitive sphere. Psychophysiology of sensations and perception. Psychophysiology of attention. Psychophysiology of memory. Psychophysiology of thinking (intelligence). Psychophysiology of functional states and emotions. Physiological bases of needs, motivation. Psychophysiology of adaptation and stress. Psychophysiology of addictive behavior. Changes in the physiological bases of the psyche in ontogenesis. Diagnosis and correction of functional states.

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**Comparative psychology.** The problem of the emergence and evolution of the psyche. Methods of studying the psyche of a man and animals. Behavior of animals in a comparative aspect with a person. Elementary sensory psyche. Perceptual psyche. Development of human and animal psychic activity in the game period. The problem of thinking, intelligence and consciousness of animals. Animal communication. The language of the animal and the language of the person. Knowledge and its role in the development of the psyche. Individual memory and learning. The basics of bioethics and human behavior. Genetic memory. Levels of phylogenetic memory. The basics of bioethics and human behavior. The theory of genetic-cultural co-evolution.

**Physical Education.** The aim is to shape the young person's physical culture and the ability to realize it in social and vocational training and in the family. The objective of the discipline is to strengthen the health of students and to develop physical abilities that are appropriate for the professional activity of a future specialist.

## 2. SPECIAL (PROFESSIONAL) TRAINING CYCLE

### Compulsory components

**General Psychology.** Subject, principles, tasks, significance of psychology, its methods. Patterns of mental processes: sensations, perceptions, attention, imagination, memory, speech, thinking, freedom, emotions and feelings. Features of mental states of man. Personality and its individual psychological peculiarities.

**History of psychology.** The main stages of the development of psychological knowledge. The development of psychological ideas within the philosophy and the natural sciences. The formation of psychology as an independent science and the development of its branches. The main tendencies and concepts of scientific psychological thought from the end of the nineteenth century to the present day.

**Age psychology.** Subject, history of development and methods of age psychology. Conditions, driving forces and basic laws of mental development in ontogenesis. The problem of periodization of age development in the works of foreign and domestic psychologists. Features of mental and personal development in infancy, early childhood and preschool age, in younger school, teenage, youthful age, adolescence and old age.

**Pedagogical psychology.** Psychology of educational activity. Psychology of personality upbringing. Psychological characteristic of pedagogical activity. Educational-pedagogical cooperation and communication in the educational process. Interaction of the subjects of the educational process. Difficult communication of subjects of the educational process in pedagogical interaction. Specificity of the psychological culture of the teacher.

**Social Psychology.** Subject and methods of research in social psychology. Patterns of communication and interaction of people. Socio-psychological aspects of interpersonal relations of personality. Psychology of small and large social groups. The development of personality in the system of interpersonal relationships. Psychological patterns of social group management. Applied research in social psychology.

**Pathopsychology.** Subject and objectives of pathopsychology, history of development of views on mental pathology, history of development of pathopsychology. Types of mental disorders: disorders of mental processes, consciousness, personality. Deviant personality behavior. Violations of mental development at different stages of ontogenesis.

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**Workshop on general psychology.** Methods of study of cognitive mental processes. Methods of study of higher cognitive processes and processes of goal-setting. Methods of research of emotional-volitional processes and mental states. Methods of studying the personality and its individual psychological peculiarities.

**Psychodiagnostics.** Concept of psychodiagnostics, its subject, structure. History of psychodiagnostics. Classification of psychodiagnostic techniques. Test as the main tool of psychodiagnostics. Psychometric requirements for the construction and verification of techniques. Basic stages of designing the test. Personnel questionnaires. Projective methods of personality diagnostics.

**Mathematical methods in Psychology.** This course covers the structure of probability theory, which is the foundation of statistics, and provides many examples of the use of probabilistic reasoning. It discusses the most commonly encountered probability distributions, both discrete and continuous. The course considers random sampling from a population, and the distributions of some sample statistics. It deals with the problem of estimation - the process of using data (in the best possible way) to learn about the value of the unknown parameters of a model. Finally, it discusses hypothesis testing - the use of data to confirm or reject hypotheses formed about the relationship among (economic) variables.

**Experimental psychology and the fundamentals of scientific research.** This is an undergraduate psychology course designed to provide students with knowledge about and hands-on practice with experimental research methods in psychology. Students will learn how to plan, conduct, and analyze their own experimental research, and how to communicate the results of their research to others. Students will develop the knowledge and skills to apply and critique the scientific method in future courses.

**Psychological correction.** Psychocorrection as a direction of activity of a psychologist. The concept of psycho correction. Types of psychocorrections, principles, goals and objectives of this work, the main models of psycho-correction practice; methods and techniques of psychocorrection, ways of correction of cognitive psychical processes, emotional disorders and violations of the communicative sphere; features of work with different age groups. Features of constructing psycho-correction programs.

**Psychology of communication.** Familiarization of students with basic approaches to communication analysis; providing understanding of nature, patterns and mechanisms of this process, forming skills of possession of communication techniques; readiness to apply the technology of effective communication in different situations of practical activity, ability to apply methods of self-regulation in the process of communication.

**Psychology of personality.** Psychology of personality as a branch of psychological science. Personality and its main manifestations. Structure and factors of personality development. Classification and basic properties of theories of personality. Psychodynamic theory of personality. Neo-Freudian, humanistic, dispositional and phenomenological trends in the psychology of personality. Approaches theories of teaching to the study of personality. Cognitive and socio-cognitive theory of personality. Gestalt psychology and its peculiarities of personality study. Modern trends in personality psychology.

**Clinical Psychology.** Clinical psychology as a science. History of formation and development of clinical psychology. The subject of clinical psychology. Relationship of clinical psychology with other sciences. Tasks and principles of psychological research in the clinic. Methods of Clinical Psychology. The concept of health. Health Criteria. The concept of the disease. Classification and etymology of pathopsychological disorders. Pathopsychology as a section of clinical psychology. Psychology of the patient.

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Psychology of the diagnostic process. Psychology of the therapeutic process. Psychology of the medical worker and the medical profession. Psychological features of the diagnostic process. Psychology of the therapeutic process. Psychological requirements for the physician's personality. The main models of building a relationship "doctor-patient". Psychological features of the use of drugs. Ethical principles of the clinical psychologist. General principles of the organization of medical and psychological assistance. The work of a clinical psychologist in various types of medical institutions. Psychological features of patients with various somatic diseases. Basics of psychosomatics.

**Psychology of the conflict.** Subject and object of conflictology. Characteristics of the conflict as a social phenomenon. Patterns of conflict interaction. Structural and dynamic characteristics of the conflict. Classification of conflicts. Psychological characteristics of intrapersonal and interpersonal conflicts. Prevention (prevention) of conflict interaction. Ways and ways to resolve conflicts.

**Gender Psychology.** Gender research as an interdisciplinary research and educational practice. Concept of psychological gender and gender identity. Categories of masculinity and femininity as meaningful components of gender identity. The main stages of the formation of gender identity. The concept of gender stereotypes, their typology and content. The theory of social design of gender. The concept of gender and gender. Reasons for matching gender expectations. Differential socialization as a monotonous phenomenon. The process of forming the psychological sex of a person, his mechanisms. Differences in the intrapersonal dynamics of the formation of sexual identity for boys and girls. The concept of "gender" and "sexual socialization". Differentiated pedagogical influence on the formation of gender behavior of the individual.

**Ethics and Family Life Psychology.** Adopting a Family Relationship framework; Family Development: Continuity and Change; Gender, Culture, and Ethnicity Factors in Family Functioning; Interlocking Systems: the individual the family and the community; The Development and Practice of Family Therapy Growth of Family Therapy; Professional issues and Ethical Practices; Human Validation Process Model; Emotionally Focused Therapy; Symbolic-Experiential; Psychodynamic Approaches; Objects Relations Transgenerational Approach; Genogram and other topic presentations and all papers due Structural Family Therapy; Strategic Family Therapy; Behavioral/Cognitive; Solution-Focused Brief Therapy; Narrative Therapy.

### **Optional components**

#### ***Optional components by specialty (block 1)***

**Anatomy and physiology of the nervous system.** History of physiology of higher nervous activity as a science. Basic methods and concepts of physiology of GNI. Anatomical physiological aspects of higher nervous (mental) activity. Concept II signaling system. Cork-subcortical relations in the processes of higher nervous activity. Physiological analysis of the "unconscious" in the human psyche. Physiological bases and forms of behavior. Regularities of conditioned reflex activity. Psychophysiology of thinking, emotions and memory. Physiology of human sensory systems. Physiological bases of labor activity.

**Psychology of Religion.** The purpose of the course studying is to provide students with knowledge about the specifics of the religion phenomenon in psychological study and aspects of religiosity psychological analysis, as the essential state of world perception of a man; to form the ability of the analysis of socio-psychological religion study results.

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**Psychology of Sport.** Structure of professional activity of a psychologist in sport. Areas of activity of a sports psychologist. Psychological characteristics of an athlete's personality. Formation of an athlete's personality. Psychology of the sports team. The psychological climate of the sports team. Group interaction in a sports team. Understanding the psychological climate in sports activities. Psychological principles of psychomotor skill. Psychological training in sport. The psychological essence of technical training in sport. Psychological principles of tactical preparation in sport.

**Psychology of Law.** General psychological and socio-psychological basics in legal psychology. Psychology of law-making activity. Contents of professions of an investigator, a judge, a lawyer, a notary. Psychological Aspects of Legal Responsibility. Professional deformation. Criminal psychology. Psychological analysis of the offender's personality. Psychology of criminal behavior. The psychological structure of the crime. Deviant behavior and its peculiarities. Social degradation. Motive as an element of the psychological mechanism of a criminal act. The psychological consequences of a crime. Psychology of investigative actions. Penitentiary Psychology. Social groups of convicts and their psychological characteristics. Psychological foundations of re-socialization of convicts.

**Non-governmental sector and volunteering.** The discipline deepens the notion of non-governmental (non-profit) organizations (NGOs). The goal is to provide knowledge about the specifics of NGOs solving social work tasks; their kinds, types, features of management, indicators of viability, peculiarities of work with volunteers. Concept, structure, importance of non-governmental organizations in solving social problems. Legal support of the activities of non-governmental organizations that carry out various types of social work. Interaction and cooperation of non-governmental organizations with mass media and business in social work. The specifics of the interaction of a non-governmental organization with the government and state structures. Volunteer Service of the Non-Governmental Organization of the Social Sphere. Experience of social work of non-governmental organizations.

**Social Tutorship.** The role of the social tutorship in society, the social significance of tutors activity in the context of inclusive education introduction. The content of the main technologies developed by modern socio-pedagogical and psychological sciences and the practice of working with disabled children. Methods of work of the social guardian with children at various life restrictions.

**Fundamentals of Human Biology and Genetics.** The laws of life development, structure and vital functions of the human body at all levels of organization of living, impact of the environment on human factors. Human biology, its constituent parts. The human body as a holistic biological system. An Intelligent Man - a biological species. The origin of man. Fundamentals of human genetics. Subject and tasks of studying human genetics. Methods of studying human genetics and their resolution. Modern genetics on mechanisms of human heredity and viability.

**Zoopsychology.** Physical activity of animals. Development of animals psyche in ontogenesis. Development of psyche and behavior in the postnatal, juvenile periods and during puberty. Instinctive behavior as the basis of animal life. Instinct and learning. Elementary mental activity of animals. Problem of thinking, intelligence and consciousness for animals. Animal communication systems. Problems of sociobiology. The nature of altruism, selfishness and aggressiveness. Mechanisms of congenital prohibition in animals.

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***Optional components by specialty (block 2)***

**Psychological aid in crisis and emergency situations.** 1. Disability issues; 2. Suicide (Select a specific age cohort such as adolescent, college aged, mid-life, elderly); 3. Enactment of the Advanced Declaration (Living Will); 4. Post-trauma symptomatology; 5. Current treatment of PTSD; 6. Multicultural concerns in crisis intervention; 7. The role of spirituality/religion in adaptation to trauma; 8. Bereavement – normal vs. complicated; 9. Caregiver fatigue; 10. Trends in victimology; 11. Survivor/victim issues associated with one of the following categories: homicide, domestic battery, relationship violence including stalking, sexual assault as adult or child, hate crimes; 12. Emergency medical and public safety intervention models; 13. DSM-IVTR diagnosis categories and related issues; 14. Disaster response (agencies and models); 15. Assessment of trauma history and impact of events; 16. Intervention and treatment outcome studies; 17. Impact of trauma on early childhood; 18. Public/private school intervention models; 19. Role and efficacy of community/national hot line services; 20. Certification of crisis/trauma intervention specialists; 21. The neuropsychological response to trauma/current trends in research; 22. Post-trauma growth.

**Psychology of management.** Psychology of management as a branch of psychological science. Structure and functions of management activity. Levels of psychological and managerial problems (psychological aspects of the activities of the head, the organization as the subject and object of management, the interaction of the head with members of the organization). Socio-psychological theories of management. Psychology of the personality of the head. The content of the concepts "leader" and "leader" in the management of the organization. Managerial role of manager. The level of formation of the psychological readiness of the future specialist to management. Striving for leadership and leadership ability. Approaches to leadership learning. Forms of power and influence. Typology of management styles. Levels of organization management decisions. The main styles of implementation of the process of making managerial decisions. The concept of motivation and its role in management. Theories of labor motivation. Psychology of collective management. Psychological characteristics of the group as a structural element of the organization. Phenomena of group life. Psychology of business communication. Manipulative technologies in management. Psychology of conflict management. Gender aspects of professional activity.

**Basics of psychotherapy.** Psychotherapy at the present stage, the place of psychotherapy in the system of psychological knowledge. Types and forms of psychotherapeutic work of a psychologist. Purpose, task and principles of psychotherapy. Professional training of psychotherapist, competence and qualification questions. The model of psychology and client interactions within different psychotherapeutic schools. Requirements for the personality of the therapist within different therapeutic areas and schools. Professional deformation of the personality of the psychologist. Professional ethics and responsibility of the therapist. Clinical and physiological bases of psychotherapy. Psychological principles of psychotherapy. Medical model of psychotherapy, interaction in the system "patient-patient". Psychological model of psychotherapy, interaction in the system "psychologist-client". The main stages of the psychotherapeutic process. Problems studying the client's personality. The problem of the limits of psychotherapeutic influence. Criteria for the effectiveness of psychological care. Preparatory stage of therapeutic work, stage of adjustment for interaction, first meeting with the client, diagnostic stage, therapeutic stage, stage of control.

