**NATIONAL UNIVERSITY OF LIFE**

**AND ENVIRONMENTAL SCIENCES OF UKRAINE**

# BACHELOR CURRICULA

# AND

# TRAINING PROGRAMS

**2018-2019**
**academic year**

**2018**

# CONTENTS

## 1. GENERAL INFORMATION ABOUT NATIONAL UNIVERSITY OF LIFE AND ENVIRONMENTAL SCIENCES OF UKRAINE


1.1. Historical brief 6
1.2. The concept and objectives of educational activities 9
1.3. Specialties for Bachelor's degree 12
1.4. Admission rules 17
1.5. Organization of academic process 22
1.6. Practical training of Students 28
1.7. Teaching and Reseach staff 31
1.8. Material and Technical infrastructure 32
1.9. Information and Telecommunication support of the academic process 33
1.10. Scientific Library 35
1.11. Educational, sports and social activities 39
1.12. Reserve Officers Training 40
1.13. International mobility 42
1.14. Student self-governing 43
1.15. Areas of graduates' employment 44


## 2. BACHELOR'S DEGREE PROGRAMS


2.1. General Regulations 47
2.2. Agrobiology Faculty 51
201 Agronomy 53
203 Horticulture and Viticulture 69
2.3. Faculty of Plant Protection, Biotechnology and Ecology 80
202 Plant Protection and Plant Quarantine 81
162 Biotechnology and Bioengineering 89
101 Ecology 98
2.4. Faculty Livestock Science and Water Bioresources 107
207 Water Bioresources and Aquaculture 108
204 Technology of production and processing of livestock products 116
2.5. Education and Research Institute of Forestry and Garden-Park Management 123
205 Forestry Management 125
206 Park and Gardening Management 132
187 Woodworking and Furniture Technologies 139
2.6. Faculty of Veterinary Medicine 147
211 Veterinary Medicine 148
2.7. Faculty of Alimentary Technologies and Managing of Quality of Productes of Agricultural Sector of Economy 156
181 Food Technologies 157

**2.8. Faculty of mekhaniks-technology 166**
**208 Agricultural Engineering 168**
**275 Transport Technologies (on Motor Transport) 175**
**2.9. Faculty of construction and design 183**
**133 Industrial Mechanical Engineering 185**
**192 Construction and Civil Engineering 196**
**2.10. Education and Research Institute of Energetics, Automatics and Energy Saving 206**
**141 Power Engineering, Electrical Engineering and Electrical Mechanics 208**
**151 Automation and Computer Integrated Technologies 214**
**2.11. Faculty of Land Management 219**
**193 Geodesy and Land Management 220**
**2.12. Law Faculty 230**
**081 Law 231**
**2.13. Economic Faculty 243**
**051 Economy 245**
**071 Accounting and Taxation 257**
**072 Finance, Banking and Insurance 266**
**076 Entrepreneurship, Trade and Exchange Activities 279**
**2.14. Faculty of Agrarian Management 289**
**075 Marketing 290**
**073 Management 303**
**2.15. Faculty of Information Technology 317**
**051 Economy (Educational program «Economic Cybernetics») 319**
**051 Economy (Educational program "Digital Economy") 329**
**122 Computer Science 337**
**121 Software Engineering 345**
**123 Computer Engineering 353**
**2.16. Humanitarian Pedagogical Faculty 363**
**231 Social Work 365**
**035.04 Philology (Germanic languages and literature (translation included)) 373**
**291 International relations, social communications and regional studios 379**
**015 Professional Education 387**
**061 Journalism 401**
**053 Psychology 410**
**2.17. Education and Research Institute of Continuing Education 418**
**242 Tourism 419**

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

1.1. Historical Brief
1.2. The concept and objectives of educational activities
1.3. Specialties for Bachelor's degree
1.4. Admission rules
1.5. Organization of academic process
1.6. Practical training of students
1.7. Teaching and research staff
1.8. Material and Technical infrastructure
1.9. Information and Telecommunication support of the academic process
1.10. Scientific Library
1.11. Educational, sports and social activities
1.12. Reserve Officers Training
1.13. International mobility
1.14. Student Self-Governing
1.15. Areas of employment for graduates

## 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

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 Agraricultural 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.

According to the Resolutions of the Cabinet of Ministers of Ukraine from 6 May 2001 No 434 and from May 16, 2001 No 508, Berezhany 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; Prybrezhne 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 Berezhany 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.

## 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 agro-biotechnology, 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 – 36 specialties;
- Specialist – 13 specialties;
- Master – 37 specialties and more than 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;

• 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.

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.

## 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; Agricultural Engineering; Agronomy; Automation and Computer Integrated Technologies; Biotechnology and Bioengineerin; Computer Engineering; Computer Science; Construction and Civil Engineering; Ecology; Economy; Entrepreneurship, Trade and Exchange Activities; Finance, Banking and Insurance; Food Technologies; Forestry Management; Geodesy and Land Management; Horticulture and Viticulture; Industrial Mechanical Engineering; International Relations; Journalism; Social Communications and Regional Studios; Law; Management; Marketing; Park and Gardening Management; Philology (Germanic languages and literature (translation included)); Plant Protection and Plant Quarantine; Power Engineering, Electrical Engineering and Electrical Mechanics; Professional Education; Psychology; 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 interpretating 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<br><br>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 | 035.01 Philology (Germanic languages and literature (translation included), first - English)<br>035.04 Philology (Germanic languages and literature (translation included), first - German) | Humanitarian Pedagogical (75/15)<br><br>(25/10) | – |
| 3 | 051 Economy | Economic (150/110) | Berezhany agrotechnical institute (40/200) |
| 4 | 053 Psychology | Humanitarian Pedagogical (75/25) | – |
| 5 | 061 Journalism | Humanitarian Pedagogical (50/-) | – |

**Table 1.1 Continuation**

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| 6 | 071 Accounting and Taxation | Economic (150/140) | Berezhany agrotechnical institute (60/60)<br>Nizhyn agrotechnical institute (40/25) |
| 7 | 072 Finance, Banking and Insurance | Economic (130/90) | – |
| 8 | 073 Management | Agrarian Management (150/60) | Nizhyn agrotechnical institute (30/25) |
| 9 | 075 Marketing | Agrarian Management (60/60) | – |
| 10 | 076 Entrepreneurship, Trade and Exchange Activities | Economic (50/25) | – |
| 11 | 081 Law | Law (135/115) | – |
| 12 | 101 Ecology | Plant Protection, Biotechnology and Ecology (75/75) | Berezhany agrotechnical institute (30/30) |
| 13 | 121 Software Engineering | Information Technologies (50/50) | – |
| 14 | 122 Computer Science and Information Technologies | Information Technologies (50/50) | – |
| 15 | 123 Computer Engineering | Information Technologies (50/50) | – |
| 16 | 133 Industrial Mechanical Engineering | Construction and Design (170/120) | – |
| 17 | 141 Power Engineering, Electrical Engineering and Electrical Mechanics | Energetics, Automation and Energy-saving (175/120) | Berezhany agrotechnical institute (75/100)<br>Nizhyn agrotechnical institute (60/60)<br>Nemishayevo Agrotechnical College (50/50) |
| 18 | 151 Automation and Computer Integrated Technologies | Energetics, Automation and Energy Saving (50/35) | – |
| 19 | 162 Biotechnology and Bioengineering | Plant Protection, Biotechnology and Ecology (100/50) | – |
| 20 | 181 Food Technologies | Food Technologies and Quality Management of AIC Products (100/100) | – |
| 21 | 187 Woodworking and Furniture Technologies | Forestry, Park and Gardening Management (50/100) | |
| 22 | 192 Construction and Civil Engineering | Construction and Design (50/50) | – |
| 23 | 193 Geodesy and Land Management | Land Management (90/85) | – |
| 24 | 201 Agronomy | Agrobiology (190/120) | – |
| 25 | 202 Plant Protection and Plant Quarantine | Plant Protection, Biotechnology and Ecology (75/50) | – |
| 26 | 203 Horticulture and Viticulture | Agrobiology (60/30) | – |
| 27 | 204 Technology of Production and Processing of Livestock Products | Livestock and Water Bioresources (125/60) | – |
| 28 | 205 Forestry Management | Forestry, Park and Gardening Management (215/200) | – |
| 29 | 206 Park and Gardening Management | Forestry, Park and Gardening Management (175/240) | Berezhany agrotechnical institute (30/30) |
| 30 | 207 Water Bioresources and Aquaculture | Livestock and Water Bioresources (75/75) | – |
| 31 | 208 Agricultural Engineering | Mechanics – Technology (200/200) | Berezhany agrotechnical institute (75/100)<br>Nizhyn agrotechnical institute (75/75)<br>Nemishayevo Agrotechnical College (50/40) |

**Table 1.1 Continuation**

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| 32 | 211 Veterinary Medicine | Veterinary Medicine (250/-) | – |
| 33 | 231 Social Work | Humanitarian Pedagogical (50/50) | – |
| 34 | 242 Tourism | After Diploma Education (25/25) | – |
| 35 | 275 Transport Technologies (on Motor Transport) | Mechanics - Technology (100/100) | Nizhyn agrotechnical institute (30/–) |
| 36 | 291 International relations, social communications and regional studios | Humanitarian Pedagogical (75/25) | – |

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 | Specialty | Educational Program |
|---|---|---|
| *1* | *2* | *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 After Diploma Education | Management | Extension service |
| | | Management of innovative activity |
| Agrobiology faculty | Agronomy | Agronomy |
| | | Agrochemistry and Soil Science |
| | | Selection and genetics of agricultural crops |
| | Horticulture and Viticulture | Horticulture and Viticulture |
| Humanitarian Pedagogical faculty | Management | Management of educational institution |
| | Educational, Pedagogical Sciences | Pedagogy of higher school |
| | Social Work | 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 |
| Economic faculty | Economy | Economics of enterprise |
| | | Applied Economics |
| | Accounting and Taxation | Accounting and audit |
| | Entrepreneurship, Trade and Exchange Activities | Entrepreneurship, Trade and Exchange Activities |
| | Finance, Banking and Insurance | Finance and credit |
| Mechanics – Technology faculty | Agricultural Engineering | Agricultural Engineering |
| | Transport Technologies (on Motor Transport) | Transport Technologies (on 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 | Marketing |
| Faculty of Veterinary Medicine | Veterinary Hygiene, Sanitation and Examination | Veterinary Hygiene, Sanitation and Examination |
| | Veterinary Medicine | Veterinary Medicine |

**Table 1.2 Continuation**

| *1* | *2* | *3* |
|---|---|---|
| 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 | Plant Protection |
| | | Quarantine of Plants |
| 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 | Snformation Systems Software |
| | 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 |
| Faculty of Livestock Science and Water Bioresources | Water Bioresources and Aquaculture | Water Bioresources and Aquaculture |
| | 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 | Quality, Standardization and Certification |
| | Food Technologies | Technologies of storage, preserving and reprocessing of meat |
| | | Technologies of storage and reprocessing of aquatic bioresources |
| Law faculty | Law | Law |

## 1.4. Admission rules

Admission to the National University of Life and Environmental Sciences of Ukraine is carried out for the training programs for the "Bachelor" degree of full-time and correspondence courses in accordance with the rules of admission for the current year, the rules are approved by the Academic Council of the University.

Educational activity is carried out according to the license of the Ministry of Education and Science of Ukraine, serial number AE # 636425 from 20.05.2015.

### Dates for application, competitive assessment of certificates, entrance exams, competitive selection and enrolment for the training of full-time and correspondence courses of state oder

| Dates of Application | | Entrance exams | | Rating list | Terms for choosing the place of training by an applicant | Enrolment |
|---|---|---|---|---|---|---|
| CGSE | JS | CGSE | JS | | | |
| 12.07 - 26.07.2018* | 12.07 - 24.07.2018 | 21.07 - 26.07.2018** | 25.07 - 31.07.2018 | by $12^{00}$ pm 01.08.2018 | by $18^{00}$ pm 06.08.2018 | by $12^{00}$ pm 07.08.2018 |

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

***** applicants admitted on the base of the interview, entrance examinations at NULES - by 20.07.2018

****** applicants who are interviewed - 21-23.07.2018

**With the application form, filled in paper format, applicants personally submit the following documents:**

- a copy of personal ID (1st, 2nd pages and place of registration, 2 copies);
- a copy of a state document of previously acquired education (educational qualification) level, on the basis of which the entry is made, and a copy of the attachment;
- a copy of the certificate(s) of the Ukrainian Centre for Educational Quality Assessment (for entrants on the basis of complete general secondary education);
- 4 colour photos 3x4 cm;
- a copy of the identification number (2 copies).

All copies of documents submitted at the entrance to the NUBiP of Ukraine are certified by the originals of Admission Committee. **Copies without submitting the original documents are not considered.**

Ukrainian passport or other document identifying a person and citizenship (birth certificate for under-age applicants without passports), military ID (certificate of detachment to the recruiting station), standard document (original) of the previous educational (educational and qualification) level which serves as the basis for enrolment, and appendix; certificate(s) of the Ukrainian Centre for Educational Quality Assessment and documents certifying their right to apply are submitted by an applicant in person.

Copies of the documents which confirm special conditions of entrance to obtain a higher education on the basis of Complete General Secondary Education in accordance with the rules of admition or admition rules by quotes are submitted in paper form by an applicant in person within the dates of application submission. Documents certifying special conditions of the entrance to

obtain a higher education on the basis of Complete General Secondary Education, which are not submitted in time, are not entitled to receive such special conditions.

Applicants for the Bachelor's degree on the basis of complete General secondary education applying for full-time and correspondence forms of education except the applicants having the special rights on participation in competitive selection according to the results of entrance examinations, enrolment by interview and enrolment by quota-1 or have distinctions in surname, name, patronymic, date of birth, gender or nationality of the applicant in the identification document, and in the certificate of External Independent Evaluation, **submit an electronic application only**. Applicants may submit up to 7 applications no more than 4 specialties, which provide admission by state order. Submission of applications for participation in the competition for the places at the expense of individuals or legal entities is not limited.

While filling applications for participation in competitive selection, applicants specify in each application the priority of this application as to other applications submitted by them, with "1" being the highest priority.

In 2018 the certificates of External Independent Evaluation of 2016, 2017 and 2018 years are accepted, except estimates from English, French, German and Spanish. Estimates of English, French, German and Spanish are accepted only from the certificates of External Independent evaluation of 2018.

For the competitive selection of applicants on the basis of Complete General Secondary Education for the Bachelor's degree, competitive score is calculated by adding the grades of certificate on competitive subjects (entrance examinations) **(table)**, the average score of the document (Annex to the document) of complete secondary education and scores for outstanding achievements in the study of core subjects or successful completion of preparatory courses at NULES of Ukraine taking into account weighting coefficients stipulated by the Rules of admission to NULES of Ukraine.

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

**Individuals who enrol for studying according to the Bachelor's educational-professional programs on the basis of educational qualifying level of specialist are accepted to study on the first (reduced curriculum) or senior courses (for the program with a standard period of study) and are taken in by the state order only in case of applying for the same or related specialty within the field of knowledge. Competitive selection of this category of applicants is the sum of the scores obtained at the entrance examination at NULES of Ukraine and the average score of the diploma of Junior specialist with the weighting coefficients. To participate in the competition in all specialties are admitted the applicants who received not less than 124 points in the core subjects examinations.**

Persons who applied in paper or electronic form and participate in the competition for place of state and regional order, after making by the Admission Committee decision on recommendation for admission in accordance with the period have to comply the requirements for enrolment into places of government and regional order: submit personally the original document on education (educational qualification) level and its annex, a military ID or military service registration certificate (for persons liable for military duty), except in cases provided by law, Certificates of External Independent Evaluation and/or other documents stipulated by the Admission Rules, to the Admission office of NULES of Ukraine. The original documents are stored in NULES during the period of study. Persons who have filed the applications in electronic form also must sign the application form printed out by the Admission Commission.

## Competitive selection and enrolment of students in NULES of Ukraine

| Specialty (Specialization) | The list of competitive disciplines | | |
|---|---|---|---|
| | 1 | 2 | 3 (chosen by applicant) |
| Economics (Economics of Enterprise, Economic Cybernetics);<br>Accounting and taxation (Accounting and Audit);<br>Finance, Banking and Insurance (Finance and Credit);<br>Management;<br>Marketing;<br>Enterpreneurship, trade and stock activity | Ukrainian language and literature | Mathematics | Foreign Language / Geography |
| Software Engineering;<br>Computer Science;<br>Computer Engineering;<br>Industry Engineering<br>Electrical Engineering, Electrotechnology and Power Engineering;<br>Automation and Computer Integrated Technologies;<br>Building and Civil engineering;<br>Agroengineering;<br>Transport Technologies (road transport) | | | Physics / Foreign Language |
| Food Technologies;<br>Forestry;<br>Gardening | | | Chemistry / Biology |
| Woodworking and Furniture Technology | | | Physics / Biology |
| Geodesy and Land Management | | | Geography/ History of Ukraine |
| Ecology | | Biology | Chemistry / Geography |
| Biotechnology and Bioengineering;<br>Agronomy;<br>Protection and Quarantine of plants;<br>Horticulture and Viticulture<br>Technology of Production and Processing of Livestock Products;<br>Water Bioresources and Aquaculture;<br>Veterinary Medicine; Veterinary Hygiene, Sanitation and Expertise | | | Chemistry / Mathematics |
| Professional education (technology of production and processing of agricultural products) | | | Chemistry / Foreign Language |
| Psychology | | | Mathematics / Foreign Language |
| Journalism;<br>Law;<br>Social work | | History of Ukraine | Mathematics / Foreign Language |
| Philology (Germanic languages and literature (translation inclusive) | | ign Lan gua | History of Ukraine / Geography |

| | | | |
|---|---|---|---|
| Tourism | | | Mathematics / Geography |
| International relations, Public Communication and Regional Studies | | | History of Ukraine / Mathematics |

Individuals who enrol for studying according to the Bachelor's educational-professional programs on the basis of educational qualifying level of specialist are accepted to study on the first (reduced curriculum) or senior courses (for the program with a standard period of study) and are taken in by the state order only in case of applying for the same or related specialty within the field of knowledge. Competitive selection of this category of applicants is the sum of the scores obtained at the entrance examination at NULES of Ukraine and the average score of the diploma of Junior specialist with the weighting coefficients. To participate in the competition in all specialties are admitted the applicants who received not less than 124 points in the core subjects examinations.

Persons who applied in paper or electronic form and participate in the competition for place of state and regional order, after making by the Admission Committee decision on recommendation for admission in accordance with the period have to comply the requirements for enrolment into places of government and regional order: submit personally the original document on education (educational qualification) level and its annex, Certificates of External Independent Evaluation and/or other documents stipulated by the Admission Rules, to the Admission office of NULES of Ukraine. The entrant, after application, but before the requirements for enrollment, have changed the surname, name, patronymic, additionally personally gives to Admission Committee of NULES of Ukraine certificate of state registration of the act of civil status on the respective changes and issued on its basis to the identification document, information are made to uniform basis. Persons who have filed the applications in electronic form also must sign the application form printed out by the Admission Committee.

Persons, who in the established terms have not fulfilled the requirements for crediting to the place of state or regional order, lose the right in the current year on enrolment (transfer) for the state and regional order studying.

Participants of Ukrainian olympiads of NULES of Ukraine for professional orientation of entrants on the basis of complete general secondary education on specialities, which are given special support, additional points are added to Certificate of External Independent Evaluation on one suitable subject when calculating the contest score in the amount of 1 to 20 points, but not higher than 200 points per subject.

In NULES of Ukraine there are preparatory courses of External Independent Evaluation on the comprehensive subjects, after finishing it a person can obtain up to 10 additional points when entering the speciality, which provides special support.

To the services of students of the basic institution of NULES of Ukraine (Kyiv) there are 14 educational buildings, 13 hostels, educational-laboratory complexes in some of research institutes of National Academy of Sciences of Ukraine and National Academy of Agrarian Sciences, 3 educational-experimental stations, 7 educational-research farms ( area more than 25 thausand ha), library (more than 1 million copies), military department, driving school, stadium and sports complex.

Also studying of students in NULES of Ukraine is carried out in 11 separate subdivisions of II-III accreditation levels (detailed on the site).

**Applicants submit the documents to the address:**
03041, Kyiv-41, 19, Generala Rodimtseva st., building № 1.
How to get to the admission commission:
metro station "Lybidska", "Teremky" , bus 212.
Documents are accepted daily from $9^{00}$ to $18^{00}$, on Saturday and Sunday- from 9.00 to 14.00.
lunch break – $13^{00}$ -$14^{00}$
**Phone**: (044) 258-42-63, 527-83-08
(098) 660-08-48; (063) 804-49-93

You can get more information by joining the group facebook.com/vstupnubip and on the official website of the university **http:www.nubip.edu.ua.**

## 1.5. Organization of academic process

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

full time studying;

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, taking into account the benefits required by law for persons who combine work with study.

**An academic 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. T**he main objective is to educate and train intelligent and harmoniously developed personalities who are able to 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 specialist-bachelor-specialist-master"** (**"bachelor-master"** – at the University's basic institution). 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.

**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 standard and elective 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.

The curriculum distributes the number of hours for disciplines as follows:

− Standard - 60% of the total academic workload of a student (the list of these disciplines, the number of hours and credits are determined by the standards of higher education, requirements of MES of Ukraine within the relevant fields of training (specialties) and are included in the curriculum of training in full);

− Elective:

• offered by the University - 15% of the total academic workload of a student (the list of these disciplines, forms of study (in class or independently) and credits are defined by the academic board of the University).

• chosen by students - 25% of the total academic workload of a student (the list of these disciplines, forms of study (in class or independently) and credits are defined by the working groups formed by the order of Rector of the University, recommended by academic boards of faculties (ERI), approved by the teaching and methodological board of the University as well as by the academic board. They are included in the curricula, depending on the student's choice).

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 academic 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.

**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 credit** 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.

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

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

Examination results are scored according to the national four-grade scale – "excellent", "good", "satisfactory", "unsatisfactory" and to European Credit Transfer and Accumulation System (ECTS) – A, B, C, D, E, FX, F. *For conversion from the Ukrainian national grades into ECTS grades, see Table 1.5.* Credit results are scored by the national marks "passed" and "failed" and by the correspondent ECTS grades.

**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$^{st}$ year); 28 hours (2$^{nd}$ year); 26 hours (3$^{rd}$ year); 24 hours (4$^{th}$ year); for EQL "Specialist" – 24 hours, 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", EQL "Specialist" 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 at the chair meeting. Content modules are included into the curriculum for the discipline.