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**Methodology of conducting psychological examination in various branches of psychology.** The purpose is to get acquainted with the main issues of psychological examination, the technology of its conduct and preparation; the formation of the ability to independently plan and conduct psychological examination, to choose the appropriate methods for studying the personality traits, to identify and study personal qualities, individual psychological and psycho-physiological features of the personality.

**Methodological and theoretical problems of psychology.** The goal is to form students' ideas about the theoretical foundations (explanatory principles, the subject of science) and the methodological basis of psychology; development of the ability to build a research methodology. The tasks of studying the discipline are: awareness of the prospects of the development of psychology as a scientific knowledge; understanding of the main methodological problems of psychology; study of the principles of psychological science, explaining the laws of the existence of the subject of psychology; understanding of the basic and metascientific categories of science.

**Methodology of teaching psychology.** Goals, content, principles of teaching psychology; methods, receptions and forms of training; Planning of the educational process in psychology.

**Philosophy of Psychology.** The philosophical and methodological content of classical and newest actual problems of psychological science. From the standpoint of unity and interaction of philosophy and psychology, the socio-psychological phenomena are covered. Knowledge of philosophical methodology will improve the activities of the psychologist, help him to build and regulate the relationship with people, deep understanding of the motives and their actions, to know the objective reality, to correctly evaluate it and use the results obtained in practice.

**Political psychology.** Psychological characteristics of the subjects of politics. Psychology of political culture. Political culture concepts, its levels and types. Political psychology of personality. The problem of political activity of the individual. Political socialization. Psychology of political power and power relations. Political elite and counterelite in modern society. Political leadership as a psychological phenomenon. Psychology of the groups in politics. Elemental mass political behavior and mass political consciousness. Political stability and political conflict. Psychology of political violence.

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**Bachelor**  
**Field of knowledge "Education / Pedagogy"**  
**in specialty "Physical education and Sports"**  
**Educational and professional program "Physical education and Sports"**

Form of Training:	Licensed number of persons:
– Full-time	50
– Part-time	-
Duration of Training	4 years
Credits ECTS	240
Language of Teaching	Ukrainian
Qualification	sports coach, physical education teacher

### **Concept of training**

The training of bachelors in the fields of physical education and sports aims to meet the needs of the individual, society and the state in specialists who are able to carry out educational and sports activities at a high professional level.

The relevance of the specialty "Physical education and Sports" and the need for professional staff is due to the need to maintain the proper level of health of the population of Ukraine, insufficient number of specialists in education, sports, sports, mass, rehabilitation, insufficient promotion of sports and fitness among the population, irrational use of health-improving opportunities of recreational sphere.

Training under the educational-professional program "Physical education and Sports" is aimed at providing the applicant with higher education (hereinafter - HEI) the acquisition of knowledge, skills and abilities in the fields of physical culture and sports and methods of sports training at the appropriate level, further education and research.

### **Practical training**

Practical training in the specialty 017 "Physical Culture and Sports" is carried out according to the schedule of the educational process and involves students of pedagogical practice, coaching practice in secondary schools, SDYUSHOR, CYSS, SHVSM, universities, sports and fitness clubs, lessons and bulk training. as an assistant teacher, coach, teacher and independently.

The purpose and content of practical training are students to master modern methods and forms of organizing the work of teachers and coaches in sports, the formation on the basis of acquired skills and abilities necessary for professional activity, independent decision-making, creative use of their knowledge in practice.

### **Form of certification of applicants for higher education**

Certification of applicants for the first (bachelor's) level of higher education in the specialty 017 Physical Culture and Sports is carried out in the form of a comprehensive qualifying examination in accordance with the Regulations on the examination commission of the university.

Students who have fulfilled all the requirements of the training program (curriculum) are admitted to the certification. A set of knowledge, skills, abilities and other competencies acquired by a person in the process of training is submitted for certification.

Certification is carried out openly and publicly. Based on the results of successful certification, a standard document is issued on the award of a bachelor's degree with the award of a qualification: bachelor of physical culture and sports, sports coach, physical education teacher.

**Academic rights of graduates** - can continue their studies in specialties and educational (educational-professional or educational-scientific) master's training programs, the names of which are given in table. 1.2 of section 1.3 of this Catalog.

### **Employment of Graduates**

The graduate prepares to work as a physical education teacher in a secondary school, as well as to perform pedagogical functions with school-age children in other educational institutions. As a coach, the work is performed in the staff of sports and fitness clubs, children's sections, in professional sports, the Olympic movement.

According to the National Classification of Occupations DK 003: 2010, specialists who have been educated under the educational and professional program "Physical Culture and Sports" can hold the following primary positions:

- 2331 - Teacher of a secondary school;
  - 2320 - Teacher of a secondary school;
  - 3475 - Sports coach (federation, national team or club team, sports school, etc.);
  - 3475 - Coach-teacher in sports (sports school, section);
  - 3475 - Instructor-methodologist of sports school;
  - 3475 - Aerobics instructor;
  - 3475 - Instructor-methodologist of the gym (hall);
  - 3475 - Fitness trainer;
  - 3414 - Leisure specialist;
  - 3414 - Instructor of health and sports tourism (by type of tourism);
  - 3475 - Instructor of combat and physical training;
  - 3475 - Instructor-methodologist in physical culture and sports;
  - 3475 - Instructor-methodologist in industrial gymnastics
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**Bachelor`s Program and Curriculum  
in Specialty "Physical education and Sports"  
Educational-professional program "Physical education and Sports"**

Code n/a	Components of the educational and professional program (education disciplines, course projects (paper), practice, qualification work)	Amount of tests ECTS	The final control
1	2	3	4
<b>1. GENERAL TRAINING CYCLE</b>			
<b>Compulsory components EPP</b>			
CC 1	General theory of health	4	exam
CC 2	Pedagogy	6	test, exam
CC 3	Human anatomy and sports morphology	6	exam
CC 4	Biochemistry	4	exam
CC 5	Computer technology and information technology in physical education and sports	4	exam
<b>Compulsory components EPP by decision of the Academic Council of the University</b>			
CCU 1	Ukrainian (professional)	4	exam
CCU 2	Foreign language (for professional purposes)	8	test, exam
CCU 3	Philosophy	4	exam
CCU 4	History of Ukrainian statehood	4	exam
CCU 5	Ethno-cultural studies	4	exam
CCU 6	Ethics and aesthetics	4	exam
CCU 7	Occupational and life safety	4	exam
CCU 8	Legal culture of the individual	4	exam
<b>2. SPECIAL (PROFESSIONAL) TRAINING CYCLE</b>			
<b>Compulsory components EPP</b>			
CC 6	Introduction to specialty	4	exam
CC 7	History of physical culture	4	exam
CC 8	Theory and methods of physical education	12	test, exam
CC 9	Theory and methods of teaching gymnastics	6	test, exam
CC 10	Theory and methods of teaching athletics	6	test, exam
CC 11	Theory and methods of teaching swimming	6	exam
CC 12	Theory and methods of teaching sports games	8	test, exam
CC 13	Theory and methods of teaching strength sports	6	exam
CC 14	Theory and methods of teaching martial arts	4	exam
CC 15	Basics of tourism and orienteering	4	exam
CC 16	Olympic and professional sports	4	exam
CC 17	Sports metrology	4	exam
CC 18	Theory and methods of coaching in the chosen sport	12	test, exam
CC 19	Human physiology and motor activity and sports	6	exam
CC 20	Biochemistry of muscular activity	4	exam
CC 21	Biomechanics of sport	4	exam
CC 22	Psychology of sport	4	exam
CC 23	Sports medicine	4	exam
CC 24	Adaptive sport	4	exam
<b>The total amount of Compulsory components</b>		<b>166</b>	
<b>Optional components EPP</b>			
<b>Optional components by specialty</b>			
OB 1.1	Fundamentals of sports management and marketing	4	exam
	Regional management in the field of physical education and sports		
OB 1.2	Sports facilities and training equipment	4	exam
	Modern fitness technologies		
OB 1.3	Fundamentals of medical knowledge	4	exam
	Diagnosis and monitoring of athletes' health		

OB 1.4	Pedagogical skills of specialists in physical education and sports	4	exam
	Improving skills in the chosen sport		
OB 1.5	Pharmacological support in the field of physical education and sports	4	exam
	Basics of rational and sports nutrition		
OB 1.6	Fundamentals of research work	4	exam
	Research methods in physical education and sports		
OB 1.7	Fundamentals of age and gender psychology in physical education and sports	4	exam
	Age anatomy and physiology in physical education and sports		
OB 1.8	Therapeutic physical culture	5	exam
	Basics of general and sports massage		
OB 1.9	Moving games and entertainment with teaching methods	4	exam
	Recreational games		
OB 1.10	Basics of physical rehabilitation	4	exam
	Basics of kinesitherapy		
OB 1.11	Theory and methods of youth sports	5	exam
	Fundamentals of teaching modern sports		
OB 1.12	Hygienic support in the field of physical culture and sports	4	exam
	Pre-medical care in emergencies		
OB 1.13	Marketing of sports and health activities	4	exam
	Organization and methods of mass physical education		
<b><i>Optional components by Student's Choice</i></b>			
OB 2.1	Basics of classical aerobics and step aerobics	3	exam
	Basics of strength fitness		
OB 2.2	Basics of health fitness	3	exam
	Physical education in special medical groups		
<b>The total amount of Optional components</b>		<b>60</b>	
<b>3. OTHER TYPES OF TRAINING</b>			
CC 25	Course work on the discipline	1	test
CC 26	Pedagogical practice	6	test
CC 27	Coaching practice	6	test
CC 28	state attestation	1	exam
<b>the total amount of other types of training</b>		<b>14</b>	
<b>THE TOTAL AMOUNT OF EPP</b>		<b>240</b>	

## Annotations of Components in the curriculum

### 1. GENERAL TRAINING CYCLE

#### Compulsory components

**General theory of health.** Mastering the basic methods of diagnosing the level of health and the principles of maintaining a healthy lifestyle; mastering skills to form a motivation for a healthy lifestyle; skills of overcoming stressful situations, the negative impact of hypodynamics, malnutrition, bad habits; use the acquired knowledge of the general theory of health and healthy lifestyle and use it in further professional activities. Ability to adapt their current practice to changing conditions. Ability to find ways to continuously improve the quality of rehabilitation services.

**Pedagogy.** Familiarization of students with the basics of pedagogical science, principles, methods, forms of organization of education and upbringing, ideological and methodological principles of education, conceptual foundations of higher education reform in Ukraine in the process of entering the European educational space; acquisition by students of the corresponding pedagogical knowledge, abilities and skills which application will promote effective professional activity.

**Human anatomy and sports morphology.** Creating a theoretical foundation for the development of subjects of the medical-biological cycle and disciplines of professional orientation for the training of specialists in physical education and sports; preparation of students for scientifically substantiated training process taking into account morphological features of the athlete's body structure.

**Biochemistry.** The discipline "Biochemistry" contains modern ideas about the chemical composition and properties of compounds that are part of living organisms, and about their transformations that occur in the process of life. The course considers the general laws of metabolism, metabolism of the main classes of biomolecules, mechanisms of realization of genetic information, biochemistry of intercellular communications, integration of metabolism and its regulation.

**Computer technology and information technology in physical education and sports.** The discipline is aimed at forming the general and professional competencies defined by the educational-professional program, the ability to identify and effectively solve complex specialized and scientific problems and practical problems in the field of physical culture and sports with the help of modern information technologies.

### **Compulsory components by decision of the Academic Council of the University**

**Ukrainian language for professional purposes.** Lexical, orthographic, morphological, syntactic norms of modern Ukrainian literary language. Sounded speech and its features. Speech composition. Lexical and grammatical means of relevant reproduction of communicative intentions in writing. Requirements for professional texts: objectivity of presentation, logic, consistency, completeness of information, accuracy, conciseness, standardity.

**Foreign language for professional purposes.** Phonetic rules of a foreign language. Audition and Speaking. Lexical minimum (categories of being, their properties and relations, geographical, demographic, economic and political data) of a specific country of the world, the language of which is being studied. The lexical minimum of regional and social differences between Ukraine and the country of study. Reading for a grasp and reading for the gist at a specified time without a dictionary. Studying reading with a certain number of unknown words (using the dictionary).

**Philosophy.** The course teaches a system of knowledge from such sections of philosophy as ontology, epistemology (theory of knowledge), social philosophy, historical types of philosophy, revealing the essence of the relationship "man - the world" in its most basic manifestations. The phenomenon of religion, its origin, basic religious concepts, history and current situation of tribal, early and late national religions, the main provisions of the creed and cult of the most influential religions in the world.

**History of Ukrainian statehood.** The study of the discipline involves a deep assimilation and understanding by students of the history of the origin and formation of the Ukrainian people and Ukrainian statehood, the establishment of national identity, coverage of political activities of classes and social groups in Ukraine at certain stages of historical development. The general vocation of the course is to train highly qualified specialists of the agro-industrial complex on the basis of the processes of humanization of higher education, integration of professional and socio-humanitarian training, improvement of the course structure, use of world and national thought achievements, universal values.

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**Ethno-cultural studies.** Ethnocultural studies in the system of modern knowledge. The meaning of the concepts "anthropogenesis", "sociogenesis", "ethnogenesis". Ethnos as a cultural paradox. Formation of ethnology. The main directions of ethnocultural studies. Ethnos and civilization. Tradition as a factor of ethnocultural process. Dynamics of traditional culture. Endogenous factors of cultural tradition. Culturology of myth. Ethnosociocultural foundations of mythology. A naturalistic version of the myth. A holiday in traditional culture.

**Ethics and aesthetics.** In the formation of a holistic, harmoniously developed personality of future professionals, an important place is given to ethics and aesthetics. Ethics is a part of practical philosophy that studies the phenomenon of morality, its structure and nature, the laws of moral formation of society and the individual. Explaining the spiritual and moral world of the individual and influencing its formation, ethics is an integral part of the worldview.

**Occupational and life safety.** Analysis of the negative impact of various hazards on human life and health, as well as methods, means and measures to protect against them; legal and organizational issues of the basics of labor protection, the basics of industrial sanitation and occupational health, the basics of safety of production processes, fire safety.

**Legal personality culture.** Formation of legal thinking and cultural style of lawful behavior in everyday life both in interpersonal relations and in communication with representatives of judicial and law enforcement agencies.

## 2. SPECIAL (PROFESSIONAL) TRAINING CYCLE

### Compulsory components

**Introduction to specialty.** "Introduction to the specialties of physical education and sports" is designed to teach students all specialties in the field of "physical culture and sports": physical education, physical rehabilitation, Olympic and professional sports. The main task of the course is to form in the freshman a certain system of knowledge and ideas about the field of his future professional activity and about the profession of specialists in the field of physical culture. While studying the course, the student gets acquainted with the system of higher education in Ukraine, with the peculiarities of obtaining professional education and the specific conditions of study at the university.

**History of physical culture.** The history of physical culture is one of the profile disciplines and is a specific field of historical and pedagogical knowledge. It is an important part of the science of physical education. The subject of its study is the general patterns of origin, formation and development of physical culture and sports at different stages of society. The content of the subject history of physical culture and sports includes the study of means, forms and methods, ideas, theories and systems of physical culture. Physical culture is seen as an organic part of all human culture, education and training of people to prepare them for work and military activities. History traces the evolution of physical culture and sports from ancient times to the present day.

**Theory and methods of physical education.** As a discipline, the theory and methods of physical education is the main general theoretical profile subject of professional education of specialists in physical education and sports. This subject is of paramount importance in the formation of the professional credo of the future specialist, his professional views and beliefs. The introduction of this discipline is due to the need for a holistic understanding of various scientific and practical knowledge about physical education as a multifaceted social phenomenon that is spreading in such areas of human life as education, recreation, rehabilitation, tourism, sports and more.

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**Theory and methods of teaching gymnastics.** The purpose of teaching the discipline "Theory and methods of teaching gymnastics" is: • formation of a system of knowledge on the history, theory and methods of teaching; • mastering the technique of basic gymnastic exercises; • acquisition by students of the necessary knowledge, skills and abilities to prepare them for the professional activity of a physical education teacher of a secondary school.

**Theory and methods of teaching athletics.** The purpose is to provide theoretical-methodical and practical training of students for teaching athletics in future professional activities. Objectives of the discipline: to enrich students' knowledge of techniques and tactics of performing athletics exercises; to master the technique and methods of teaching different types of athletics, as well as methods of developing physical qualities by means of athletics.

**Theory and methods of teaching swimming.** Purpose - involves students studying the theory and methods of teaching swimming, mastering the techniques of basic types of swimming exercises, acquiring the necessary knowledge, skills and abilities for independent pedagogical work.

**Theory and methods of teaching sports games.** Teaching the discipline is aimed at students studying theoretical material, acquaintance and mastering the necessary skills of technical actions with and without the ball at the curriculum, mastering the methods of initial training in basic techniques and tactical interactions, as well as organizing and conducting competitions.

**Theory and methods of teaching strength sports.** Teaching the discipline aims to form basic professional and pedagogical knowledge, skills, abilities that provide theoretical and practical training of a specialist in the field of Fis.

**Theory and methods of teaching martial arts.** The course provides the provision of theoretical, methodological and practical training of students for future professional activities. The purpose, structure and content of the discipline "Theory and methods of teaching martial arts" are revealed. The place and significance of this discipline in the training of future physical education teachers and trainers are considered. Students need to master issues related to: the history of martial arts; the evolution of the rules of martial arts; basic concepts; terminology, classification and systematics of martial arts; organization and content of martial arts classes.

**Basics of tourism and orienteering.** Sports tourism occupies a special place among other types of tourism as the most effective form of acquiring knowledge, skills and abilities necessary for domestic, industrial and military activities. In the process of sports tourism, educational, health-improving and sports tasks are solved at the same time.

**Olympic and professional sports.** The discipline "Olympic and professional sports" studies the origins of Olympic and professional sports; their impact on the individual and society as a whole and the impact of socio-economic status of society on the development of Olympic and professional sports; relationships of Olympic and professional sports with other spheres of social activity; finding out the optimal organizational structure of Olympic and professional sports and their legal and economic bases; substantiation of effective systems of competitions, methods of selection and training of amateur athletes and professional athletes, etc.

**Sports metrology.** The purpose of teaching the discipline is to form in students a system of knowledge, skills and abilities in the field of sports measurements, which is a necessary element of professional development. The main objectives of the discipline are: - teaching students the metrological foundations of modern theory and practice of integrated control in sports and physical education; - learning methods and mastering the skills of independent work with measuring instruments; - bringing the content of university studies closer to the demands of future practical activities of students.

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**Theory and methods of coaching in the chosen sport.** The purpose of teaching the discipline is to provide students with knowledge about the basics of training, methods of teaching motor actions and the development of motor skills, the basics of building a training process in the chosen sport.

**Human physiology and motor activity and sports.** Principles of life of the human body. Mechanisms of functioning of separate systems (nervous, blood circulation, breath, digestion, deception of substances, and energy, thermoregulation, endocrine glands, higher nervous activity, musculoskeletal system). Physiological methods of human research. The purpose of the discipline is to form in future specialists in physical education and sports knowledge about the physiology of muscle activity, to reveal the physiological essence of sports and fitness, its functionality, which can and should be realized in the process of purposeful physical education.

**Biochemistry of muscular activity.** Describes the chemical structure, norms of consumption, metabolic processes of the most important substances of the body in the norm, during muscle activity and some pathological conditions. The biochemical mechanisms of excitation, contraction and energy supply of skeletal muscles, as well as metabolic changes during various physical activities and the possibility of using metabolic parameters to assess the functional state of the human body are revealed.

**Biomechanics of sport.** The concept of human motor actions. Structure and functions of the musculoskeletal system, biomechanical characteristics of movements. Methods of analysis of biomechanical characteristics. Regularities of motor actions management. Types of motor actions and features of motility. Fundamentals of the theory of construction of physical exercises, regularities of modeling and bases of didactics of motor actions.

**Psychology of sport.** Study of the psychology of human personality as a holistic structure consisting of socially conditioned (orientation) and biologically conditioned (temperament, inclinations, instincts, simple needs) aspects of personality; parties due to life experience and upbringing / habits, knowledge, skills and abilities /, individual features of mental functions (their qualitative originality and level of development). Principles and content of the psychology of sports, patterns of their practical use in the training of athletes of different qualifications. Combination of fundamental and applied psychology according to the specifics of the industry. Practical use of knowledge in psychology in the process of physical education and sports training. Methods of studying and correcting the mental aspects of the athlete's personality.

**Sports medicine.** The discipline is aimed at forming students' theoretical knowledge and developing practical skills in conducting therapeutic physical culture and, depending on the type of disease, to use the basic and auxiliary techniques of sports medicine. Discipline that studies the impact on the human body of physical culture and sports; develops and substantiates a rational method of physical exercises and sports training for the purpose of comprehensive harmonious development, strengthening of health and increase of working capacity of the person.

**Adaptive sport.** The purpose of the discipline is to acquaint students with the problems, prospects, features of the organization and development of adaptive sports in the world and in Ukraine.

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## Optional components

### *Optional components by specialty*

**Fundamentals of sports management and marketing.** Providing a holistic view of the student about the industry system of management and marketing; mastering the principles, methods and technologies of management of physical culture and sports organizations in the modern market conditions of Ukraine.

**Regional management in the field of physical culture and sports.** Features of management in the field of physical culture and sports of administrative-territorial units of different levels. In the context of decentralization in Ukraine, it is important to systematize the accumulated management experience in various segments of administrative-territorial units, including in the field of physical culture and sports.

**Sports facilities and training equipment.** The purpose of teaching the discipline is to acquaint students with existing sports facilities and training equipment. The main objectives of the discipline are to acquire knowledge and practical skills necessary for the operation of sports facilities and sports equipment, to know the basics of organization of design and construction of sports facilities, to know the specifics of sports facilities and their nature, basic terms and names, requirements for safe operation. settlements, be able to rationally operate sports facilities and equipment, build simple sports facilities, etc.

**Modern fitness technologies.** Topical issues of using fitness programs and technologies in the process of physical education, methodological features of sports training, rational use of recreation and mass sports, methods of conducting physical rehabilitation classes for student youth are considered.

**Fundamentals of medical knowledge.** Fundamentals of medical knowledge is one of the leading disciplines of theoretical and practical training of students of higher educational institutions, as in the system of national education the most important task today is to ensure the full development of children and youth, protection and promotion of health as a prerequisite for future citizens of Ukraine.

**Diagnosis and monitoring of athletes' health.** The purpose of studying the discipline is for students to master the theoretical foundations and practical skills in determining the state of physical, mental, intellectual and spiritual health. To teach students to evaluate a person's lifestyle, to diagnose the peculiarities of human lifestyle disorders.

**Pedagogical skills of specialists in physical culture and sports.** Pedagogical systems, pedagogical processes and pedagogical technologies in modern pedagogical knowledge. Technology of pedagogical communication. Technology for resolving pedagogical conflict and pedagogical problems. Tolerance as an important condition for the formation of teacher skills. Technology of self-regulation of the physical and mental state of the teacher. Technology of teacher self-development.

**Improving skills in the chosen sport.** To form in future specialists professional and pedagogical knowledge, skills and abilities that will be necessary for independent work in various institutions of the system of physical education and sports, as well as to increase the level of sportsmanship in the chosen sport.

**Pharmacological support in the field of physical culture and sports.** The main task of pharmacology in physical education and sports, which is to study the mechanisms of action, routes of administration, indications, contraindications and side effects of drugs. The sections of the discipline of pharmacodynamics, pharmacokinetics and drug toxicology and the system of current and final control are analyzed.

**Basics of rational and sports nutrition.** The purpose of teaching the discipline is to acquaint students with the nutrition of a healthy person and athlete, the chemical composition of food and their impact on human health, the basics of therapeutic nutrition,

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sports nutrition, recommendations for dietary therapy for various diseases, nutrition technology in sports training.

**Fundamentals of research work.** The purpose of the course is to master the main directions and issues of research and development. Characteristics of planning, organization, research methods and design of student research papers.

**Research methods in physical education and sports.** The main theoretical and practical issues of conducting scientific work with children at school, in other sports and educational institutions are highlighted. The main provisions of the methodology are systematically stated, the methods of scientific research in the field of physical education and sports are characterized.

**Fundamentals of age and gender psychology in physical education and sports.** It is shown the need to take into account the age and gender approach in physical education not in terms of gender policy of equal rights for men and women, but in terms of studying their psychosocial characteristics to create adequate organizational and methodological conditions in the process of physical education.

**Age anatomy and physiology in physical education and sports.** Formation in future teachers of knowledge about age features of a structure and functions of a children's organism; about the laws that underlie the preservation and strengthening of the health of the student, maintaining his high efficiency during various types of educational and work activities; about hygienic requirements to the organization of educational work in initial classes.

**Therapeutic physical culture.** The material on the general methods of therapeutic physical culture and massage is presented, the basic information on physiology, biomechanics and medical action of physical exercises is given. Particular attention is paid to the description of private methods of therapeutic gymnastics for many diseases that are common in injuries. Complexes of physical exercises for patients, and also healthy persons of mature, elderly age and children are resulted.

**Basics of general and sports massage.** Provide future specialists in physical rehabilitation with the amount of knowledge, skills and abilities on scientifically sound (taking into account the state of health, age changes and individual characteristics) performance of certain massage techniques, massage of certain parts of the body, construction and massage procedure

**Moving games and entertainment with teaching methods.** Providing theoretical, methodical and practical preparation of students for future professional activity. Knowledge of the content of educational material and its planning in accordance with the program of secondary schools. Perfect execution of basic techniques and tactical actions of mobile games. Formation of a system of knowledge on the basics of technique and tactics of mobile games in educational, extracurricular work on physical education in the school section, health camp, place of residence, acquisition of knowledge and organizational skills of sports holidays "Merry Starts" and others.

**Recreational games.** The discipline for students majoring in "Physical Culture and Sports" is aimed not only at mastering theoretical material, but also at improving students' practical skills and forming their professional competencies, which are extremely important in today's competitive labor market.

**Basics of physical rehabilitation.** Providing students with the necessary level of theoretical and methodological knowledge about rational methods and means of their professional activity, to reveal the structure and content of this activity, the conditions for successful implementation of educational, upbringing and health tasks in the process of physical rehabilitation.

**Basics of kinesitherapy.** The purpose of the discipline - to form students' skills in the use of kinesitherapy in the process of physical rehabilitation of patients with diseases of the senses, musculoskeletal system, neurological diseases. The task of studying the

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discipline involves acquainting students with the types of exercises, mechanotherapeutic means, the principles of kinesitherapy classes.

**Theory and methods of youth sports.** Formation of students' system of knowledge, skills and abilities on the basics of the theory and methods of youth sports, features of the content of the system of sports training of young athletes, taking into account age periodization of training loads, which is a necessary element of becoming a specialist.

**Fundamentals of teaching modern sports.** Physical culture is developing rapidly, non-traditional sports are increasingly being introduced into the lives of athletes, so specialists in physical culture and sports need to be in the trend of modern change. The course will tell about non-traditional and modern sports, their place in modern sports and everyday activities, as well as the importance for certain categories of people, will form students' knowledge, skills and abilities to teach modern sports.

**Hygienic support in the field of physical culture and sports.** Influence of various factors related to physical culture and sports on the health of the person who engages in them: environmental conditions in which exercise continues; organization and content of physical exercises; volume and intensity of physical activity in the process of physical exercises; nutrition characteristics; technological support and equipment of athletes.