It is recommended that there be from 2 to 4 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 1.5. Ratio between the Ukrainian National and ECTS grades and student's rating**

| The Ukrainian National Grade | ECTS Grade | Percentage of students who get corresponding grade at European Universities | Definition of the ECTS grading | Student's rating, points |
|---|---|---|---|---|
| *1* | *2* | *3* | *4* | *5* |
| **Excellent** | **A** | 10 | **EXCELLENT** – outstanding performance with only minor errors | **90 – 100** |
| **Good** | **B** | 25 | **VERY GOOD** – above the average standard but with some errors | **82 – 89** |
| | **C** | 30 | **GOOD** – generally sound work with a number of notable errors | **74 – 81** |
| **Satisfactory** | **D** | 25 | **SATISFACTORY** – fair but with significant shortcomings | **64 – 73** |
| | **E** | 10 | **SUFFICIENT** – performance meets the minimum criteria | **60 – 63** |
| **Unsatisfactory** | **FX** | - | **FAIL** – some more work required before the credit can be awarded | **35 – 59** |
| | **F** | - | **FAIL** – considerable further work is required | **00 - 34** |

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 ECTS-grades and is recorded into an examination record, a student grade record and a student assessment register (*see Table 1.5.*).

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 and ECTS-grades (*see Table 1.5*).

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, on the whole, 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.

In order to promote mobility of students and faculty, academic disciplines are taught in the English language at NULES of Ukraine. The majority of 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 and Bioengineering;
Veterinary Medicine;
Industrial Mechanical Engineering;
Geodesy and Land Management;
Ecology;
Economy;
Plant Protection and Plant Quarantine;
Management;
Management of foreign economic activity;
Accounting and Taxation;
Law;
Public Management and Administration;

Social Work;
Philology;
Finance, Banking and Insurance.

These programs 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 23 specialties:

Automation and Computer Integrated Technologies;
Agricultural Engineering;
Agronomy;
Veterinary Medicine;
Water Bioresources and Aquaculture;
Industrial Mechanical Engineering;
Geodesy and Land Management;
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;
Management;
Accounting and Taxation;
Law;
Park and Gardening Management;
Technology of Production and Processing of Livestock Products;
Transport Technologies (Motor Transport);
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 19.10.2015.

**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 stuff 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.

**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 stuff 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.

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.

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 expertize, 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 (Chech), 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

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

For today in the basic institution of the University (Kyiv) 1384 working scientist, 84 % of them have scientific degrees and academic titles. The average age of the academic staff is 47.

Among the academic staff of the basic institution of NULESU, there are:

doctors of sciences and professors – 264;

candidates of sciences and associate professors – 905;

Academicians of the NAAS of Ukraine – 11;

Academicians of the NAPS of Ukraine – 2;

Correspondent Members of the NAS of Ukraine – 3;

Correspondent Members of the NAAS of Ukraine – 18;

Correspondent Members of the NAPS of Ukraine – 1;

Honored Workers of Science and Technology of Ukraine – 22;
Honored Workers of Education of Ukraine – 20;
Honored Workers of Higher School of Ukraine – 3;
Honored Inventors of Ukraine – 5;
Honored Doctors of Ukraine – 1;
Honored Workers of Veterinary Medicine of Ukraine – 1;
Honored Workers of Agriculture – 14;
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 Lawyers of Ukraine – 2;
Honored Workers of Culture and Sports of Ukraine – 2;
Honored Masters of Folk Art – 1;
Honored Artists of Ukraine – 1;
People's Artist of Ukraine – 2.

The scientific and academic staff of a higher qualification take post-graduate and doctoral courses. Currently, 419 postgraduate students (including 157 part-time) and 43 seekers are taking postgraduate programs, 32 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 stuff of a higher category. The faculty members and postgraduate students submitted and defended 8 dissertations to get a degree of Doctor of Sciences and 85 dissertations to get a degree of Candidate of Sciences in 2017.

In 2017, 25 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:

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.

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).

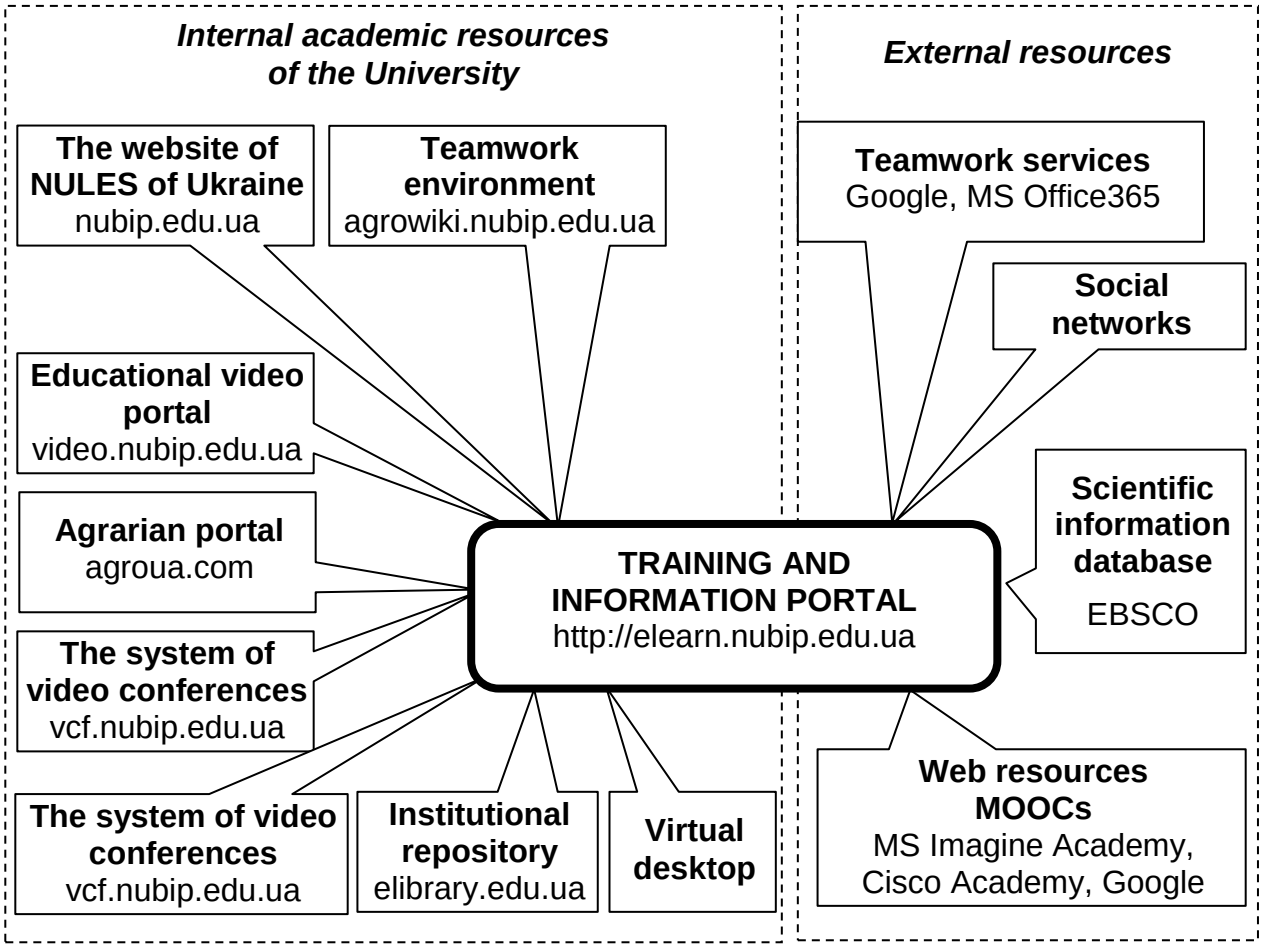


**Fig. 1. Hybrid cloud-oriented educational environment at NULES of Ukraine**

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), 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), 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), 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), 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;

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 ", "Irpin Economic College ", "Nizhyn Agrothecnical 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

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

In 2017 the number of readers for one registration account amounted to **14878** persons, which issued **1003441** copies of documents.

**Mass and educational work.** In 2017, thematic and other cultural events were organized at the library branches and its departments.

During Vyshyvanka Day there was organized an exhibition-view "Pattern became native Ukraine", the embroidered products of library staff were presented.

The bibliographic surveys compiled by the department staff depicted the actual issues of economics, energy and agriculture: application of nanotechnologies in veterinary medicine, biological protection of plants, intensive branch of agriculture - gardening, energy saving in technological processes and institutions, stock market. On the views “Organic Farming” and “Plant Biological Protection”, users were able to know new documents on these topics.

64 articles on this important topic for the society were presented in the thematic review "Selection - fortune, present and future" organized for the International scientific

and practical conference "Selection - heritage, present and future (education, science, production").

The staff of the information and bibliographic department participated in the meeting of the scientific club "Selectionist - genetics" devoted to the 110th anniversary of the birth of V.M. Remeslo, before the meeting the club did a book exhibition "Remeslo Vasyl Mykolyovych - outstanding selectionist - genetics " and report on the search scientific sources about the famous scientists of the university and Ukraine. Information about these events was posted on the site of the selection department.

Exhibitions revealing important problems of the present play an important role in literature propaganda. Understanding of the Ukrainian idea, the development of state independence of Ukraine, democratization of the processes of state formation in Ukraine - these issues were revealed in book exhibitions "By the unity" ( Day of Unity of Ukraine), "Way of Nation" (to Constitution Day of Ukraine), " Nightingale's Ukrainian native language "(to Day of the Ukrainian language)," This is my Ukraine day, the new one meets "(to Independence Day of Ukraine) organized by the staff of the service department for scientific and artistic literature.

Familiarity with the most valuable spiritual, cultural and social assets of the Ukrainian people was facilitated by the book exhibitions: "The Wings of Poetry" (to International Day of Poetry), Close Everyone at His Parental Table ..." (to Family Day), "Patterns of the Native Land" (to Ukrainian Embroidery Day).

For students of Pedagogy faculty, a bibliographic review "The Eternal Word of Kobzar" was held. For the first-year students conversation "Source of Information" was held and for all library readers, book exhibitions "Our Call and Insight - Readers" (to Ukrainian Day of Libraries) were presented, which introduced the work of the library.

To the anniversaries of prominent Ukrainian figures and writers, book exhibitions "Steps to future" (110 years since S.P. Koroliov's birth), "Creative way of I. Ogienko" (135 years since the birth), "Poetry of high spirit and majestic beauty" "(120 years since Ye.F. Malaniuk's birth), « Great fable-teller " (190 years since L.I. Hlibov;s birth)," Inspired chronicler of Ukraine "(200 years since M.I. Kostomarov's birth).

Book exhibitions were also designed for all the great dates of the state and public life. To the day of Chernobyl tragedy, a book exhibition "Irradiated by pain" was issued, to the anniversary of Great Victory - "The inexhaustible light of Victory". Independence of Ukraine was marked by the book exhibition "This is my Ukraine day, the new one meets", to Constitution Day - "Way to the Nation". To the anniversary of the foundation and development of cossacks - "Be afraid enemies, be glad Ukraine, because cossack's son is saddle a horse", to the anniversary of Holodomor - "The Black Wing of Holodomor." For the students of the first years the conversation "Give the book the time" was done and for all readers of the library a book exhibition "Treasury of folk wisdom" (to Ukrainian day of libraries), which introduced the work of the library.

In general, in 2017, the total number of information events (reader conferences, debates, bibliographic reviews, thematic exhibitions) amounted to **163** .