**Pre-medical care in emergencies.** The subject of this course is emergency pre-medical care in life-threatening conditions, the goal - ways and methods of first aid in emergency and terminal conditions. Studying the subject will help students know: the causes of serious conditions and emergency care, the principles and rules of pre-medical care for injuries, bleeding, accidents; be able to: perfectly master resuscitation techniques in threatening conditions, provide emergency care for acute diseases of the cardiovascular and respiratory systems, poisoning, animal bites, snakes, insects. The acquired knowledge is important in everyday life, in everyday life, at work, in any conditions.

**Marketing of sports and health activities.** The purpose of teaching the discipline "Marketing of sports and health activities" is to equip students with theoretical knowledge and practical skills necessary for scientifically sound marketing activities in the field of sports and health.

**Organization and methods of mass physical education.** The general bases of the theory and methods of organization of sports and mass work, forms and technologies of organization of sports and mass work and physical culture and health work in the system of education in Ukraine, at work, at the place of residence, with persons with disabilities are taught.

### ***Optional components by Student's Choice***

**Basics of classical aerobics and step aerobics.** The classification and summary of directions and types of aerobics, various movements of aerobics and technique of their performance are given; the properties of musical accompaniment of classes, construction of sets of exercises, content and structure of classes are considered; the organizational bases of training are offered, which include planning and types of control of the health-training process; testing of those who are engaged in classical and step aerobics has been clarified; the peculiarities of communication skills and abilities necessary for the training of specialists, safety requirements in the classroom, etc. are highlighted.

**Basics of strength fitness.** Formation of students' scientific and practical knowledge based on the understanding of general and special information about the educational and training process of strength fitness, its impact on the processes occurring in the human body (with different indicators of physical activity), followed by the use of this knowledge for theoretical and practical introduction in the system of physical education and sports.

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**Basics of health fitness.** Modern achievements in the field of health fitness are considered; the importance of physical activity and fitness as the most important and necessary elements for maintaining human health and prevention of various diseases is shown; The components of health fitness, construction of fitness classes, the latest norms of physical activity, modern knowledge on methods of assessing body composition and weight control, the basics of a balanced diet, prevention and coping with stress are considered in detail.

**Physical education in special medical groups.** Special medical group. Physical development of schoolchildren in special medical groups. Posture in school-age children. Posture disorders with increased physiological curves of the spine. Posture disorders in children with reduced physiological curves of the spine. Correction of impaired posture in schoolchildren. Posture disorders in schoolchildren with scoliotic disease. Construction of classes taking into account various diseases.

## **2.17. EDUCATION AND RESEARCH INSTITUTE OF CONTINUOUS EDUCATION AND TOURISM**

**Director – Mariya Kulayets**, PhD, Professor, Honored Economist of Ukraine

Tel.: (044) 259-79-11

E-mail: pdv1204@ukr.net

Location: building № 10, room 219

The ERI organizes and coordinates the educational process of bachelors in the following specialties:

### ***242 Tourism***

Educational-professional Program “**Tourism**”

Guarantor of the educational and professional program –  
Dariya Basyuk, Doctor of Economics, Associate Professor  
Tel.:(044) 527-80-61 e-mail: daruna.b@gmail.com

Graduating department:

Tourism, Hotel and Restaurant Business and Extension  
Tel.:(044) 527-80-61 e-mail: agroconsalt\_chair@nubip.edu.ua  
Head of Department – Dariya Basyuk, Doctor of Economics, Associate Professor.

### ***241 Hotel and Restaurant Business***

Educational-professional Program "**Hotel and Restaurant Business**"

Guarantor of the educational and professional program –  
Iryna Kudinova, PhD in Economics, Associate Professor  
Tel.:(044) 527-80-61 e-mail: ikudinova@nubip.edu.ua

Graduating department:

Tourism, Hotel and Restaurant Business and Extension  
Tel.:(044) 527-80-61 e-mail: agroconsalt\_chair@nubip.edu.ua  
Head of Department – Dariya Basyuk, Doctor of Economics, Associate Professor.

### ***281 Public Management and Administration***

Educational-professional Program «**Public Management and Administration**»

Guarantor of the educational and professional program - Doctor of Public Administration, Associate Professor Volodymyr Oliinyk

Graduating Department:

Public Administration and management of innovative activity  
Tel.: (044) 527-86-53 E-mail: innovation\_chair@nubip.edu.ua  
Head of the Department – Doctor of Economics, Professor Olha Vytvytska

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**Bachelor**  
**Field of Knowledge "Service sphere"**  
**in the Specialty "TOURISM"**  
**Educational-professional program "Tourism"**

Form of Training:	Licensed number of persons:
– Full-time	60
– Part-time	30
Duration of Training:	
– Full-time educational and professional program	4 years
– Part-time	4 years
Credits ECTS:	
– educational and professional program	240
Language of Teaching	Ukrainian, English
Qualification	Bachelor of Tourism

### **The Concept of Training**

Formation of general and professional competencies for successful professional activity in the field of recreation and tourism on the basis of balanced nature management, including in protected areas and in rural areas, creation of opportunities for further employment of graduates in various tourism enterprises, their careers and professional growth .

The educational program is focused on training professionals who must have: modern methods and means of organizing the tourism business on the basis of sustainable development, including in protected areas and in rural areas.

The program involves the use of the latest interactive computer technology, training at leading universities in Europe and America, attracting foreign teachers to give lectures.

### **Practical Training**

Professional practice of students is an important part of the educational process for the training of qualified specialists in tourism. During the training and industrial practice students get acquainted with recreational and tourist facilities of Ukraine and foreign countries. During the internship, students perform the professional duties of managers, instructors, guides, animators, guides-translators and administrators of hotels, resorts, tourist and hotel complexes, work in travel agencies and tours, advertising and information centers. green tourism projects.

### **Proposed Topics for Bachelor theses**

1. Formation of potential of competitiveness of the tourist enterprise.
  2. Introduction of ecological management at the hotel enterprise.
  3. Marketing policy of the tourist enterprise and ways of its improvement.
  4. Formation of competitive advantages of the tourist enterprise.
  5. Management of production behavior of the staff of the tourist enterprise.
  6. Team management in personnel management of a tourist enterprise.
  7. External and internal methods of control in hospitality establishments.
  8. Features of selection and adaptation of personnel at the enterprises of sphere of tourism.
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9. Innovative technologies of quality management at service enterprises.
10. IT technologies in the organization of work of managers of tourist enterprises.
11. Modern methods of development of the workforce.
12. Formation of leadership qualities in tourism business managers.
13. Modern methods of planning the activities of tourism enterprises on the basis of IT - technologies.
14. Modern technologies for assessing the effectiveness of personnel of tourism enterprises.
15. Formation of the brand of the tourist enterprise.
16. Internet - marketing in modern tourism enterprises.
17. Modern office - management of tourist enterprises.

**Academic rights of Graduates:** graduates can apply for Master's Degree Specialties and Educational (Educational-professional or Educational-scientific) programs specified in Table 1.2 Section 1.3 this Catalog.

### **Employment of Graduates**

Specialists are trained for organizational and managerial, economic, commercial, investment and research activities in the field of tourism. Graduates work at enterprises and organizations in the field of tourism of various forms of ownership and types of management, including green tourism as managers of travel agencies and complexes, travel agencies, etc., specialists and managers in administrative work, logistics, marketing, commercial and international departments, personnel managers, owners of green estates, etc.

**Bachelor`s Program and Curriculum  
in Specialty "Tourism"  
Educational-professional program "Tourism"**

Code n/a	Components of the educational and professional program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits ECTS	The final control
1	2	3	4
<b>1. GENERAL TRAINING CYCLE</b>			
<b>Compulsory Components of EPP</b>			
CC 1	Economic Theory: Basics of Economic Theory	4	exam
CC 2	Information Systems and Technologies	7	test, exam
CC 3	History of Ukrainian Culture	3	exam
CC 4	Foreign Language	15	test, exam
<b>Total</b>		<b>29</b>	
<b>Compulsory Components of the EPP by the Decision of the Academic Council of the University</b>			
CC 1.1	History of Ukrainian statehood	3	exam
CC 1.2	Ecology	3	exam
CC 1.3	Physical Education	3	test
CC 1.4	Occupational and Life Safety	3	exam
<b>Total</b>		<b>12</b>	
<b>2. CYCLE OF SPECIAL (PROFESSIONAL) TRAINING</b>			
<b>Compulsory Components of EPP</b>			
CC 5	Entry to the Profession	3	test
CC 6	Legal Regulation of Tourist Activity	5	exam
CC 7	Geography of Tourism (tourist resources of Ukraine)	4	exam
CC 8	Fundamentals of Tourism	5	exam
CC 9	Active Tourism	5	exam
CC 10	Business Ethics	5	exam
CC11	Statistics in Tourism	5	exam, coursework
CC 12	Geography of Tourism (tourist geography)	3	exam
CC 13	Organization of the Hotel Industry	7	test, exam, coursework
CC 14	Organization of Restaurant Business	7	
CC 15	Economics of a Tourist Enterprise	5	exam
CC16	Tourist Local Lore	6	exam
CC 17	Museum Studies	3	exam
CC 18	Information Systems and Technologies in Tourism	6	exam
CC 19	Tour Processing	6	test, exam, coursework
CC 20	Organization of Excursion Activities	5	exam
CC 21	Marketing	5	exam
CC 22	Tourism Management	8	test exam, coursework
CC 23	Recreology and Spa Business	5	exam
CC 24	Marketing in Tourism	5	exam
CC 25	International Tourism Business	5	exam
CC 26	Standardization and Certification in Tourism	4	exam
CC 27	Analysis of Tourism Enterprises	4	exam
CC 28	Business Planning in Tourism	5	exam
<b>Total</b>		<b>121</b>	
<b>The Total Amount of Compulsory Components</b>		<b>162</b>	
<b>Optional Components of EPP</b>			
<b>Optional Components by Specialty</b>			
OC 1	Second Foreign Language (German)	5	test, exam
OC 2	Second Foreign Language (French)	5	test, exam
OC 3	Organization of Animation Activities	3	exam
OC 4	Basics of Consulting	3	exam
OC 5	Rhetoric and Psychology of Communication	6	exam
OC 6	Communicative Management	5	exam

**CURRICULA AND PROGRAMS OF BACHELOR DEGREE**

OC 7	Specialized Tourism	6	exam
OC 8	Rural Green Tourism	6	exam
OC 9	Organization of Transport Trips	5	exam
OC 10	Ecological Tourism	5	exam
CO 11	Accounting and Auditing in Tourism	7	exam
OC 12	Insurance in Tourism	7	exam
OC 13	Logistics in Tourism	8	exam
OC 14	Contract and Labor Law	8	exam
OC 15	Inventive Tourism	8	exam
<b>Total</b>		<b>54</b>	
<b>Optional components by Student's Choice</b>			
OD 2.1	Optional Discipline 1	3	exam
OD 2.2	Optional Discipline 2	3	exam
<b>Total</b>		<b>6</b>	
<b>The Total Amount of Optional Components</b>		<b>60</b>	
<b>3. OTHER TYPES OF TRAINING</b>			
CC 29	The Military Training	23	
CC 30	Educational Practice	6	
CC 31	Internship	8	
CC 32	Certification Exam	1	
CC 33	Preparation of Qualifying Work	3	
<b>TOTAL AMOUNT OF EPP (without military training)</b>		<b>240</b>	

## Annotations of Components in the curriculum

### 1. GENERAL TRAINING CYCLE

#### Compulsory components

**Economic Theory: Basics of Economic Theory.** The purpose of studying the discipline is for future professionals to gain sound economic knowledge, forming the logic of economic thinking and economic culture, teaching them basic methods of cognition and analysis of economic processes, the ability to make informed decisions about economic problems related to their future practice.

**Information Systems and Technologies.** Formation of future specialists of modern level of information and computer culture, acquisition of practical skills of work on modern computer equipment and use of modern information technologies for the decision of various problems in practical activity on a specialty.

**History of Ukrainian Culture.** Familiarization of students with the main trends and forms of ethnocultural development of the Ukrainian people from ancient times to the present, analysis and understanding of various phenomena and processes of cultural life of Ukraine.

**Foreign Language.** Formation of general and professionally-oriented communicative speech competencies to ensure effective communication in a professional tourist environment.

#### Compulsory components by decision of the Academic Council of the University

**History of Ukrainian Statehood.** Study of the historical process of creation of the Ukrainian state, formation of the ability to systematically analyze the main stages of development of the statehood of the Ukrainian people and use the acquired knowledge to analyze modern problems of political, national and cultural life of Ukraine.

**Ecology.** Studying the basics of rational nature management, identifying ways to overcome the current crisis in the relationship between society and nature, the formation of socio-ecological consciousness, a new ethical attitude of man to nature; ability to develop management principles.

**Physical Education.** Development of physical strength and sports training, formation of healthy lifestyle skills.

**Occupational and Life Safety.** The purpose of the discipline is to master the theoretical foundations, practical skills and competencies to create safe living and working conditions, effective professional activities through the introduction of norms, rules, technologies of life safety and labor protection in the tourism industry.

## 2. SPECIAL (PROFESSIONAL) TRAINING CYCLE

### Compulsory components

**Entry to the Profession.** Preparing students to study at the university in accordance with modern integration processes in international education in the context of the Bologna Declaration, acquaintance of 1st year students with the content of the future profession, the nature and scope of professional activity, the practicalities of tourism enterprises.

**Legal Regulation of Tourist Activity.** Forms in students a theoretical basis and practical skills of use of modern normative - legal base of realization of tourist activity.

**Geography of Tourism (tourist resources of Ukraine).** The discipline involves the formation of knowledge, skills and competencies to determine the main tourist regions of the world by type of tourism.

**Fundamentals of Tourism.** Study of scientific bases of tourism science, formation of necessary knowledge on the organization of tourist trips for experts in the field of tourism.

**Active Tourism.** Assimilation of theoretical and practical bases of traveling on different routes with active ways of movement; acquisition of specific knowledge and skills in various types of active tourism.

**Business Ethics.** The discipline aims to provide knowledge about the moral requirements for business relations, modern technological requirements for the main forms of business communication - conversations and negotiations, meetings, etc., the moral principles, norms and rules of etiquette.

**Statistics in Tourism.** The purpose of the discipline is to provide knowledge, skills and acquisition of competencies for the use of statistical methods for quantitative assessment of phenomena in the field of tourism.

**Geography of Tourism (tourist local lore).** The purpose of studying the discipline is to acquaint students with the methods and features of a comprehensive study of the tourism industry of countries and regions of the world, data on the main types of tourist and recreational resources, major tourist centers and regions of the world.

**Organization of the Hotel Industry.** Formation of understanding of essence of hotel economy as a component of sphere of services, mastering by students of theoretical bases of the organization of functioning of the enterprise of hotel economy in the market.

**Organization of Restaurant Business.** Formation of knowledge on the rational organization of food services, acquisition of practical skills on the internal content, interaction and consistency of technological operations and processes in restaurants.

**Economics of a Tourist Enterprise.** The aim of the discipline is to acquire knowledge, skills and abilities to solve economic problems in the tourism industry.

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**Tourist Local Lore.** The discipline involves the formation of students on the basis of mastering theoretical and practical knowledge about the features of the regions of the state the ability to independently assess the tourist opportunities of individual territories, the degree of their development and the nature of use in the tourism industry.

**Museum Studies.** The discipline forms professional theoretical knowledge in the field of museum studies, practical skills and competencies of the organization of museum and exhibition activities.

**Information Systems and Technologies in Tourism.** Provides for the formation of the necessary theoretical knowledge and practical skills for the construction of modern information systems, their rational use, as well as the introduction of modern information technologies in practical tourism activities.

**Tour Processing.** Provides for the acquisition of knowledge and systematic thinking on the organization of tour operator business, schemes for its promotion and implementation, the formation of tourist services, documentation of the processes of creation, acquisition, implementation of tours and planned tour packages, organization of tourist services.

**Organization of Excursion Activities.** Provides for the formation of students' theoretical, professional knowledge and practical skills in planning and organizing excursion services, development and conduct of excursions.

**Marketing.** Formation of skills and abilities of application of marketing tools. Marketing concept and philosophy. Content and main directions of marketing research and marketing information system.

**Tourism Management.** Formation of future specialists of modern systemic economic thinking in the field of organization management, taking into account the industry specifics and features of management work in the field of tourism industry.

**Recreology and Spa Business.** Formation of knowledge about the role and importance of recreational tourism and resorts, the use of resort and recreational potential of Ukraine, their use of healing natural factors, valeological technologies in personal life and professional activities, the formation of motivation for a healthy lifestyle.

**Marketing in Tourism.** Provides the acquisition of knowledge, skills and abilities to build a marketing management system and the use of marketing tools in tourism.

**International Tourism Business.** The discipline aims to provide future professionals in the field of tourism with in-depth knowledge of current trends in international tourism business

**Standardization and Certification in Tourism.** The purpose of the discipline is the formation of knowledge about the theory, etc.

### **Optional components**

#### ***Optional components by specialty***

**Second Foreign Language (German, French).** The study of the discipline deepens students' communicative competence in a second foreign language, namely the use of skills, abilities and knowledge of a foreign language in business communication with representatives of other countries on various professional issues related to professional activities in tourism, preparation for international conferences, projects and discussions.

**Organization of Animation Activities.** Forms in students a theoretical base and practical skills of animation service of tourists in modern world and national tourist business with use of national traditions, holidays, customs, rites, etc.

**Basics of Consulting.** The purpose of studying the discipline is to acquire knowledge, skills and abilities in providing consulting services in tourism.

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**Rhetoric and Psychology of Communication.** The discipline involves the development of thinking, language skills, mastering the form of effective persuasive communication in non-standard situations of life and professional communication, the formation of skills and abilities of public speaking, developing the ability to create and deliver public speeches.

**Communicative Management.** The purpose of studying the discipline is to provide future professionals with knowledge about the theory and practice of effective management of communications management, professional communication and the ability to effectively organize meetings, interviews, business meetings and negotiations.

**Specialized Tourism.** The purpose of studying the discipline is to obtain professional knowledge about modern types of tourism and territorial organization and conditions of development of specialized types of tourism in the regions and countries of the world.

**Rural Green Tourism.** The purpose of the discipline is to acquire knowledge, skills and abilities in the organization of rural green tourism in Ukraine.

**Organization of Transport Services.** Formation of knowledge and skills that will allow to use in practice the general principles, methods and techniques of organization of transport services in tourism

**Ecological Tourism.** Mastering theoretical knowledge and practical skills of students in solving regional environmental problems of recreational resources, environmental safety of travelers and tourists, environmental hotel service.

**Accounting and Auditing in Tourism.** The purpose of studying the discipline is to form theoretical knowledge and acquire practical skills in organizing and maintaining accounting and auditing financial statements, as well as using their results as an information base for effective decision-making in the tourism industry.

**Insurance in Tourism.** Formation of knowledge on the theory and practice of insurance in tourism in domestic and foreign practice.

**Logistics in Tourism.** Formation of skills and abilities on the mechanism of reproduction of logistic systems of effective management of material flows.

**Contract and Labor Law.** Formation of a system of knowledge on legal regulation of economic activity, legal regulation of management in the market of tourist services; formation of knowledge about the legal system of Ukraine, as it regulates one of the most important areas of public relations - labor relations of employees and employers.

**Inventive Tourism.** Formation of students' modern management thinking and professional competencies in the provision of various event services for the tourism and hotel and restaurant industry.

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**Bachelor**  
**Field of Knowledge "Service sphere"**  
**in Specialty "HOTEL AND RESTAURANT BUSINESS"**  
**Educational-professional program "Hotel and Restaurant Business"**

Form of Training:	Licensed number of persons:
– Full-time	90
– Part-time	-
Duration of Training:	
– Full-time educational and professional program	4 years
Credits ECTS:	
– educational and professional program	240
Language of Teaching	Ukrainian, English
Qualification	Bachelor of Hotel and Restaurant Business

### Concept of training

Formation of general and professional competencies for successful solution of problems in the hotel and restaurant business on the basis of sustainable development and social responsibility, creating opportunities for employment and self-employment of graduates in various types of hotel and restaurant enterprises, their career development and professional growth. The program involves the use of the latest interactive computer technology, training at leading universities in Europe and America in the framework of academic mobility, attracting best practices and foreign teachers.

### Practical Training

The internship of students majoring in "Hotel and restaurant business" is organized at the leading enterprises of the hospitality industry in Ukraine and abroad. During the practice, future professionals master the technological standards, skills and abilities of the service process in all production units of accommodation and restaurants, perform the professional duties of administrators of hotels and restaurants, maids, waiters, animators, receptionists, assistant managers, secretaries, analysts, etc.

### Proposed Topics for Bachelor theses

1. Features of design and management of a business hotel 4 \* hotel for 300 people in the Kiyv region.
2. Features of design and management of the hotel of resort and recreational purpose 3 \* on 100 places in Odesa region
3. Features of design and management of SPA - hotel 5 \* for 200 places in Lviv region
4. Features of designing and managing a hostel for 70 people in Kyiv
5. Features of design and management of a motel for 50 people in the Transcarpathian region.
6. Features of design and management of a farmstead for 30 places in Cherkasy region.

**Academic rights of Graduates:** graduates can apply for Master's Degree Specialties and Educational (Educational-professional or Educational-scientific) programs specified in Table 1.2 Section 1.3 this Catalog.

## **Employment of Graduates**

Specialists are trained for organizational and managerial, economic, commercial, investment and research activities in the field of hotel and restaurant business.

Graduates work at enterprises and organizations in the field of hospitality of various forms of ownership and types of management in the positions of heads of production units in accommodation and restaurants, managers of small hotels and restaurants without management, in the positions of hotel managers, restaurant managers , specialists in recreation, hotel business, restaurant business, sanatorium business, rural tourism development, touristic security, organization of leisure.

**Bachelor`s Program and Curriculum in Specialty  
"Hotel And Restaurant Business"  
Educational-professional "Hotel and Restaurant Business"**

Code n/a	Components of the educational and professional program (education disciplines, course projects (paper), practice, qualification work)	Amount of tests ECTS	The final control
1	2	3	4
<b>1. GENERAL TRAINING CYCLE</b>			
<b>Compulsory Components of EPP</b>			
CC 1	Microeconomics	4	exam
CC 2	Information Systems and Technologies	7	test, exam
CC 3	History of Ukrainian Culture	3	exam
CC 4	Foreign Language	15	test, exam
<b>Total</b>		<b>29</b>	
<b>Compulsory Components of the EPP by the Decision of the Academic Council of the University</b>			
CC 1.1	History of Ukrainian statehood	3	exam
CC 1.2	Rhetoric and Psychology of Communication	3	exam
CC 1.3	Physical Education	3	test
CC 1.4	Occupational and Life Safety	3	exam
<b>Total</b>		<b>12</b>	
<b>2. CYCLE OF SPECIAL (PROFESSIONAL) TRAINING</b>			
<b>Compulsory Components of EPP</b>			
CC 5	Entry to the Profession	4	test
CC 6	Fundamentals of Tourism	6	exam
CC 7	Second Foreign Language (German, French)	12	test, exam
CC 8	Food Chemistry	5	exam
CC 9	Information Systems and Technologies in GRB	6	exam
CC 10	Legal Regulation of the Industry	4	exam
CC11	Organization of the Hotel Industry	5	exam, coursework
CC 12	Organization of Restaurant Business	7	exam
CC 13	Technology of Restaurant Products	6	exam
CC 14	Engineering and Computer Graphics	5	exam
CC 15	Hygiene and Sanitation in the Industry	5	exam
CC16	Equipment of Hotel and Restaurant Establishments	5	exam
CC 17	Design of GR Objects	5	exam
CC 18	Design of Hotel and Restaurant Facilities	5	exam
CC 19	Economy of Hotels and Restaurants	7	exam
CC 20	Quality Management of Products and Services in the Hotel and Restaurant Industry	7	exam
CC 21	Marketing of GRB Enterprises	7	exam, coursework
CC 22	Management of Enterprises of GRB	7	exam, coursework
CC 23	Analysis of the Activities of Enterprises of GRB	5	exam
CC 24	Business Planning in the Hotel and Restaurant Industry	5	exam
<b>Total</b>		<b>122</b>	
<b>The Total Amount of Compulsory Components</b>		<b>162</b>	
<b>Optional Components of EPP</b>			
<b>Optional Components by Specialty</b>			
OC 1	Organization of Leisure in GRB	4	exam
OC 2	Inventive Management	4	exam
OC 3	Energy Saving	4	exam
OC 4	Resort Business	4	exam
OC 5	Business Law	4	exam
OC 6	Catering	4	exam
OC 7	Beverage Technology	4	exam
OC 8	Ethnic Cuisines	4	exam

**CURRICULA AND PROGRAMS OF BACHELOR DEGREE**

OC 9	Mini-technologies of Food Production	4	exam
OC 10	International Market of Hotel Services	4	exam
CO 11	Accounting and Audit of Hotel and Restaurant Enterprises	4	exam
OC 12	Marketing Communications in GRB	4	exam
OC 13	Organization and Technology of Service	4	exam
OC 14	Confectionery and Baking Art	5	exam
OC 15	Merchandising	5	exam
OC 16	Building Engineering	4	exam
OC17	Bar Business and Organization of the Sommelier	5	exam
OC18	Business Law	4	exam
OC19	Communicative Management	5	exam
<b>Total</b>		<b>54</b>	
<b>Optional components by Student's Choice</b>			
OD 2.1	Optional Discipline 1	3	exam
OD 2.2	Optional Discipline 2	3	exam
<b>Total</b>		<b>6</b>	
<b>The Total Amount of Optional Components</b>		<b>60</b>	
<b>3. OTHER TYPES OF TRAINING</b>			
CC 25	The Military Training	23	
CC 26	Educational Practice	6	
CC 27	Internship	8	
CC 28	State Attestation	1	
CC 29	Preparation of Bachelor's Thesis	3	
<b>TOTAL AMOUNT OF EPP (without military training)</b>		<b>240</b>	

## Annotations of Components in the curriculum

### 1. GENERAL TRAINING CYCLE

#### Compulsory components

**Microeconomics.** The purpose of studying the discipline is to acquire future economic knowledge, future formation of the logic of economic thinking and economic culture, teaching them basic methods of knowledge and analysis of economic processes at the enterprise level, the ability to make informed decisions about business processes of a particular business unit. future practical activities.

**Information systems and technologies.** Formation of future specialists of modern level of information and computer culture, acquisition of practical skills of work on modern computer equipment and use of modern information technologies for the decision of various problems in practical activity on a specialty.

**History of Ukrainian Culture.** Familiarization of students with the main trends and forms of ethnocultural development of the Ukrainian people from ancient times to the present, analysis and understanding of various phenomena and processes of cultural life of Ukraine.

**Foreign Language.** Formation of general and professionally-oriented communicative speech competencies to ensure effective communication in a professional tourist environment.

## Compulsory components by decision of the Academic Council of the University

**History of Ukrainian statehood.** Study of the historical process of creation of the Ukrainian state, formation of ability to systematically analyze the main stages of development of the statehood of the Ukrainian people and to use the received knowledge for the analysis of modern problems of state-political and national-cultural life of Ukraine.

**Rhetoric and psychology of communication.** The discipline involves the development of skills and abilities, mastering the form of effective persuasive communication in non-standard situations of life and professional communication, the formation of skills and abilities of public speaking, developing the ability to create and deliver public speeches.

**Physical Education.** Development of physical strength and sports training, formation of healthy lifestyle skills.

**Occupational and life safety.** The purpose of the discipline is to master the theoretical foundations, practical skills and competencies to create safe living and working conditions, effective professional activities through the introduction of norms, rules, technologies of life safety and labor protection in the hotel and restaurant industry.