**Reference, bibliographic and informational services** of the users of the scientific library were conducted on the basis of the research and teaching work of the university and according to individual applications submitted during the year. Much attention was paid to the topic of master's work, both research and production directions.

In 2017, the library's information and bibliographic department staff prepared 3 thematic bibliographic indexes and 12 thematic lists. According to the themes of master's thesis, 16 thematic lists were prepared.

For all categories of users 2 bibliographic and information pointers are done :

"Periodicals subscribed to the scientific library for 2017";

"Bulletin of new revenues of literature of the scientific library for 2016-2017"

**Manning and accounting of funds.** Replenishment of fund of the scientific library with new documents in 2017 was carried out on the basis of orders of departments, faculties, Educational and Scientific Institutes and library departments. All documents were counted individually and in total, in the traditional and electronic form.

During the year, only 9632 copies came to the scientific library new documents and general fund by 01.01.2018 amounts to 1028737 copies of documents.

For the manning of fund of the scientific library in the current year was spent 390290 UAH 74 coins (including for the purchase of periodicals in 2017: magazines - 94125 UAH 22 coins, newspapers - 60542 UAH 94 coins), for 2018: magazines for the first half - 29363 UAH 92 coins, newspapers - 85725 UAH 67 coins), 120532 UAH 99 coins were spent on the purchase of modern educational publications.

In 2017 the scientific library received 1010 of 1250 copies. (24 out of 29 titles) of modern teaching aids and textbooks from the university's publishing department, which were recommended for publication by the university's Educational and Methodological Council in 2016 to replenish the library stock at the university's publishing department.

In addition, in 2017 1075 copies (29 titles) were recommended by Educational and Methodological Council for printing in 2018 for the university's funds in the publishing department to replenish the library fund.

From the scientific and methodical centre of agrarian education, the scientific library received 71 copies of textbooks and scientific and methodical literature worth 638 UAH 77 coins. From the publishing centre of NULES of Ukraine, the library received the same documents 1105 copies for the amount of 128775 UAH 35 coins. It was profitable 4078 copies donated educational and methodological literature.

In the reporting year 7 copies were received of foreign documents for the maintenance of the work of the FAO United Nations Depositary Library for Ukraine in the amount of 280 UAH 00 coins.

In addition, the library fund was actively replenished with gifts from users and various organizations, in particular publishing houses "Naukova Dumka", "Academperiodyka " of National Academy of Sciences of Ukraine.

**Scientific work.** In 2017 the library staff took an active part in seminars, conferences of library workers.

So in particular, the library staff participated in the following activities:

International scientific and practical seminar "Strategy of development of libraries: from idea to incarnation", Kyiv;

Round table "Copyright in the library area", Kyiv;

The seminar is dedicated to creating a positive image of the library as a communication platform of the society "Advertising of the library - as an instrument for a positive image of educational establishment", Illintsi.

In addition, the scientific library staff actively participated in seminars organized by the Ukrainian Library Association in order to improve the work of libraries, namely in seminars:

"Development of modern libraries: from the classical library to the library of future";

" Media literacy: modern dimensions";

" Advocacy in sustainable financing support of libraries in conditions of economic instability";

"Scientific library and quality of modern education".

In the reporting year, the scientific library paid an attention to international and science-based databases. Thus, in particular, since December 2017 access to the EBSCO science- based database has been subscribed. Access to the scientific medical journal The New England Journal of Medicine, NEJM («New England Medical Journal - English edition, medical research peer-reviewed journals, publisher - Massachusetts Medical Society, USA. This is the oldest medical journal, which is also the most readable, quoted and influential periodicals on general medicine in the world; and access to the BioOne full-text database. BioOne is a product of the creative collaboration of scientific societies, libraries, academic institutions and private sector. It is a valuable resource for scientists, lecturers and students who collects high-quality publications in the fields of biology, ecology and environmental sciences.

Also, our university was among the 100 Ukrainian universities and research institutions of the Ministry of Education and Science of Ukraine, which, through the state budget, got access to international databases Scopus and Web of Science. In this regard, the scientific library director held 4 training seminars for library staff to familiarize themselves with the work of these science-computer databases. After these workshops, the staff of the information-bibliographic department and heads of the library branches provide individual consultations to the scientific-pedagogical staff and post-graduate students of the university regarding the work of Scopus databases, Web of Science and EBSCO

**Informatization of library and bibliographic processes.**

In 2017 the scientific library carried out:

- filling the databases of electronic catalogue;
- introduction and use of barcode-based technologies in automation of library processes;
- filling the database of readers for service in an automated mode;
- formation of the database on the use of electronic resources by the readers of the scientific library of NULES of Ukraine, university, world information resources, international science-computer database EBSCO PUBLISHING etc.;
- filling of the electronic library of NULES of Ukraine with electronic copies of educational and methodological and scientific literature received from the scientific and pedagogical staff of the university, new full-text database of the electronic catalogue BOOKS - "Full texts of educational publications" with access to full texts from the library network and Internet ;
- constantly information is updated at the scientific library (library. nubip. edu. ua ) and at the university library portal (nubip. edu. ua / structure / library);

- reference and information service of users in the mode of electronic counselling was carried out with the help of package application to WEB- IRBIS, “Ask the librarian” (Virtual Help).

The volume of the electronic catalogue in 2017 was 189398 entries.

In order to provide the educational process of the university, modern educational and scientific publications the electronic library of NULES of Ukraine is daily filled.

So, in 2017 1258 electronic copies of the publications came to the scientific library, with the authors having signed 2516 copyright treaties.

It should be noted that the transfer of electronic copies of educational and methodological and scientific literature to the scientific and pedagogical staff of the university was carried out through the conclusion of copyright agreements on the transfer of non-exclusive rights to use the publication (this is the official permission to place an electronic copy) to provide users with access either through the university's local network or through Internet.

In general, by 01.01.2018 the electronic library has 4486 full-text documents.

## 1.11. Educational, sports and social activities, military-patriotic education

Together with the departments of cultural studies, physical education, Humanities, student government educational work of the University organizes and coordinates TRC educational and social development.

The traditional events University festival "Day of knowledge", international student day, contest "the Beauty of Nubip of Ukraine", the international art festival "Golosiivska vesna", “Donor day” take place annually. The TRC has organized new events: military-sports competitions in fire training "Sniper Nubip of Ukraine", IQ tests, Olympiads among students in new sports, such as paintball, pushups, volleyball on the ground and many others.

The TRC of educational and social development together with the department of pedagogy organizes scientific-methodological seminars for mentors of academic groups of the first courses that help to apply pedagogical methods and techniques aimed at students’ team-building.

According to the order of Ministry of Ukraine for Family, Youth and Sports, Ministry of Education and Science of Ukraine, Ministry of Defense of Ukraine, Ministry of Culture and Tourism of Ukraine № 3754/981/538/49 from 27.10.2009 «On the Concept of national and patriotic education of youth", the department of military training organised both in-classes and out-of-class military and patriotic education of students and school children during the morning inspection.

The department of military training traditionally organizes meetings of generations (with Veterans of Department) hours of memory, educational classes (during army trainings), discussions on the topics "Remembrance day", "The heroic deeds are immortal", "The heroes fought for our country." In particular, during the Year of honoring of the combatants in other lands, in January 2014 the staff of the department arranged an Hour of Courage. Students and staff together with the NGO of soldiers - Afghans laid flowers at the monument to soldiers - Afghans.

The TRC initiated sports competitions "UNI-sportsman" among the staff and students of NULES of Ukraine in 15 kinds of sports. In 2015, the University teams in tug-of-war, powerlifting, arm wrestling were organized.

A permanent commission on monitoring compliance with the internal Rules in the dormitories of NULES of Ukraine has been organized.

Physical education and sports activities at NULES of Ukraine are carried out by staff of the Department of physical education together with the student organization, the Trade Union Committee of employees of NULES of Ukraine led by TRC of educational and social development, by involving students, scientific and pedagogical staff and University employees to go in for physical culture, mass sport and competitive sport.

The University hold annual competitions “Spartakiada” among the students of the faculties in 12 sports, among the residents of dormitories in 12 sports, "Health" among the scientific and pedagogical staff and employees of structural subdivisions in 6 sports.

Teams of the University and individual athletes participate in competitions at various levels: district, city, national, international and repeatedly won prize-winning places.

The University teams and individual athletes participate in competitions at various levels: district, city, national, international, and regularly become prizewinners. In 2012, in order to promote physical fitness and health of young people, the University built an outdoor playground for mini-football with artificial turf. In 2015-2016, the educational building № 9 which houses the Department of physical education, outdoor voleyball court, stadium were renovated up to modern standards.

No less important influence on the education of students, establishing the basis for the formation of personality of a future qualified specialist, and master of the land, fully developed and harmonious personality has a dormitory. It has become a tradition to hold an annual contest for the best Dorm to identify the best mechanisms of the organization of conditions for living, learning and recreation of students.

From year to year improved the quality of living conditions in hostels Nulesu. Living rooms are equipped with hard and soft items, created conditions for self-study: the work of reading rooms in which there is access to free Internet, conducted educational and cultural work. All hostels run laundromats. For sports in the hostels there are sports room, and in adjacent territories of hostels № 1, 2, 6, 8, 10, 11 renovated playgrounds, in front of the hostel № 12 to the Playground. Student organizations faculties, ERI, and boards of student dorms have meetings rooms.

## 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.

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 2017, the university graduated 378 reserve officers.

Now the department trains:

First year of study – 261 students;

Second year of study - 413 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 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 2005-2017 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";

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 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 through the activities of the clubs.

Clubs and cultural centers of SO:

- Club of Experts;
- Club "City Of Mafia";
- Science club;
- Media-centre;
- Center of social work;
- Sports Center;
- Tourist club “Bars”.

SO 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 Kiev, the Joint Council of the Ministry of agrarian policy and food of Ukraine. 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 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. Agrobiology 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

**2.8. Faculty of Mekhaniks-Technology**

208 Agricultural Engineering

211 Transport Technologies (Motor Transport)

**2.9. Faculty of Construction and Design**

133 Industrial Mechanical 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

151 Automation and Computer Integrated Technologies

**2.11. Faculty of Land Management**

193 Geodesy and Land Management

**2.12. Law Faculty**

081 Law

**2.13. Economic Faculty**

051 Economy

071 Accounting and Taxation

072 Finance, Banking and Insurance

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")

122 Computer Science

121 Software Engineering

123 Computer Engineering

**2.16. Humanitarian Pedagogical Faculty**

231 Social Work

035 Philology

291 International relations, social communications and regional studios

015 Professional Education

053 Psychology

061 Journalism

**2.17. Education and Research Institute of Continuing Education**

242 Tourism

## 2.1. General Regulations

The disciplines in the bachelors training curricula are structured into the following components:

- standard - 60% of the total student workload (their list, the amount and forms of attestation are determined by the standards of higher education, requirements of MES of Ukraine within the relevant field of study (specialty) and included into the curriculum of specialists training in full);

- elective:

• offered by the University - 15% of the total student workload (their list, forms of study (in-class or self-study) and attestation is defined by the academic council of the University);

• offered by students - 25% of the total student workload (their list, forms of study (in-class or self-study) and attestation is defined by working groups formed by order of the Rector of the University, recommended by academic councils of the faculties (ESI), adopted by educational and methodological University Council and approved by the Academic Council of the University. They are included into the curricula of specialists training according to the student's choice).

The curricula determine the total amount of time for study of each discipline in hours and credits of European credit transfer accumulating system (ECTS), one credit ECTS – 30 hours.