## 2. SPECIAL (PROFESSIONAL) TRAINING CYCLE

### Compulsory components

**Entry to the profession.** Preparing students to study at the university in accordance with modern integration processes in international education in the context of the Bologna Declaration, acquaintance of first-year students with the content of the future profession, the nature and scope of professional activity, the practical activities of the hotel and restaurant industry.

**Fundamentals of tourism.** Study of scientific bases of tourism science, formation of necessary knowledge on the organization of tourist trips for experts in the field of tourism.

**Legal regulation of the industry.** Forms in students a theoretical base and practical skills of using modern necessary legal tools for implementation in the restaurant and hotel business.

**Organization of the hotel industry.** Formation of understanding of essence of hotel economy as a component of sphere of services, mastering by students of theoretical bases of the organization of functioning of the enterprise of hotel economy in the market.

**Organization of restaurant business.** Formation of knowledge on the rational organization of food services, acquisition of practical skills on the internal content, interaction and consistency of technological operations and processes in restaurants.

**Technologies of restaurant products.** Formation of competencies in production technologies in restaurants with specified properties using modern technological means, high quality and safe for both consumers and the environment.

**Engineering and computer graphics.** Development of students' spatial imagination, abilities to analyze and synthesize spatial forms, development of skills for performing and reading technical drawings, acquaintance with the means of mechanization and automation of graphic works.

**Hygiene and sanitation of the industry.** To provide students with knowledge in the field of nutrition science of healthy and sick people, on the basis of which the technology of the industry and the organization of the restaurant industry are formed and developed.

**Equipment of GRB establishments.** Formation of professional competencies for the effective operation of modern hotel and restaurant business. A characteristic feature of the hotel and restaurant business is the ability to provide a large number of new services and products, and this requires constant updating of equipment.

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**Design of GRB objects.** Training of higher education students in the basics of design of restaurants. study of theoretical foundations of design; styles in architecture, interior, furniture; rules and recommendations in the design of interiors of restaurants; techniques of computer design and 3-D modeling of virtual interiors, implementation of spatial, color and decorative solutions of interiors of restaurants.

**Design of GRB establishments.** Formation of professional competencies for the effective operation of modern hotel and restaurant business.

**Economy of hotels and restaurants.** The aim of the course is to provide theoretical knowledge and practical skills in the economics of hotels and restaurants, as well as the formation of students' ability to think independently and solve practical economic problems.

**Quality management and services in the AWG.** Formation of students' complex knowledge in the field of quality management of products and services in the hotel and restaurant industry.

**Marketing in GRB.** Mastering the latest theoretical knowledge on hotel and restaurant management, acquiring practical skills to build a marketing management system of such organizations, which would ensure their effective functioning in a competitive and changing business environment; formation of skills and abilities for the application of marketing tools in hotels and restaurants.

**Management of enterprises of GRB.** Formation of future specialists of modern systemic economic thinking in the field of organization management taking into account industry specifics and features of managerial work in the hotel and restaurant industry, training of a highly qualified manager who will be able to ensure a high level of management efficiency and competitiveness in a market economy.

**Analysis of the activities of enterprises of GRB.** The purpose of the discipline is to master students' theoretical provisions for the analysis and evaluation of the hotel and restaurant industry and the acquisition of practical skills to use this knowledge to make management decisions to improve the efficiency of the enterprise.

**Business planning of enterprises of GRB.** Formation of a system of theoretical knowledge and practical skills in business planning as an element of management of hotel and restaurant enterprises.

**Food chemistry.** Formation of the future specialists of the system of knowledge and skills necessary for their innovative activity in the field of science and practical use in the food industry, production of new ideas.

**Second foreign language (German. French).** The study of the discipline deepens students' communicative competence in another foreign language, namely the use of skills, abilities and knowledge of a foreign language in business communication with representatives of other countries on various professional issues related to professional activities in hotels and restaurants, preparation for participation in international conferences, projects and discussions.

**Information systems and technologies in GRB.** Provides for the formation of the necessary theoretical knowledge and practical skills for the construction of modern information systems, their rational use, as well as the introduction of modern information technology in the practice of hotels and restaurants.

### **Optional components**

#### ***Optional components by specialty***

**Organization of leisure in GRB.** Formation of practical competencies for the organization of various types of leisure activities and their content, features of the functioning of the relevant infrastructure to provide different categories of guests with conditions for recreation and entertainment. involvement in the aesthetic values of society.

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**Business law.** Theoretical knowledge and practical skills related to the legal status of business entities and the legal regulation of business in general.

**Catering.** Formation of students' system of knowledge regarding the principles of organization of work of institutions on the organization of special forms of service.

**Beverage technology.** Acquaintance with technological processes and quality standards of various types of alcoholic, low-alcohol and non-alcoholic beverages.

**Ethnic cuisines.** Formation of knowledge about the culture and traditions of nutrition of the peoples of the world; acquisition of technological skills of cooking restaurant products according to national recipes. .

**Mini-technologies of food production.** Theoretical and practical study of the technology of craft food production (bakery, confectionery, alcohol and non-alcoholic products) for the needs of the restaurant industry.

**International market of hotel services.** Acquaintance with modern tendencies of hotel business in Ukraine and the world, studying of bases of the marketing analysis.

**Accounting and auditing of GRG enterprises.** The purpose of studying the discipline is to form theoretical knowledge and acquire practical skills in organizing and maintaining accounting and auditing financial statements, as well as using their results as an information base for effective decision-making in the hotel and restaurant industry.

**Marketing communications in GRB.** Study and mastering by students of theoretical knowledge and practical skills on application, use of means and elements of a complex of marketing communications; organization, planning, management of communicative activity of the enterprise for the purpose of their effective functioning, and also effective sale of production / services for the purpose of acceptance of production, organizational and administrative decisions at the level of modern requirements.

**Organization and technology of service.** Acquaintance with the basics of the organization of the service process for different categories of consumers, modern standards and technologies for providing quality services in the field of hospitality and restaurants.

**Confectionery and baking art.** Study of the world experience of outstanding schools of confectionery and baking art and the main directions of their activity.

**Bar business and organization of the sommelier.** Formation of students' theoretical and practical knowledge and skills in the organization of work and service in bars, as well as the scientific basis of storage and consumption of alcoholic beverages through in-depth study of basic approaches, principles and methods of bartending and sommelier.

**Resort business.** Acquisition by future specialists of the hotel and restaurant sphere of professional knowledge in the field of historical development and the current state of sanatorium and resort business in Ukraine and the world.

**Inventive management.** Formation of students' modern managerial thinking and professional competencies in the provision of various event services for the tourism and hotel and restaurant industry.

**Energy saving.** Formation of students' scientific concept of methods and means of energy saving, planning measures to improve energy efficiency and energy savings in the hotel and restaurant industry.

**Communicative management.** The purpose of studying the discipline is to provide future professionals with knowledge about the theory and practice of effective management of communications management, professional communication and the ability to effectively organize meetings, interviews, business meetings and negotiations.

**Building engineering.** Formation of a system of necessary knowledge and skills regarding the types, purpose, scope of use and operation of various types of engineering and technological equipment in the hotel and restaurant industry.

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**Merchandising.** Acquisition of theoretical and practical knowledge on the development and implementation of methods and technical solutions aimed at improving the supply of goods in the city of sale, as well as skills in using marketing methods and tools in the hotel and restaurant industry.

**Bachelor**  
**field of knowledge "Public Administration"**  
**in speciality "Public Management and Administration"**  
**Educational-professional program "Public Management and Administration"**

Form of education:	Licensed volume, Persons:
– day-time EPP	50
– day-time EP (if available)	
– extramural	
Period of study:	
– full-time educational and professional program	4 years
– full-time educational and scientific program	
– extramural	
ECTS credits:	
– educational and professional program	240
– full-time educational and scientific program	
Language of education	Ukrainian
Qualification of graduates	Bachelor of Public Administration

### Concept of training

Preparation of specialists for state executive authorities and local self-government bodies, able to solve complex specialized tasks and practical problems in the field of Public Administration or in the process of studying. Specialists of public authorities and local self-government bodies are involved in the implementation of the content of the educational and professional program of bachelor's preparation.

### Practical training

Educational and practical training takes place in structural subdivisions of ministries, Cabinet of Ministers of Ukraine, committees of Verkhovna Rada of Ukraine, Kyiv City State Administration, departments and authorities of other public authorities, with which agreements on internship are concluded.

### Proposed Topics for Bachelor theses

1. Foreign experience of administrative reform.
2. Development of civil society in Ukraine.
3. Optimization of activity of local state executive authorities.
4. Ensuring the control system in public authorities.
5. Constitutional control in public administration.
6. Social mechanism of implementation of public administration.
7. Making and implementation of state-administrative decisions.
8. Planning of the territory of the locality.
9. Public discussion and solving of local issues.
10. Organization of activity of enterprises of communal form of ownership.

**Academic rights of Graduates:** graduates can apply for Master's Degree Specialties and Educational (Educational-professional or Educational-scientific) programs specified in Table 1.2 Section 1.3 this Catalog.

## Employment of Graduates

According to the current edition of the National Classifier of Ukraine: Classifier of Professions (SC 003:2010 following the amendments made on February 15, 2019) and International Standard Classification of Occupations 2008 (ISCO-08) graduate of the first (bachelor) level of higher education with professional qualification «Bachelor of public management and administration» may employ specialist positions with the following professional titles: Assistants to Heads of Enterprises, Institutions and Organizations (3436.1); executive committee secretary (3431); Secretary of the Central Executive Body (3439); administrative secretary (3431); organizers of record keeping (3435); organizers of record keeping (public institutions) (3435.1); secretary of the executive committee (3431); secretaries of administrative bodies (3431); assistant of a specialist in city and district planning (3439); Assistant Specialist in Productive Forces and Regional Economics (3439); state inspectors (344); personnel inspector (3423); staff organizer (3423); Inspector for supervision of execution of orders (3431); secretary of the executive committee (3431); secretary of the body of self-organization of the population (3431); instructor of the executive committee for organizational work (3439); organizer of nature management (3439); specialist in the organization of household services (3439); security specialist for security restricted information (3439); specialist in information security (3439) and other positions of specialists in central and local executive bodies, positions in local self-government bodies, in structures of non-state entities of civil society and public organizations, in positions of specialists in enterprises, institutions, organizations of various forms of property, managerial and administrative positions in international organizations and their representative offices in Ukraine.

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**Bachelor`s Program and Curriculum in Specialty  
"Public Management and Administration"  
Educational-professional program "Public Management and Administration"**

Code n/a	Components of the educational and professional program (education disciplines, course projects (paper), practice, qualification work)	Amount of tests ECTS	The final control
1	2	3	4
<b>1. GENERAL TRAINING CYCLE</b>			
<b>Compulsory components EPP</b>			
MC 1.1	Economic theory	4	exam
MC 1.2	Informatics	6	exam
MC 1.3	Law	4	exam
<b>Total</b>		<b>14</b>	
<b>Compulsory components EPP by decision of the Academic Council of the University</b>			
MC 1.4	History of Ukrainian statehood	3	exam
MC 1.5	Philosophy	4	exam
MC 1.6	Ukrainian language by professional direction	4	exam
MC 1.7	Foreign Language	15	exam
MC 1.8	Physical Education	4	test
MC 1.9	Life safety and civil protection	3	exam
MC 1.10	Basics of Ecology	4	exam
<b>Total</b>		<b>37</b>	
<b>2. SPECIAL (PROFESSIONAL) TRAINING CYCLE</b>			
<b>Compulsory components EPP</b>			
MC 2.1	Introduction to the speciality	3	test
MC 2.2	Theory of state and law	4	exam
MC 2.3	History of public management	5	exam
MC 2.4	Sociology	5	exam
MC 2.5	Basics of public management	5	exam
MC 2.6	Managerial decision-making technologies	4	exam
MC 2.7	Public finances and control	5	exam
MC 2.8	Constitutional law	4	exam
MC 2.9	Local finances and control	5	exam
MC 2.10	Public management	7	exam
MC 2.11	State regulation of economy	4	exam
MC 2.12	Information systems and technologies by professional direction	4	exam
MC 2.13	Planning of development of territories	5	exam
MC 2.14	Politology	4	exam
MC 2.15	Psychology of management and Conflictology	5	exam
MC 2.16	Basics of public administration	5	exam
MC 2.17	Public service	5	exam
MC 2.18	The rulemaking process and application of legal norms	4	exam
MC 2.19	Regional administration and local government	5	exam
MC 2.20	Statistics in public administration	5	exam
MC 2.21	E-government	4	exam
MC 2.22	Public governance	5	exam
MC 2.23	Anti-corruption policy	4	exam
MC 2.24	Strategic management	5	exam
<b>Total</b>		<b>111</b>	
<b>The total amount of Compulsory components</b>		<b>162</b>	

<b>Optional components EPP</b>			
<i>Optional components by specialty</i>			
SC 1.1	Record keeping in Public Administration	5	exam
SC 1.2	Institutional support of public administration	4	exam
SC 1.3	Fundamentals of land management and land cadastre	5	exam
SC 1.4	Sustainable development of territories	5	exam
SC 1.5	Communication strategies in public administration	5	exam
SC 1.6	Personnel management	5	exam
SC 1.7	Leadership and team building	5	exam
SC 1.8	Public service quality management	5	exam
SC 1.9	Management of communal property	4	exam
SC 1.10	Public management of innovation	5	exam
SC 1.11	Political processes and institutions	4	exam
SC 1.12	Change management	5	exam
SC 1.13	Project management in public administration	5	exam
SC 1.14	European integration and policy of international cooperation	5	exam
SC 1.15	Civic competence of a public servant	4	exam
<b>Total amount</b>		<b>54</b>	
<i>Optional components by Student's Choice</i>			
SC 2.1	Optional discipline 1	3	exam
SC 2.2	Optional discipline 2	3	exam
<b>Total amount</b>		<b>6</b>	
<b>Total amount of Optional components</b>		<b>60</b>	
<b>3. OTHER TYPES OF TRAINING</b>			
1.	Military training	23	
2.	Educational practice	6	
3.	Industrial practice	8	
4.	Preparation and defense of qualification work	3	
5.	Attestation Exam	1	
<b>THE TOTAL AMOUNT OF EPP (without military training)</b>		<b>240</b>	

## Annotations of Components in the curriculum

### 1. GENERAL TRAINING CYCLE

#### Compulsory components

**Economic theory.** Fundamentals of knowledge about economics: objective economic laws, their knowledge and application; the essence of the economic category; subject and method of economic theory; methods of knowledge of the economy; functions of economic theory; levels of application of economic laws: economic-theoretical, administrative, practical; economic needs and production capabilities of society; forms of organization of social production; the market as an economic form of organization of social production; market structure and infrastructure; capital, production losses and profits; social reproduction and forms of social product; world economy; forms of international economic relations; economic aspects of global problems; needs as drivers of economic development; types of needs; the law of needs growth; economic resources and their

types; the choice of alternative resources; forms of social production; the genesis of commodity production, its main features and evolution; the essence of money; market economy; competition and monopoly in the market system.

**Informatics.** Structure and general properties of information; methods and technical means of its creation, transformation, storage, transfer and use in various fields of human activity; methods of implementation of information processes; providing theoretical and practical knowledge of the use of computer technology, advanced software and the Internet to search, process, analyze and share information in the global information space; acquaintance with the software that will be the basis for its use in the study of professionally oriented disciplines. Skills in using modern applications: modern IT education in Ukraine, Microsoft educational resources and services, Cisco Internet academy, Google services and products, Internet information resources and catalogs, hardware and software, basics of operating systems, computer networks, The Internet of Things, working with a spreadsheet editor, using a text editor, using cloud services.

**Law.** Concepts and features of law. The concept and essence of scientific approaches to legal thinking. The main areas of concepts that combine theories of understanding law: Normative; Sociological; Moral. Law in a subjective and objective sense. Features of law. Norms of law. The concept of legal norms, their place and role in the regulation of social relations. Structure of legal norms. The concept of the system of law and its main features. Elements of the structure of the system of law: branches of law and sub-branches of law, institutions of law, rules of law. The system of law and the system of legislation. Issues that are determined (established) exclusively by the laws of Ukraine. Systematization of legislation. Characteristics of constitutional, labor, ecological, land, civil, administrative, criminal and family law.

### **Compulsory components by decision of the Academic Council of the University**

Annotations of components: History of Ukrainian Statehood, Philosophy, Ukrainian language for professional purposes, Foreign language, Physical education see Section 2.1.

**Life safety and civil protection.** The purpose of the discipline is to provide students with the knowledge and skills to pursue effective professional activity by ensuring the optimal management of occupational safety at enterprises, institutions and organizations, the formation of students' responsibility for personal and collective safety, taking into consideration the risk of technogenic accidents, natural hazards, infectious outbreaks and industrial accidents.

**Basics of Ecology.** The laws of interaction between society and nature, the main environmental problems arising in the modern industrial production, the impact of the changed environment on humans, the means of protection, restoration and rational use of natural resources, environmental quality management based on the modern achievements of science, technology and technology on protection are studied the environment.

## **2. SPECIAL (PROFESSIONAL) TRAINING CYCLE**

### **Compulsory components**

**Introduction to the speciality.** Public administration and administration as a management system. Public administration: concepts and scientific background. Principles and laws of public administration. Public sphere is the unity of the economic, social and political spheres. Civil society as an object of public administration. Authorities: Public authorities, main functions and powers. Public administration as a process of making,

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making and implementing management decisions. Public administration: concepts, basic laws of management.

**Theory of state and law.** State: origin, concept, signs, essence. Scientific theories of the emergence of the state. Constitutional state. Historical prerequisites for the emergence of the rule of law. The concept and basis of the feature of the rule of law. Principles and general features of the rule of law. The basic principles of the rule of law: "separation of powers", the rule of law and law; the principle of "connectedness" of the state with its laws, the principle of mutual responsibility of the state and the citizen, the principle of having a Constitutional Court; the principle of reality of control and supervision over the implementation of law; principle of reality of the rights and freedoms of citizens, principle of high legal culture of population. The main directions of formation of the rule of law in Ukraine. Offenses and legal liability. Offenses: concepts, types.

**History of public management.** Historical prerequisites of the emergence of the first states in the third millennium BC. Chaos theory. The main stages of the evolution of public administration: 1 Period - the inception of the state, 2 Period - the states of the ancient world, 3 Period - the states of the Early Middle Ages, 4 Period - the estate monarchy. The origin and development of public administration in the territory of present Ukraine in: IV-IX centuries (period of formation of East Slavic statehood); IX-XIV centuries (Kiev-Ruskiy and Galicia-Volyn period; Old Russian state); XIV-XVII centuries (Lithuanian-Ruskiy and Polish period); middle of the XVII century - the second half of the XVII century - Cossack period: the era of the Liberation War of the Ukrainian people; formation of the Cossack Hetmanate and its structure; end of the XVIII century - 1917-stateless period; 1917-1920 - period of liberation struggles of the Ukrainian people; 1920-1991 - management in the Soviet period; 1991 - for this time - development of public administration in independent Ukraine.

**Sociology.** Subject and definition of sociology. Sociological understanding and sociological explanation. Sociological theories in competition. Central concepts of sociology. Society. Social action. Social fact. Macrosociology (society, team, structure, system). Microsociology (personality, individual, action). Mesosociology. Macro-micro-sociology. The structure of sociological knowledge. Functions of sociology and its role in the development of society.

**Basics of public management.** The main attributes of the state: the presence of public authority (with the apparatus for management and coercion). Territorial principle of organization of power. General concept of public administration. The concept of "power" and its constituent elements. Management as the essence of power. The concept and general features of management. The emergence and essence of social, political, state and interstate power. Forms of government. Functions of the state. Features of public administration. Political regime as a component of the form of government and political system. Democratic and anti-democratic forms of political regime. Implementation of state power in different types of political regime. Global approaches that assess the prospects for the development of public administration: market-liberal (based on conceptual models of new management); liberal-communitarian (based on the concept of "political networks", the relationship between the political institutions of the state and society); democratic citizenship (special "receptive management" is aimed at serving the citizen, not the client (consumer)).

**Managerial decision-making technologies.** The concept of management procedures and individual activities aimed at collecting, moving, storing, processing, analyzing information. Stages of management decisions. The main elements of the stage of preparation for management decisions. Decision-making stage. Stage of solution implementation. Defining the circle of performers. Control measures. Feedback to the object to which the management decision was directed. Selection and decision-making on

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continuation or cancellation of the administrative decision. American and European approach to the technology of management decisions.

**Public finances and control.** Public finance: their role and structure. National and local finances. National budget. National trust funds. State debt. Reserve and insurance funds. Finance of state enterprises. The system of taxes and fees in Ukraine. The essence and conceptual principles of tax policy formation and tax system reform. Income tax and features of its administration. Electronic VAT Administration System. The concept and objectives of financial control. Classification of financial control. State financial audit of business entities. Planning of activity of internal audit. Audit risk and its components. Recent tax reforms in the European Union and tax policy of Ukraine in the context of the implementation of the Association Agreement with the EU.

**Constitutional law.** The Constitution as the main state document that defines the state system, the order and principles of functioning and distribution of powers of authorities. The concept of "constitutionalism" and its role in the activity of a public servant. The concept of distribution of branches of power. The doctrine of the distribution of branches of power. The system of checks and balances in ensuring the principle of separation of powers. Distribution of branches of power in the system of Ukrainian constitutionalism. Separation of power in the Constitution of Pylyp Orlyk (1710) "Legal system and Constitution on the rights and freedoms of the Zaporozhian Army, concluded between Pylyp Orlyk, the newly elected hetman of the Zaporozhian Army and the general officer, colonels, as well as the Zaporozhian Army itself." Organization of state power in the project "Basic Law of Independent Ukraine" by M. Mikhnovsky (1905). Basic concepts of the Constitution of the Ukrainian People's Republic of April 29, 1918. Ensuring the principle of separation of powers in the Declaration of State Sovereignty of Ukraine of July 16, 1990 and the Constitution of Ukraine. Ensuring the freedoms and rights of citizens.

**Local finances and control.** The concept of local and public finances. Local self-government and its role in the formation of local finances. Functions of local finances and basic principles of their organization. Formation of regulatory and legal support of local finances. Financial policy of local authorities. Local budget and its formation. The main sources of local budget revenues: taxes, non-tax revenues, intergovernmental transfers from the state budget. Formation of the revenue base of local budgets. The right of tax initiative. Local government policy in the field of local borrowing. Expenditures and their classification according to the purpose and tasks to be financed. The concept and types of local budget revenues. Theoretical foundations of local taxation. Mechanisms for collecting local taxes and fees. The practice of self-taxation of residents of territorial communities. Local borrowings to local budgets. Intergovernmental relations. Financing local budgets as a tool for successful functioning of local communities. Features of financing of united territorial communities (UTC). Formation of incomes of UTC. Expenditure planning of UTC. State financial support of UTC.

**Public management.** Public management as a system: elements of the system; subsystem; structure; functions, mechanisms of administration; properties; communication; state of system; process; development; goal; environment. Characteristic features of the system of public administration as a holistic entity. Openness of system and interaction with the external environment. The system of state executive bodies: levels, relationships, powers. The system of local government. The concept of civil society. Regulatory and legal support for the functioning of the public administration system in Ukraine. Principles of management. Organizational structures of public administration as a set of management units located in subordination to ensure the relationship between management and control systems. Types of organizational structures: linear, functional, linear-functional (staff), matrix. Approaches to reforming organizational structures in public administration. National values and national interests in the system of public administration. Management at the local, regional, state, interstate levels. Interstate management entities. World government.

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Models of public administration: traditional model; Good Governance; New Public Management; goal management; value management.

**State regulation of economy.** Areas of state regulation of the economy. The concept of state regulation of the market. Tariff regulation. State regulation of prices for goods and services. Non-tariff regulation. The concept of ineffective state regulation: the "cobra effect". The difference between a team (planned) economy and a market economy. Mixed economy. The concept of self-regulation of markets. Regulatory policy. Reaganomics. Normative legal acts regulating the issues of economic regulation by state and non-state structures within the framework of delegated powers.

**Information systems and technologies by professional direction.** The essence of information systems and their role in public administration and administration. Current state and trends in information technology. Methodology of information systems development, determination of their quality and efficiency. Basic principles of information resources and technology management. Formation of information structure in public authority. Use of integrated automated information systems by public authorities. Determination of basic characteristics of expert systems. The concept of cloud technology, cloud computing and artificial intelligence. Terminology. History of cloud technologies. The main categories of cloud computing services: software as a service (SaaS); platform as a service (PaaS); infrastructure as a service (IaaS). Cloud placement models. Classification of service models. The concept of cloud storage. Advantages and disadvantages of cloud technologies in the activities of public servants.

**Planning of development of territories.** Territorial community as an object of management. Basic models of community development as an open polysystem. Territorial management: essence, approaches, principles and tools of integrated development of territorial community. Mechanisms for collecting information about the nature, components, trends of socio-economic processes in the community, their causes and consequences in the dynamics. Development of program documents for the development of the territory. Mechanisms to stimulate economic development of the territory. Basic concepts and indicators of business and investment climate of the territory, tools and methods of stimulating sustainable development. Approaches to building partnerships with business structures and the community to solve problems of efficient use of territorial resources. Determining the priorities of the territory in the changing conditions of the external and internal environment. Greening of the territory: the concept and need for implementation. Identification of man-made risks and problems of anthropogenic impact on the environment and action planning to minimize them. Management of social processes in order to influence the demographic processes and economic development of the territory.

**Politology.** Structure and functions of political science. Theory of political systems and their elements. Mechanisms of functioning of political power, states, parties, socio-political organizations. Theory of social management: forms and methods of management of socio-political, socio-economic, administrative-legal and socio-psychological processes. Theory of political ideology: the role and functions of ideology in the system of political power. Political theories, concepts, doctrines, features of their implementation and existence in different societies. Politics as a space and process of organizing the interaction of community members; features of the functioning of public authorities and public and political institutions under conditions that correspond to certain political regimes, forms of government and government; the role and place of public servants in the implementation of public policy at various levels of government. The human factor and the subjective factor in the exercise of official authority and the implementation of state policy; features, stages and approaches to political decision making; features of operating values and socio-political guidelines as the basis of ideological currents; the problem of elites and the masses.

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**Psychology of Management and Conflictology.** The concept of the psychological aspect of managerial relations, which function in the process of interpersonal and intergroup interaction of people involved in employment. "Human factor" and its role in the management of the organization. The role of the psychological factor in public administration. Optimal distribution of professional and social roles in the team; informal relations between team members; psychological mechanisms of managerial decision-making; psychological methods of uniting staff around the goals of the organization; methods of improving the style and culture of business relations in public authorities; psychological compatibility of team members; methods of establishing effective interaction between subjects and objects of public administration. Features of application of psychology of management in foreign countries. Conflictology: basic concepts. The essence and structure of the conflict. The main types and kinds of conflicts. Prerequisites and stages of conflict development. Substantive and structural-functional analysis of the conflict. Strategies, tactics and styles of behavior of conflict participants. Psychological methods of overcoming negative emotions in conflict. The essence, rules and methods of resolving and resolving conflicts. Prevention and prerequisites for successful conflict prevention.

**Basics of public administration.** The essence and concept of public administration. Administration as a bureaucratic method of management with the help of management decisions. Administration as an integral part of public administration. European standards of good administration are formulated in the SIGMA document "Principles of Public Administration". Types of administration: public (state, regional, municipal); corporate (private). Public administration as a regulated activity of subjects of public administration regulated by normative legal documents is aimed at: making administrative decisions; provision of administrative services; implementation of internal administration of the subject of public administration. The concept of administrative acts: individual and regulatory administrative acts. Administrative decision. Administrative service. Public service. Types of management activities: information and analytical; forecasting; organizational and managerial; administrative and technological; communicative and consultative; socio-psychological; research and teaching. The concept of service state. Effectiveness and efficiency of public administration.