Within one specialty the curricula of Bachelor training for the first three terms (1,5 year of study) are common. Beginning with the fourth term (2-nd year of study) they differ by the elective components according to the future Master's specialty that allows graduate's of Bachelor programs to adjust to the changes on the labor market.

According to the order of rector of university from 26.02.2018 № 171 «About development of workings curricula on 2018-2019 academic year», the elective disciplines offered by the University are the following: ***«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 volume of each selective discipline − not less than four credits ECTS. In the bachelors training curricula among 13 elective disciplines offered by the University the necessary for a particular specialty within 36 credits ECTS the boundaries are selected.

The annotations of the elective disciplines offered by the University are given below.

### Annotations of elective disciplines offered by the University

**History of Ukrainian Statehood.** The content of theeducational 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 comprehendon their own laws of the state building process, orientate in political life and feel their involvementin 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.

**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.

**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.

## 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[a]

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

### *201 Agronomy*

Educational Program **«Agronomy»**

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 V.L.Zhemoyda

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.

### *203 Horticulture and Viticulture*

Educational Program **«Horticulture and Viticulture»**

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 –  Doctor of Agricultural Sciences, Professor T.Y.Kondratenko

# Bachelors
# field of knowledge "Agricultural science and food"
# in specialty "AGRONOMY"
# Educational Program «Agronomy»

| | |
|---|---|
| Form of Training: | Licensed number of persons: |
| – Full-time | 190 |
| – Part-time | 120 |
| 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. Ahroekonomichnyy analysis of agriculture and technology of cultivation of field crops on the farm.

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. Impact of resource saving, soil cultivation technologies on soil properties.

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 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 Program «Agronomy»

| № | Name of Academic Discipline | Semester | Number | |
|---|---|---|---|---|
| | | | hours | credits ECTS |
| **1. STANDARD ACADEMIC DISCIPLINES** | | | | |
| 1 | Botany | 1-2 | 180 | 6 |
| 2 | Agrophysics | 1 | 120 | 4 |
| 3 | Chemistry | 1-2 | 300 | 10 |
| 4 | Agroecology basics of radiobiology | 3 | 120 | 4 |
| 5 | Genetics | 3 | 120 | 4 |
| 6 | Plant physiology with the fundamentals of biochemistry | 3 | 120 | 4 |
| 7 | Agricultural economics and business | 6 | 120 | 4 |
| 8 | Stockbreeding and beekeeping | 4 | 120 | 4 |
| 9 | Agrometeorology | 2 | 120 | 4 |
| 10 | Soil Science with the bases of geology | 2-3 | 180 | 6 |
| 11 | Agricultural pharmacology | 5 | 120 | 4 |
| 12 | Agricultural Entomology | 4 | 120 | 4 |
| 13 | Phytopathology the basics of virology | 4 | 120 | 4 |
| 14 | Basic research in agronomy | 5 | 120 | 4 |
| 15 | Standardization and management of planting products quality | 5 | 120 | 4 |
| 16 | Farm equipment of agricultural production | 2 | 150 | 5 |
| 17 | Agriculture | 3-4 | 180 | 6 |
| 18 | Herbology | 4 | 120 | 4 |
| 19 | Agrochemical chemistry | 4-5 | 180 | 6 |
| 20 | Fruit-growing | 5 | 120 | 4 |
| 21 | Vegetable growing | 5 | 120 | 4 |
| 22 | Plant Growing | 5-7 | 240 | 8 |
| 23 | Field and meadow fodder | 6-7 | 120 | 4 |
| 24 | Breeding and seed growing of crops | 6-7 | 120 | 4 |
| 25 | Technology of storage and processing of plant products | 6-7 | 150 | 5 |
| 26 | Technologies of Protected Cultivated | 4 | 120 | 4 |
| 27 | Seed Studies | 7 | 120 | 4 |
| **Total for standard part** | | | **3840** | **128** |
| **2. ELECTIVE ACADEMIC DISCIPLINES** | | | | |
| **2.1. *Disciplines offered by University*** | | | | |
| 1 | History of Ukrainian statehood | 1 | 120 | 4 |
| 2 | Ethnocultural | 3 | 120 | 4 |
| 3 | Philosophy | 2 | 120 | 4 |
| 4 | Ukrainian for professional purposes | 1 | 120 | 4 |
| 5 | Foreign language (English, German, French, Spanish) | 1-2 | 120 | 4 |
| 6 | Physical training | 1-4 | 120 | 4 |
| 7 | Labour and life safety | 6 | 120 | 4 |
| 8 | Legal culture of personality | 6 | 120 | 4 |
| 9 | Information Technology in the industry | 1 | 120 | 4 |
| **Total (Disciplines offered by University)** | | | **1080** | **36** |
| **2.2. *Disciplines offered by students*** | | | | |
| **2.2.1. *Specialization* "Agronomy"** | | | | |
| 1 | Management in agronomy | 7 | 120 | 4 |
| 2 | Agricultural microbiology | 3 | 120 | 4 |
| 3 | Biotechnology | 8 | 120 | 4 |
| 4 | Fundamentals of crop production commodity | 8 | 120 | 4 |
| 5 | Programming and forecasting crop yields | 8 | 120 | 4 |
| 6 | Agricultural melioration | 8 | 120 | 4 |
| 7 | Industrial crops | 7 | 120 | 4 |
| 8 | Technological quality control crop production | 7 | 120 | 4 |
| 9 | Post-harvest handling and processing of plant products | 8 | 120 | 4 |

| | | | | |
|---|---|---|---|---|
| 10 | Statistical analysis of agronomic research | 8 | 120 | 4 |
| 11 | Rational land use based | 8 | 120 | 4 |
| 12 | Onion phytocoenoses | 8 | 120 | 4 |
| 13 | Breeding and Seed-growing heterosis hybrids | 8 | 120 | 4 |
| **Total for Specialization** | | | **1560** | **52** |
| **2.2.2. *Specialization* "Agrochemistry and Soil Science"** | | | | |
| 1 | Management in agronomy | 7 | 120 | 4 |
| 2 | Agricultural microbiology | 3 | 120 | 4 |
| 3 | Geology and Basics of Geomorphology | 8 | 120 | 4 |
| 4 | Plants biochemistry | 8 | 120 | 4 |
| 5 | Geochemistry | 8 | 120 | 4 |
| 6 | System of fertilizers application | 8 | 120 | 4 |
| 7 | Programming and forecasting crop yields | 8 | 120 | 4 |
| 8 | Soil Mapping | 8 | 120 | 4 |
| 9 | System Protection and Plant Quarantine | 8 | 120 | 4 |
| 10 | The methodology of the agrochemical investigation | 8 | 120 | 4 |
| 11 | Technological quality control crop production | 7 | 120 | 4 |
| 12 | Soil Geography | 7 | 120 | 4 |
| 13 | Soil Conservation | 8 | 120 | 4 |
| **Total for Specialization** | | | **1560** | **52** |
| **2.2.3. *Specialization* "Selection and Genetics of Agricultural Crops"** | | | | |
| 1 | Management in agronomy | 7 | 120 | 4 |
| 2 | Agricultural microbiology | 3 | 120 | 4 |
| 3 | Biotechnology | 8 | 120 | 4 |
| 4 | Fundamentals of crop production commodity | 8 | 120 | 4 |
| 5 | Agricultural melioration | 8 | 120 | 4 |
| 6 | Industrial crops | 7 | 120 | 4 |
| 7 | Special genetic field crops | 7 | 120 | 4 |
| 8 | Special breeding and variety studding crops | 8 | 360 | 12 |
| 9 | Seed-growing of the field crops | 8 | 330 | 11 |
| **Total for Specialization** | | | **1560** | **52** |
| **Total (Disciplines offered by students)** | | | **1560** | **52** |
| **Total for elective part** | | | **2640** | **88** |
| **3. OTHER TYPES OF TRAINING** | | | | |
| 1 | Military training course | | 870 | 29 |
| 2 | Academic Practice | | 270 | 9 |
| 3 | Production Practice | | 300 | 10 |
| **Bachelor Thesis writing (Graduate thesis or Project)** | | | **120** | **4** |
| **State Attestation** | | | **30** | **1** |
| **Total for Specialty (without Military training course)** | | | **7200** | **240** |

## Annotations of disciplines in the curriculum

### 1. Standard academic disciplines

**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 basics of radiobiology.** 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. The course considers the principles of agricultural radiobiology and radioecology; it introduces into the problems of biological impacts of ionizing irradiation,

the 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.

**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.

**Agricultural 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.

**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.

**Agrometeorology.** The discipline program provides for studying of agrometeorological factors influence the performance of agricultural production. The discipline focuses on the modern methods for assessing climate from the standpoint of agricultural production and agro-climatic zoning. The course demonstrates the hazardous weather activity for agriculture and proposes the measures to combat them. The course of discipline provides examples of agro-climatic justification agrotechnical and reclamation activities. The modern and advanced methods of agrometeorological observation and agrometeorological forecasts are considered in the course. In addition, students will understand and analyze the importance agrometeorological ensure of agricultural production.

**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. Knowledge of theoretical bases of soil science enables to understand and grasp problems and prospects of land use. Purpose of the course “Soil Science with the Bases of Geology " is deep cognition and study of the soil cover as environment of agricultural crops growing, and also place of existence of living organisms, study of structure and basic properties of soils, their mineralogical composition, laws of geographical distribution of soils, cognition of natural processes of soil.

**Agricultural pharmacology.** Contents of subject involves the study of pesticides, their production and toxicological-hygienic characteristics, of modern classifications of pesticide, regulations their application.

**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.

**Phytopathology the basics of virology.** Plant pathology studies phytopathology, reasons of their appearance features in development, symtomatology 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. 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.

**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 - practical course dedicated to the study

of methods and algorithms statistical analysis of experimental data, variation, variance, correlation, regression, Pearson analysis, probit analysis.

**Standardization and management of planting products quality.** The course includes the study of the following issues: the goals and objectives of standardization, standardization essence of the science, teaching the basics of standardization, product quality issues, standardization of quality products and the methods of control, international standards. General information on national and international experience in quality management, certification and metrology software. The development of the current requirements for plant products intended for the purpose of producing competitive products. The development of effective measures of quality control in the production of high-quality, environmentally friendly, organic and competitive products. The development of principles and procedures for certification of products for the domestic market and export. Features creation and implementation in production systems ISO 9000 with the following quality management system accreditation. While teaching discipline taken into account existing laws on standardization, certification and safety of plant products.

**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.

**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.

**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, 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.

**Plant growing.** The course forms future specialists with knowledge and skills of technological measures for maximizing the biologica 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 loosing of crop during harvesting, transportation.

**Field and meadow fodder.** The discipline program provides for studying of scientific-grounded system of organization-managemental, biological, technological and economical measures of production, conservation and storage of fodder. The course provides for studying of the system of organization measures and technological methods, aimed to increase natural forage land productivity, creation of sowed hayfields and pastures, and efficient use of them.

**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 course 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 grains, cereals, legumes for the different purpose, fruits, vegetables, potatoes and industrial crops (sugar beet, flax, hops, essential oil plants). The program of discipline provides study keeping capacity (the ability to be stored) harvest yield and its ability to provide certain processed products obtained under favorable growing conditions and unfavorable conditions and how affecting factors of securities, 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 must learn. 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.

**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.

**Seed Studies.** Discipline involves mastering the knowledge of the theoretical and practical principles of forming sowing, yield and varietal qualities. Includes studying of the theoretical foundations of formation, features of passing ontogenesis and organogenesis stages, anatomy, morphology and chemical composition of the seeds, physical and mechanical properties of the seeds and methods for removing seeds from dormancy, energy of germination, vigor of germination, vitality and longevity of seeds, breathing and injuring of seeds. After studying the discipline, student should to know modern cultivation technologies, harvesting, cleaning and storage of high-quality seeds of field crops, national and international legislative and regulatory framework for production, sale and using of seeds, methods for determining sowing qualities of seeds, control inside the farm and state control of seed producing in compliance with the rules at all stages, state inspection of seed studies of cereal crops as a system of producing control, implementation and using of cereal seeds.

## 2. Elective academic disciplines

### *2.1. Disciplines offered by 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", "Legal Personal Culture" see Section 2.1.

**Information technologies in the industry.** In the lecture course, students are introduced to the concepts of information, its properties and use of computers, the principles of input, storage and processing of information, its purpose in the professional activity and life of mankind. The main part of the course is devoted to studying and mastering basic computer technology, which is the most widely used for processing of business information - the study and practical use of text and spreadsheet processes. The development of this technology is carried out in a problematic term, i.e. students not only learn the basics of informatics, and acquire practical skills in computer technology that allows the preparation of agronomic training on international standards.

### *2.2. Disciplines offered by students*

#### *2.2.1. Specialization "Agronomy"*

**Management in agronomy.** 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.

**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 deseases and pests of plant, perspective means of plant protection for graving harvest agricultural crops.

**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.

**Fundamentals of crop production commodity.** The discipline that studies the technological characteristics of different types of commodity crop production, methods of preparation of parties grain various purpose, horticultural, industrial raw materials, processed grains, fruit and vegetables, formatting rules accompanying documents and methodology of consignments of crop production.

**Programming and forecasting crop yields.** The aim is obtaining of high, stable and predictable yields of crops. The solution is possible if are the quantitative determination of the impact of natural, organizational and technological factors on growth, development and formation of plant productivity, establishing degree of ensuring agricultural cultures by these factors in a specific soil and climatic conditions and establishment of necessary resources for their regulation, what is the main task of programming the yields. Soil fertility and yields programming is aimed on organization of agrophytocenoses, as a system for getting maximum productivity of it. Providing the population by crop production will be carried out mainly by the growth of yields, by introduction of scientific and technological achievements in agriculture and plant growing. The set of measures to achieving of this goal incorporate programming course of soil fertility and yields of agricultural crops. It is based on the needing of the plants in essential resources.

**Agricultural melioration.** The discipline introduces students to the technological characteristics of applying hydroengineering, land clearance, chemical, agrotechnical and forest reclamations and forms students' competence in the technology of agricultural production on reclaimed lands. The discipline focuses on the development of new agricultural technology of irrigation (micro-, drip irrigation, etc.), which enables to increase significantly the yield of crops in terms of increasing climate aridity. The discipline ensures the students to obtain the basis of professional knowledge to improve soil productivity as well as preserve soil fertility in different climatic zones of Ukraine.

**Industrial crops.** The course covers the environmental and economic principles of crops accommodation, using, origin, distribution, yield, production volumes. Describes the systematic, morphological, anatomical and biological features of crops; requirements for growing conditions. Shows the essence of adaptive, cost-effective, environmentally safe technologies of each culture in the zonal section; describes its placement in rotation, fertilization system, the system of soil preparation and seed sowing process, control of weeds, diseases and pests, harvesting, primary processing products.

**Technological quality control crop production.** 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, soil fertility, sorts and hybrids features for improving of the quality of crop products according to standards.

**Post-harvest handling and processing of plant products.** The course examines the final course for the "Bachelor". The program includes the study of technology post-harvest handling and preparation plant production to storage, processing or selling. Students study question of assessing the quality of the harvest of agricultural products and organization of the handling yield with the formation of corresponding technological equipment of primary, secondary and special handling.The questions bases of flour production from different types of grains, including soft and hard wheat must be learn. The program also has sections technologies of cereals, pasta, oil and processing of fruits and vegetables (production of canned products, pickling, drying, etc.). Program opens themes processing of raw industrial crops (sugar beet, flax, hops, etc.).

**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.

**Rational land use based.** 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.

**Onion phytocoenoses.** 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.

### *2.2.2. Specialization "Agrochemistry and Soil Science"*

**Management in agronomy.** 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.

**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 deseases and pests of plant, perspective means of plant protection for graving harvest agricultural crops.

**Geology and Basics of Geomorphology.** Geologic conditions determine the origin, evolution and distribution of soil cover. Rocks along with other landscape conditions, including climate and water, determine the type of soil genesis. Geology - the science that studies the composition, structure and history of the Earth and the processes that occur inside and on the surface. The main goal of "Geology and Basics of Geomorphology" course is the study of the material composition of the Earth crust, which is the mineral basis of all soils and subsoils, familiarity with the most important minerals and rocks.

**Plants biochemistry.** The goal of the studding of the theoretical materials and laboratory classes are mastering for bachelor of the agrochemistry and soil science in theoretical knowledge about compositions and structure of the main organic compounds, their functions and their means for crops, the biosynthesis processes and compounds metabolisms, special feature biochemistry of the different crop groups. And, the discipline goal is mastering in practical skills in biochemical crop analyses.

**Geochemistry.** Geochemistry reveals the mechanisms of flow and transformation of certain chemical elements in different environments, including soils, natural waters and atmosphere, depending on existing conditions; and studies laws of biogeochemical cycling of substances in the landscapes. Knowledge of geochemistry is used in the soil survey, soil monitoring, in agrochemical research, development of methods of fertilization and amelioration.

**System of the fertilizers application.** The goal of the studding of the theoretical materials and laboratory classes are mastering for bachelor of the agrochemistry and soil science 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.

**Programming and forecasting crop yields.** The goal of the studding of the theoretical materials and laboratory classes are mastering for bachelor of the agrochemistry and soil science in theoretical knowledge into complex structural generalization of the information about regulated and unregulated factors of the crop growing and making of the models of the crop yield formation and programing of the productivity parameters with creating of the mathematic functional interdependency.

**Soil Mapping.** The main purpose of the subject "Soil Mapping" is research of land surface coverage of the Earth and respective regularities, as well as approaches for required calculations, providing and incorporation of the results to topographic maps. In

the study process students learn the information about topography measures in nature, analyze methods, and construction and application of the soil, ecological, special maps. During the study period students produce a geomorphologic profile of a region, develop legends for the thematic maps, and carry out a map basic for further ecological research purposes.

**System Protection and Plant Quarantine.** Presented by modern methods and technologies for plant protection. The course includes information on specific types of pests and pathogens under different production conditions. Study pest control methods based on the use Entomophages and biologics. As a result, using the acquired knowledge, students will be able to increase crop yields and quality. Modern task of phyto sanitary legislation, procedures and methods of phytosanitary examination, biology and other quarantine pests absent in the country.

**The methodology of the agrochemical investigation.** The goal of the studding of the theoretical materials and laboratory classes are mastering for bachelor of the agrochemistry and soil science in theoretical knowledge into 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, lisymetric 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.

**Technological quality control crop production.** The goal of the studding of the theoretical materials and laboratory classes are mastering for bachelor of the agrochemistry and soil science 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 agroresources in modern crop rotations based on abiotic environmental factors, biotic environmental factors and anthropogenic factors, determination of the nutrients cycle according to crop damands, production damands 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.

**Soil Geography.** The course “Soil Geography” studies the laws of geographical distribution, genesis, description of the main soil types in Ukraine, their physical and chemical properties, morphological description of profiles. The problem of classification and taxonomy of soils is discussed. Soil resources of Polissya, Forest-Steppe, Steppe, Dry Steppe, swampy, waterlogged and saline areas, the Carpathians and the Crimea mountainous regions are described.

**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.

### *2.2.3. Specialization “Selection and Genetics of Agricultural Crops”*

**Management in agronomy.** 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.

**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 deseases and pests of plant, perspective means of plant protection for graving harvest agricultural crops.

**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.

**Fundamentals of crop production commodity.** The discipline that studies the technological characteristics of different types of commodity crop production, methods of preparation of parties grain various purpose, horticultural, industrial raw materials, processed grains, fruit and vegetables, formatting rules accompanying documents and methodology of consignments of crop production.

**Agricultural melioration.** The discipline introduces students to the technological characteristics of applying hydroengineering, land clearance, chemical, agrotechnical and forest reclamations and forms students' competence in the technology of agricultural production on reclaimed lands. The discipline focuses on the development of new agricultural technology of irrigation (micro-, drip irrigation, etc.), which enables to increase significantly the yield of crops in terms of increasing climate aridity. The discipline ensures the students to obtain the basis of professional knowledge to improve soil productivity as well as preserve soil fertility in different climatic zones of Ukraine.

**Industrial crops.** The course covers the environmental and economic principles of crops accommodation, using, origin, distribution, yield, production volumes. Describes the systematic, morphological, anatomical and biological features of crops; requirements for growing conditions. Shows the essence of adaptive, cost-effective, environmentally safe technologies of each culture in the zonal section; describes its placement in rotation, fertilization system, the system of soil preparation and seed sowing process, control of weeds, diseases and pests, harvesting, primary processing products.

**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.

## Bachelors
## field of knowledge "Agricultural science and food"
## in specialty "HORTICULTURE AND VITICULTURE"
## Educational 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. Vyvchennya 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 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 Program «Horticulture and Viticulture»

| № | Name of Academic Discipline | Semester | Number | |
|---|---|---|---|---|
| | | | hours | credits ECTS |
| **1. STANDARD ACADEMIC DISCIPLINES** | | | | |
| 1 | Botany | 1-2 | 150 | 5 |
| 2 | Agrophysics | 2 | 120 | 4 |
| 3 | Chemistry | 1-2 | 180 | 6 |
| 4 | Genetics | 3 | 120 | 4 |
| 5 | Plant physiology | 2 | 120 | 4 |
| 6 | Economics and business, management | 8 | 120 | 4 |
| 7 | Viticulture | 6-7 | 150 | 5 |
| 8 | Agrometeorology | 2 | 120 | 4 |
| 9 | Soil Science with the bases of geology | 3 | 180 | 6 |
| 10 | Ahrofarmacology | 6 | 120 | 4 |
| 11 | Entomology | 5 | 120 | 4 |
| 12 | Phytopathology | 4 | 120 | 4 |
| 13 | Basic research | 6 | 120 | 4 |
| 14 | Standardization and quality control of Horticulture and viticulture | 3 | 120 | 4 |
| 15 | Farm equipment and instruments | 3 | 120 | 4 |
| 16 | Farming | 3 | 150 | 5 |
| 17 | Mushroom growing | 4 | 120 | 4 |
| 18 | Agrochemicals | 5 | 150 | 5 |
| 19 | Fruit-growing | 3-5 | 300 | 10 |
| 20 | Vegetable growing | 4-6 | 270 | 9 |
| 21 | Plant Growing | 4 | 150 | 5 |
| 22 | Selection of vegetable, fruit and berry crops | 6-7 | 120 | 4 |
| 23 | Technology of storage and processing of of fruits and vegetables | 8 | 150 | 5 |
| 24 | Agrochemical service for vegetable growing, horticulture and viticulture | 6 | 120 | 4 |
| 25 | Vegetable growing in Protected Cultivated | 7-8 | 180 | 6 |
| **Total for standard part** | | | **3690** | **123** |
| **2. ELECTIVE ACADEMIC DISCIPLINES** | | | | |
| **2.1. *Disciplines offered by University*** | | | | |
| 1 | History of Ukrainian statehood | 1 | 120 | 4 |
| 2 | Ethnocultural | 1 | 120 | 4 |
| 3 | Philosophy | 1 | 120 | 4 |
| 4 | Ukrainian for professional purposes | 1 | 120 | 4 |
| 5 | Foreign language (English, German, French, Spanish) | 1-2 | 120 | 4 |
| 6 | Physical training | 1-4 | 120 | 4 |
| 7 | Labour and life safety | 2 | 120 | 4 |
| 8 | Legal culture of personality | 8 | 120 | 4 |
| 9 | Information Technology in the industry | 1 | 120 | 4 |
| **Total (Disciplines offered by University)** | | | **1080** | **36** |
| **2.2. *Disciplines offered by students*** | | | | |
| **2.2.1. *Specialization* "Fruit and Vegetable Science and Viticulture"** | | | | |
| 1 | Herbology | 4 | 120 | 4 |
| 2 | Commodity fruits and vegetables | 8 | 120 | 4 |
| 3 | Ampelography | 7 | 120 | 4 |
| 4 | Agricultural microbiology | 2 | 120 | 4 |
| 5 | Biotechnology | 6 | 120 | 4 |
| 6 | Virology | 5 | 120 | 4 |
| 7 | Potato | 7 | 120 | 4 |
| 8 | Ornamental horticulture | 8 | 120 | 4 |