**Public service.** The concept of public service. The main terms of the laws of Ukraine governing the activities of public servants. Principles of civil service and service in local governments. Job categories and ranks. Legal status of employees. Basic responsibilities and rights of public servants. Specifics of execution of orders and instructions in state executive bodies. Civil service management system. General conditions for entering the civil service. Legislative requirements for persons applying for civil service positions are defined by law. The order of the competition. Appointment to a position of civil service or service in local self-government bodies. Restrictions on appointment. Testing and establishing compliance with the position. Oath of a civil servant. Working hours and rest time of a public servant. Service discipline. Disciplinary and material liability of public servants. The procedure for termination of service in public authorities. Patronage service. Internal and external control over the activities of public servants.

**The rulemaking process and application of legal norms.** The rule-making process in public authorities as a transformation of the principle of the rule of law to ensure the harmonious expression in legal norms of the objective needs of social development. Components of rule-making activity: 1) activity on development, adoption, cancellation of by-laws; 2) activities for the development of draft laws. The order of formation, systematization, adoption and promulgation of normative legal acts. Features of implementation of legislative activity. The importance of a systematic approach to the regulation of regulations governing the relevant industries and areas. Stages of the rule-making process. Legal acts of state executive bodies. Acts of bodies and officials of local

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self-government of normative-legal character. Rule-making process in public authorities: preparation, approval, promulgation, entry into force, abolition. Law enforcement as the authoritative activity of public bodies and officials in the preparation and adoption of individual legal decisions in legal matters on the basis of legal facts and specific legal norms.

**Regional administration and local government.** Theories of regional development and their evolution. State regional policy and regional development management. Regionalism and regionalization as a global transformation process. Organizational and legal bases of formation and realization of the state regional policy. Subjects of formation of the state regional policy in Ukraine. Involvement of non-governmental structures in participation in providing regional development programs. Regional strategies as a tool for managing the development of territories. Methodical bases of preparation of regional strategies of development. Monitoring and evaluation of the implementation of regional development strategies. Management of regional infrastructure and infrastructure of the territorial community. Features of functioning of regional infrastructure objects of communal form of ownership. Public-private partnership in the development of regional infrastructure. The main aspects of the formation of social infrastructure of the region or territorial community. Development of the main branches of social and household purpose. Land management at the regional and local levels. The role and responsibilities of local government officials in the management of land resources in the area. Methodical approaches to the formation of a comprehensive mechanism for stimulating the economic development of a region or territorial community.

**Statistics in Public Administration.** Basic concepts of statistics; economic indices and correlation-regression analysis; industry statistics; basic methods of economic and statistical analysis when considering economic and political processes; technology for calculating indicators and indices of socio-economic development of Ukraine; methods for forecasting indicators of socio-economic development; methods of realization of economic policy of the state; preparation of requests for relevant statistical information from public authorities, political parties; preparation of analytical materials based on the results of the economic and statistical analysis; calculation of indicators of economic and social development of the object of management (and the levels of the state, region, territory) for the short and long term on the basis of the current state of affairs.

**E-governance.** Goals, objectives, principles, functions, characteristics and special features of e-governance. Principles of organization and functioning, models and forms of e-governance. Methods, technologies, tools of e-governance. Architecture and legal support of e-governance. Motivation, analysis, adaptation, development and implementation of e-governance. Electronic readiness, monitoring, evaluation, stages. Levels of e-government implementation: central, regional, local, in institutions and organizations. Implementation of international experience of e-governance. Problems of implementation of experience. Electronic services: levels of maturity, varieties, coverage and penetration; functioning and filling of portals, web pages of public authorities and local governments, institutions and organizations; current trends and approaches. Smart cities. E-democracy: essence, stages of development, coverage, inclusion, participation, partnership, instruments of involving citizens. E-Parliament, electronic voting, electronic sectoral government, electronic administration, electronic institution. Personal data and their protection. Privacy protection, electronic information resources and databases, open data.

**Civil governance.** Theory of civil society. Periodization of the development of ideas of civil society: 1) early concepts of civil society in the VII-XIX centuries, the works of T. Hobbes, J. Locke, A. Ferguson, S.-L. Montesquieu, I. Kant, F. G. Hegel, A. de Tocqueville); 2) the development of ideas of the XIX-second half of the XX century, aimed at exacerbating class contradictions. Development of civic consciousness of Ukrainians in Galicia. The works of M. Drahomanov, I. Franko, M. Hrushevsky, and B. Kistyakivsky are

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devoted to the theory of communities, public life, and the legal state; 3) the strategy of transforming dictatorial regimes (the works of R. Putnam). The concept of sphere of public activity. Ethicization of civil society as a carrier of morality, education, everyday and political culture. The role of the network of public organizations in the work of A. de Tocqueville "Democracy in America". Study of the theory of civil society by A. Gramsci. The concept of public participation. Elements of participation of citizens, defined by the United Nations Development Program. Role of the citizen in democratisation of society.

**Anti-corruption policy.** The concept of anti-corruption policy. Anti-corruption policy as a function of the state. The main threats of corruption for Ukraine and the world economy: interdependence of economies and globalization of corruption; terrorism as a threat to national and international security; political speculation and the establishment of a totalitarian system. Anti-corruption policy as a system of legal, economic, energy, social, environmental, information and other measures to combat corruption. Permanent measures of the state anti-corruption policy. Stages and directions of anti-corruption policy. Legislative support of anti-corruption measures. The system of anti-corruption bodies: goals, objectives, structure, subordination, activities. Basic provisions of anti-corruption legislation of Ukraine. International experience in combating and preventing corruption.

**Strategic management.** Strategic management: content, main differences from operational management. Principles of strategic management and their essence. The process of strategic management. The concept of strategic management. Orientation of strategic management to identify new opportunities, comprehensive vision of problems, pooling all available resources to achieve goals. Understanding management based on anticipation of change. Management technologies under conditions of high instability and unpredictability of the external environment. Strategic management as a type of management focuses on anticipating, planning and implementing the necessary and most significant changes.

### **Optional components**

#### ***Optional components by specialty***

**Record keeping in public administration.** Document and documentation support of management in Ukraine. Basic requirements for drafting and execution of documents in public authorities. Features of documentation of personnel management services. Personnel documents (autobiography, identity card, applications for leave, etc.). Appeals of citizens to public authorities. Regulatory framework for ensuring the openness of government agencies. Work with citizens' appeals: requirements, terms, control. Ensuring document circulation in the public authority. Basic documents for document flow recording. Activities of the organizational department and clerks. Features of documents. Work with documents containing state secrets. Restricted documents and classified. Electronic document management system.

**Institutional support of public administration.** Theory of institutionalism. Forms of manifestation of institutions: formal and informal. Components of institutional support: institutional and legal; institutional and personnel; organizational and institutional. Institutional support of public administration at the state level (higher and central bodies of state executive power, Verkhovna Rada of Ukraine, the institution of President). Institutional support of public administration at the regional level. Problems of institutional support of public administration.

**Fundamentals of land management and land cadastre.** Knowledge of the essence and patterns of development of land management, study of methods and mechanisms of management. Land management system. The essence and main ways to develop land management. Substantiation of the content and patterns of change in land management. Theoretical bases of land management and maintenance of the state land cadastre and its

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components at the national, regional and local levels. The main issues of land relations regulation in terms of registration of land tenure, land use and real estate, accounting for the quantity and quality of land, soil quality and economic evaluation of land for the rational use of land resources.

**Sustainable development of territories.** The concept of sustainable development. The concept of sustainable development V. Vernadsky doctrine of the noosphere. UN Report «Transforming our world: the agenda in the field of sustainable development until 2030». Sustainable development goals in Ukraine. The difference between the Sustainable Development Goals and the Millennium Development Goals. Monitoring the implementation of Sustainable Development Goals at the state and territory level. Ideas, principles, strategies and mechanisms for implementation of the sustainable development concept. The main approaches to the study of the concept of sustainable development: 1) eco-centric; 2) economic-centric; 3) sociocentric. Theoretical and applied mechanisms for ensuring sustainable development of territories. Foreign experience in ensuring sustainable development of territories.

**Communication strategies in public administration.** Communicative strategy as the optimal implementation of communicating the management decision of a public authority to the object of management to achieve a specific goal by choosing effective speech moves and their modification in a changing situation. Features of communication strategies: dynamics and flexibility. Classification of strategies. Main and auxiliary communication strategies. Regulatory and motivational communication strategy of a public servant. The main tasks of the implementation of communication strategies in public administration: mastering oral monologue communication (report, speeches); mastering oral dialogic communication (discussion, conversation, negotiations, questions, answers), improving written communication skills (writing analytical documents, articles, reports, information reports); improving the ability to analyze professional texts.

**Personnel management.** Theoretical and methodological foundations of state personnel policy: organizational culture in public authorities. Recruitment and selection management for public authorities. The concept of professionogram and its structure. Leader, managerial activity. Official, manager and employee. Personal, professional and business qualities. The image of the head and public authority. HR. The sequence of the main processes of personnel management. Personnel planning, staff adaptation, evaluation and further development in public authorities.

**Leadership and team building.** Leadership: concepts, types, classification. Main theories of leadership. Team roles. Team building. Formation and development of leadership qualities: the ability to determine the strategy, activities and development of the organization; setting clear goals and objectives; ability to develop professional competencies of employees; ability to inspire a team and motivate people to dedicate themselves to work; achieving individual and team results; ability to delegate tasks effectively and manage team performance; creating a culture of openness and responsibility; ability to identify stakeholders and influential parties correctly, build partnership; ability to interact effectively, to listen, perceive and convey an opinion; the ability to influence the opinion of others using convincing arguments; ability to apply the principle of integrity and rules of ethical conduct of public servants.

**Public service quality management.** The essence of the concept of "public services". Scope of services. Classification of services, systematization of criteria for belonging of services to a certain type. Standardization in the field of administrative services. Principles of public service management. Experience of foreign countries in the field of public services. Activities of public authorities in the field of organization of service provision. Formation and management of the public services market. Influence of uncertainties on the organization of public services. Public service delivery tools. Quality management of public services. Quality management standards and models. Quality

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management of services in public authorities. Evaluation of service quality. Control in the field of organization of service provision.

**Management of communal property.** Powers of local councils and executive bodies of village, settlement, city councils to manage property belonging to the communal property of territorial communities. Regulatory and legal regulation of communal property management. Enterprises of communal ownership: creation, management, financing, liquidation. Control over the activities of enterprises, institutions, organizations of communal ownership. The order of alienation of communal property. The procedure for appointment, dismissal and reporting of heads of utility companies.

**Public management of innovation.** Innovation as an object of public policy. State innovation policy of Ukraine. Science-intensive products as a goal of state policy. Methods and tools of state support of innovation. Microeconomic reasons for the need for state support for innovators. Classification of instruments for state support of innovations. Taxation policy for innovators. Areas of application of state influence on innovation processes. Direct and indirect methods of promoting the development of innovation. State support of small business as a factor of innovation policy. Domestic experience in supporting innovation. The concept and content of regulation of innovation at different levels of government. Foreign experience in supporting innovative development. Legal aspects of intellectual property protection in the field of innovation. Monitoring of innovations in public administration bodies. Organizational structures of innovation management. Mechanistic and organic types of organizational structures of innovation management.

**Political processes and institutions.** Political process as a form of functioning of the political system of society. Types of political processes: revolution, counter-revolution, uprising, revolt, uprising, coup, political campaign, direct action in politics. Democratic and totalitarian type of political process. Subjects and objects of the political process. Stages of the political process. Control over the functioning and development of the political system. Factors influencing political processes. Basic and peripheral political processes. Election. Electoral legislation of Ukraine. Formation of parties, blocs, factions, groups of influence and their influence on the socio-political life of the country. Global, regional, national, local political processes. Political processes at the administrative-territorial level (region, district, city) and within social communities. Political institutions as a kind of social institutions for the establishment, implementation and maintenance of power. Composition, types, methods of formation of political institutions in Ukraine and foreign countries. Interaction of political institutions and social modernization. Problems of public participation in political processes.

**Change management.** The concept and tools of change management. The need for change. The process of strategic change planning. Typical change management models. The impact of changes on the activities of social systems, organizations, people. Resistance to change: causes, methods of overcoming resistance, technologies for implementing change, human resource management in the process of change. Managing the process of change at different stages of their implementation. Monitoring and analysis of the change process.

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**Project management in public administration.** The practical significance of project management. Definition of the project and features of the project. The essence of the program and project portfolio. Definition of project management and function of project management. Project management tools. Concepts, principles and methods of organizational design. The general sequence of development and formation of organizational structures of project management. Modern methods and means of organizational modeling of the project. Matrix methods. Distribution of administrative tasks of organization management. Calendar and network planning of the project. Probabilistic estimates of project duration. The method of mastered volume. Types and structure of contracts. Signing, execution and completion of contracts. Formation and development of the project team.

**European integration and policy of international cooperation.** The concept of the process of European integration and the main directions of further convergence of the participating countries and the policy of international cooperation. The institutional structure of the EU and the peculiarities of the division of powers between national and supranational governance structures. The main types of sectoral, horizontal, foreign policy of the EU and the policy of protection of citizens' rights. Practical identification of development models of EU member states. Formation of skills to determine the stages and criteria of systemic convergence of countries-applicants for accession, as well as analysis of the positive and negative consequences of the cointegration of CEE countries into the European Union. The main directions, mechanisms and instruments of rapprochement between Ukraine and the EU.

**Civic competence of a public servant.** Basic approaches to the consideration of the concept of civic competence and components of its structure. Features of the concept of "civic competence", which includes multifaceted and multicomponent. The concept of civic competencies of public servants as the ability to actively and responsibly exercise civil and official rights and responsibilities. Public involvement. Civic activity. Civic position. Active civil position. Participation in society. Traditional forms of public participation: participation in elections, activities of public organizations, cooperation with the authorities in resolving topical issues of local importance, patronage, financial support of charitable and volunteer organizations, etc. Participatory decision-making: domestic and foreign experience. Protest behavior of citizens.

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