| | | | | |
|---|---|---|---|---|
| 9 | Land reclamation | 8 | 120 | 4 |
| 10 | Nursery | 5 | 120 | 4 |
| 11 | Seeds of vegetable crops | 8 | 120 | 4 |
| 12 | Olegrafia | 7 | 120 | 4 |
| 13 | Pomology | 7 | 120 | 4 |
| 14 | Greenhouses | 5 | 120 | 4 |
| 15 | Beekeeping | 4 | 120 | 4 |
| **Total for Specialization** | | | **1800** | **60** |
| **Total (Disciplines offered by students)** | | | **1800** | **60** |
| **Total for elective part** | | | **2880** | **96** |
| **3. OTHER TYPES OF TRAINING** | | | | |
| 1 | Military training course | | 870 | 29 |
| 2 | Academic Practice | | 180 | 6 |
| 3 | Production Practice | | 300 | 10 |
| **Bachelor Thesis writing (Graduate thesis or Project)** | | | **120** | **4** |
| **State Attestation** | | | **30** | **1** |
| **Total for Specialty (without Military training course)** | | | **7200** | **240** |

## Annotations of disciplines in the curriculum

### 1. Standard academic disciplines

**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 to the genome, cytogenetic aspects of inheritance of genes, changeability, her reasons and consequences, genetic systems of reproduction of plant organisms, genetic mechanisms of firmness of plants against the causative agents of illnesses and vermines, basis of population genetics. Discipline envisages listening of course of lectures, realization of practical employments and solution of tasks from all basic subdivisions from molecular biology to the population.

**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.

**Economics, business and management.** 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.

**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).

**Agricultural meteorology.** Subject program provides for main issues of agricultural meteorology, influence of weather and climate changes on agricultural production objects. They are analyzed dangerous for agriculture weather phenomena, and methods of their controlling.

**Soil Science with the bases of geology.** The course study geological processes that form the the Earth's surface and soil conditions, mineralogical composition of the soil and rocks, the main types of parent rocks, structure, composition, properties and patterns of geographical distribution of soils, ways of their management in fruit plantations, vineyards, berry crops and measures to restore soil fertility. The purpose of discipline is to evaluate the suitability of garden soil, which lays the foundation for the successful modern

gardening soil properties because neglect can occur many years. The study of soil fertility and appraisal in relation to fruit trees is important because technology's impact on the soil in gardening is much more than in agriculture.

**Agricultural pharmacology.** Contents of subject involves the study of pesticides, their production and toxicological-hygienic characteristics, of modern classifications of pesticide, regulations their application.

**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.

**Phytopathology.** Plant pathology studies phytopathology, reasons of their appearance features in development, symtomatology 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.

**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.

**Standardization and quality management horticulture and viticulture**. The course includes the study of the following issues: the goals and objectives of standardization, standardization essence of the science, teaching the basics of standardization, the issue of quality of horticultural products, standardization of quality products and the methods of control, international standards. General information about domestic and foreign experience of produce quality management, certification and metrology software. The development of the current requirements for fruit and vegetable products to the planned production of competitive products. The development of effective actions of product quality management in the production of high-quality, environmentally friendly, organic and competitive products. The development of principles and procedures for certification of products for the domestic market and export. Features creation and implementation in production systems ISO 9000 with the following quality management system accreditation. While teaching discipline taken into account existing laws on standardization, certification and safety of produce.

**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.

**Agriculture.** 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.

**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.

**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 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.

**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.

**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 course is studying the final course for the educational level "Bachelor" when students have learned technology of cultivation of vegetable, fruit and berry crops. The course studies the principles of scientific storage of fruits and vegetables, especially as their storage and processing facilities, the impact factors of cultivation and post harvest handling their quality and keeping quality, suitability for storage forecasting, and various kinds processing. The program provides study the discipline schemes post harvest handling crop grown fruits and vegetables, especially its transport depending on type of transport. will study the technological characteristics temporary, universal and specialized storages, especially the placement of their fruits and vegetables for short-term or long-term storage. Will be considered effective regimes and methods storage different kinds of fruits and vegetables, the ability to establish and maintain optimum parameters in storage regime types. Peculiarities storage of fruits, vegetables and berries in the conditions regulated and modified atmosphere. Ways to create a modified atmosphere and means to maintain optimal gas in storage environment. Assessment of quality of fruits and vegetables after storage, to prevent losses in quantity and quality. A separate module provides the study of modern technologies of fruit and vegetables. Requirements for study materials intended for processing. Students consider microbiological, physical, chemical preservation methods. Features making fermented, dried and frozen products from fruits and vegetables, natural canned vegetables, fruit and berry compote, getting juices, purees, jams and more. Basic processing potato. Assessment of quality of canned fruits and vegetables. Accounting, quality control and storage of finished products.

**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.

**Vegetable growing in 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.

## 2. Elective academic disciplines

### *2.1. Disciplines offered by 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”, “Legal Personal Culture” see Section 2.1.

**Information technology in the industry.** In the lecture course, students are introduced to the concepts of information, its properties and use of computers, the principles of input, storage and processing of information, its purpose in the professional activity and life of mankind. The main part of the course is devoted to studying and mastering basic computer technology, which is the most widely used for processing of business information - the study and practical use of text and spreadsheet processes. The development of this technology is carried out in a problematic term, i.e. students not only learn the basics of informatics, and acquire practical skills in computer technology that allows the preparation of agronomic training on international standards.

### *2.2. Disciplines offered by students*

#### *2.2.1. Specialization* “Fruit and Vegetable Science and Viticulture”

**Herbology.** 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 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.

**Commodity fruits and vegetables.** The discipline that studies the commodity characteristics of different types of fruits and vegetables and processed products, methods of preparation for the implementation of the parties of fruits and vegetables rules of accompanying documents and assessment methodology marketable quality.

**Ampelography.** He studies the types and grape varieties, patterns of morphological variability, agrobiological and economic and technological properties by the environment and humans. Ampelography divided into general and partial. Total ampelography studying the taxonomy, classification and origin of the grapes. Partial studies ampelography some varieties gives them a botanical description, agrobiological and economic and technological characteristics and methods of determination. Ampelography helps determine varietal grapes fund, issues zoning and specialization varietal wine, grape

promoting culture in new regions, selection and use grades as a starting material in the selection process, the maintenance of varietal farming.

**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 deseases and pests of plant, perspective means of plant protection for graving harvest agricultural crops.

**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.

**Virology.** 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.

**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.

**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.

**Land reclamation.** The program of the course aims at familiarizing students with different types of reclamation activity as a set of measures for the comprehensive improvement of adverse environmental conditions. The main focus in the course of discipline study is given to the opportunities and technological characteristics of the innovations in land reclamation, namely micro-irrigation, fertigation, etc. These elements of agricultural technology are an important component of obtaining high-quality fruits and vegetables, both in open and protected ground. Learning the discipline enables the students to gain a professional competence in the correct adaptation of modern reclamation measures in the scientifically grounded system of horticulture, vegetable growing and viticulture.

**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.

**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.

**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 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.

**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.

**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.

**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.

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

**Dean** - doctor in agricultural sciences, professor, academician of the NAAS of Ukraine **M.M. Dolya**

Tel.: (044) 527-86-99 E-mail: zr_eco_bio_dep@i.ua
Location: Building № 4, Room 42

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

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

Educational 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. Peresypkin
Tel.: (044) 527-82-11, E-mail: lkriuchkova@nubip.edu.ua
Head of the department – Doctor of Biological Sciences, Professor L. O. Kryuchkova

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 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 Program **«Ecology»**

Graduating department:

Department of Agricultural Sphere Ecology and Ecological Control
Tel.: (044) 527-81-95, E-mail: eco_dep@gmail.com
Head of the department – Doctor of Agricultural Sciences, Professor V. M. Chaika

**Bachelor**
**field of knowledge "Agricultural science and food"**
**In specialty "PLANT PROTECTION AND PLANT QUARANTINE"**
**Educational 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 Inspector |

## 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", "Velykosnytinske 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 Educational programs 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 Program «Plant Protection and Plant Quarantine»

| № | Name of Academic Discipline | Semester | Number | |
|---|---|---|---|---|
| | | | hours | credits ECTS |
| **1. STANDARD ACADEMIC DISCIPLINES** | | | | |
| 1 | Botany | 1 | 90 | 3 |
| 2 | Higher mathematics (professional orientation) | 1 | 90 | 3 |
| 3 | Fundamentals of computer science | 2 | 90 | 3 |
| 4 | General microbiology | 3 | 90 | 3 |
| 5 | Biophysics | 1 | 90 | 3 |
| 6 | Inorganic and analytical chemistry | 1 | 180 | 6 |
| 7 | Organic chemistry | 2 | 90 | 3 |
| 8 | Physical and colloidal chemistry | 3 | 90 | 3 |
| 9 | Plants Physiology with the bases of chemistry | 4 | 90 | 3 |
| 10 | Ecology | 3 | 90 | 3 |
| 11 | Genetics | 2 | 60 | 2 |
| 12 | Farming | 4 | 90 | 3 |
| 13 | Soil science with the bases of geology | 3 | 90 | 3 |
| 14 | Agricultural chemistry | 5 | 90 | 3 |
| 15 | Crop production with basics of fodder production | 5 | 120 | 4 |
| 16 | Selection and seed farming | 6 | 60 | 2 |
| 17 | Economics and business management | 7 | 120 | 4 |
| 18 | Fundamentals of scientific research in plant protection | 4 | 90 | 3 |
| 19 | Mechanization, electrification and automation of agricultural production | 3 | 120 | 4 |
| 20 | Technology of storage and processing of crop production products | 7 | 90 | 3 |
| 21 | Vegetable growing | 4 | 90 | 3 |
| 22 | Fruit growing | 4 | 90 | 3 |
| 23 | General entomology | 5-6 | 150 | 5 |
| 24 | General plant pathology | 5-6 | 150 | 5 |
| 25 | General mycology | 3-4 | 150 | 5 |
| 26 | Quarantine of plants | 7 | 120 | 4 |
| 27 | Rodentology | 7 | 90 | 3 |
| 28 | Agricultural entomology | 7-8 | 180 | 6 |
| 29 | Agricultural plant pathology | 7-8 | 180 | 6 |
| 30 | Plant disease prognosis | 5 | 90 | 3 |
| 31 | Pest monitoring | 3-4 | 90 | 3 |
| 32 | Herbology. | 6 | 90 | 3 |
| 33 | Plant immunity. | 7 | 90 | 3 |
| 34 | Chemical protection with the bases of toxicology | 6 | 150 | 5 |
| 35 | “Agricultural Meteorology | 5 | 90 | 3 |
| **Total for standard part** | | | **3720** | **124** |
| **2. ELECTIVE ACADEMIC DISCIPLINES** | | | | |
| **2.1. *Disciplines offered by University*** | | | | |
| 1 | History of Ukraine Statehood | 1 | 90 | 3 |
| 2 | Etnocultural | 2 | 90 | 3 |
| 3 | Philosophy | 2 | 120 | 4 |
| 4 | Ukrainian for professional purposes | 2 | 120 | 4 |
| 5 | Foreign language (English, German, French, Spanish) | 1-2 | 150 | 5 |
| 6 | Physical training | 1-4 | 180 | 6 |
| 7 | Labour and life safety | 3 | 90 | 3 |
| 8 | Legal culture of personality | 6 | 90 | 3 |
| 9 | Fundamentals of biotechnology in plant protection | 4 | 120 | 4 |
| 10 | Biological protecting of plants from wreckers | 8 | 120 | 4 |
| 11 | Standardization and quality management of plant products | 5 | 120 | 4 |
| 12 | Protecting of field-protection forest bar from pests | 8 | 120 | 4 |

| | | | | |
|---|---|---|---|---|
| 13 | Diseases of forest field stands | 8 | 120 | 4 |
| 14 | Protection of ornamental and flower plants from pests | 8 | 120 | 4 |
| 15 | Diseases of decorative and floral plants | 8 | 120 | 4 |
| 16 | Mites and Nematodes, | 6 | 120 | 4 |
| **Total (Disciplines offered by University)** | | | **1890** | **63** |
| ***2.2. Disciplines offered by students*** | | | | |
| 1 | Latin | 2 | 120 | 4 |
| 2 | Theoretical foundations biomethod | 5 | 120 | 3 |
| 3 | Agricultural zoology | 6 | 180 | 6 |
| 4 | Beekeeping | 6 | 180 | 6 |
| 5 | Diseases of medicinal plants | 8 | 120 | 4 |
| 6 | Diseases of edible mushrooms. | 8 | 120 | 4 |
| 7 | Protection edible mushrooms from pests | 8 | 120 | 4 |
| **Total (Disciplines offered by students)** | | | **960** | **32** |
| **Total for elective part** | | | **2730** | **95** |
| **3. OTHER TYPES OF TRAINING** | | | | |
| 1 | Military training course | 5-8 | 870 | 29 |
| 2 | Academic Practice | 2,4,6 | 360 | 12 |
| 3 | Production Practice | 6 | 150 | 5 |
| **Bachelor Thesis writing (Graduate thesis or Project)** | | | 60 | 2 |
| **State Attestation** | | | 60 | 2 |
| **Total for Specialty (without Military training course)** | | | **7200** | **240** |

## Annotations of disciplines in the curriculum

### 1. Standard academic disciplines

**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.

**Further Mathematics.** 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.

**General Microbiology.** 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.

**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.

**Inorganic and analytical 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.

**Organic Chemistry.** 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 Colloidal Chemistry.** 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.

**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.

**Ecology.** Ecology science. Definition. Structure. Definition of biosphere. Ecosystem and biogeocoenosis. Circling of matter. Ecological pyramids. Notion and classification of pollution. Entropy. Populations. Contamination of environment: acid rains, greenhouse effect, influence forest ecosystems. Nature protection by reserving.

**Genetics.** 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.

**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.

**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.

**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 agriecological 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.

**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.

**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.

**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 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, electrification and automation of agricultural 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.

**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.

**Fruit growing.** 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 harvesting crops, biological peculiarities and technologies of small fruit crops growing.

**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.

**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

**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.

**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).

**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.

**Herbology.** 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.

**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.

**Agricultural Meteorology** Subject program provides for main issues of agricultural meteorology, influence of weather and climate changes on agricultural production objects. They are analyzed dangerous for agriculture weather phenomena, and methods of their controlling.

## 2. Elective academic disciplines

### *2.1. Disciplines offered by University*

Annotations of disciplines “History of Ukraine 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.

**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.

**Standardization and quality management of plant products.** The discipline provides students with knowledge of theoretical basis of standardization in Ukraine, basis of quality management, methods of plant product control, norms of plant product quality and basis of product certification.

**Protecting of field-protection forest bars from pests.** It is a section of scientific knowledge about the forest insects as of important part of forest agrobiocoenosises and adjusting of their quantity by modern measures and facilities with the purpose of increase of firmness and productivity of planting.

**Diseases of forest field stands.** The program involves the study of diseases of tree and shrub species, main pathogens, the conditions of its development and methods of protection from them. Study diagnostics, biological and morphological features of pathogens forest plantations, allow justifying measures limiting of their development.

**Protection of ornamental and flower plants from pests** involves learning the principles of phytodesign compositions with decorative and flowering plants in natural and anthropo-natural, landscape and cultural phytoncides and greenhouse, justify their role in natural regulatory mechanisms and cleaning environment from the adverse factors.

**Diseases of decorative and floral plants.** Educational discipline “Diseases of decorative and floral plants” acquires students with species composition agents of floral and decorative plant diseases; visual symptoms of display of floral and decorative plants diseases; bioecological features of pathogens; influence of environment conditions on the processes of development of floral and decorative plants diseases; modern methods and methods of protection from floral and decorative plants diseases.

**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.

### *2.2. Disciplines offered by students*

**Latin.** The main objective of the course at the faculty of Plant Protection is to teach students of Latin terminology, operating in botany, plant pathology and zoology, open access to a free and conscious perception of biological nomenclature, which is an essential element in the formation of high-grade specialist in agro-profile.

**Theoretical Foundations biometodu.** Probe diagnostic features of different groups of organisms used in biological plant protection, their relationship and role in reducing the number of malicious sites. The problems of application of various biological agents to protect plants from harmful organisms, including microbiological preparations mass breeding of insects and mites in biolaboratoriyah, use BAR, and a combination of biological method with other methods of plant protection.

**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.

**Beekeeping.** Preparation of highly qualified specialists in the field of plant based on modern achievements of a number of special subjects. The introduction of modern technology in beekeeping cannot successfully take place without increasing the overall culture of Beekeeping Livestock. Get high productivity of bee colonies is only possible through the introduction of technological methods of keeping and breeding, which should be based on a high genetic potential, the optimal conditions for growth and development of bees, compliance with sanitary rules and regulations.

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

**Diseases of edible mushrooms.** 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.

**Bachelor**
**field of knowledge "Chemical and Bioengineering"**
**in specialty BIOTECHNOLOGY AND BIOENGINEERING"**
**Educational 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, specialist of biotechnology |

## 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 Educational programs 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.

# Bachelor`s Program and Curriculum
# in Specialty «Biotechnology and Bioengineering»
# Educational Program «Biotechnology and Bioengineering»

| № | Name of Academic Discipline | Semester | Number | |
|---|---|---|---|---|
| | | | hours | credits ECTS |
| **1. STANDARD ACADEMIC DISCIPLINES** | | | | |
| 1 | Political Science | 6 | 90 | 3 |
| 2 | Higher Mathematics | 1 | 210 | 7 |
| 3 | Physics | 1 | 210 | 7 |
| 4 | General and Inorganic Chemistry | 2 | 180 | 6 |
| 5 | Organic Chemistry | 3 | 180 | 6 |
| 6 | Analytical Chemistry | 3 | 180 | 6 |
| 7 | Physical and Colloid Chemistry | 4-5 | 210 | 7 |
| 8 | Biochemistry | 5 | 210 | 7 |
| 9 | Engineering and Computer Graphics | 2 | 90 | 3 |
| 10 | Computational Mathematics and Programming | 1 | 90 | 3 |
| 11 | Ecology | 2 | 60 | 2 |
| 12 | Cell biology | 3-4 | 150 | 5 |
| 13 | General Microbiology and Virology | 2-3 | 240 | 8 |
| 14 | General Biotechnology | 1 | 240 | 8 |
| 15 | Genetics | 2-3 | 240 | 8 |
| 16 | Biotechnological processes and equipment manufacturing | 4-5 | 270 | 9 |
| 17 | Electrical and electronics base | 4 | 120 | 4 |
| 18 | Automation biotech industries | 7 | 120 | 4 |
| 19 | Regulatory support biotech industries | 3 | 150 | 5 |
| 20 | Fundamentals of designing | 6 | 150 | 5 |
| 21 | Economics and Organization biotech industries | 8 | 120 | 4 |
| **Total for standard part** | | | **3510** | **117** |
| **2. ELECTIVE ACADEMIC DISCIPLINES** | | | | |
| **2.1. *Disciplines offered by University*** | | | | |
| 1 | History of Ukraine Statehood | 2 | 90 | 3 |
| 2 | Etnocultural | 1 | 90 | 3 |
| 3 | Philosophy | 4 | 120 | 4 |
| 4 | Ukrainian for professional purposes | 1 | 120 | 4 |
| 5 | Foreign language (English, German, French, Spanish) | 1-4 | 150 | 5 |
| 6 | Physical training | 1-5 | 120 | 4 |
| 7 | Labour and life safety | 5-6 | 120 | 4 |
| 8 | Legal culture of personality | 4 | 90 | 3 |
| 9 | Instrumental methods of analysis | 4 | 90 | 3 |
| 10 | Biology (Zoology) | 4 | 60 | 2 |
| 11 | Computer technology and programming fundamentals | 8 | 90 | 3 |
| 12 | Radiobiology and radioecology | 5-6 | 90 | 3 |
| 13 | Basics of biodiversity | 3 | 90 | 3 |
| 14 | Proteomics and genomics viruses | 5 | 90 | 3 |
| 15 | Biosafety (the use of biotechnology) | 5 | 90 | 3 |
| 16 | Plant physiology | 6 | 120 | 4 |
| 17 | Industrial biotechnology | 6 | 120 | 4 |
| 18 | Applied ecology | 6 | 90 | 3 |
| 19 | Bioengineering | 7 | 90 | 3 |
| 20 | Introduction to the profession | 7 | 90 | 3 |
| 21 | Immunogenetics | 7 | 60 | 2 |
| 22 | Molecular biothechnology | 8 | 120 | 4 |
| 23 | Biotechnology of microbial synthesis of drugs | 5 | 90 | 3 |
| 24 | Biotechnology of production of microbial products for agriculture | 6 | 90 | 3 |
| 25 | Ecologycal biotechnology | 7 | 120 | 4 |
| 26 | Objects of biotechnological production | 4 | 90 | 3 |
| **Total (Disciplines offered by University)** | | | **2580** | **86** |

| | | | | |
|---|---|---|---|---|
| **2.2. *Disciplines offered by students*** | | | | |
| **2.2.1. *Specialization "Environmental biotechnology"*** | | | | |
| 1 | Environmental toxicology | 7 | 120 | 4 |
| 2 | Bioenergy systems in agrarian production | 7 | 120 | 4 |
| 3 | Technologies of bioproduction | 8 | 120 | 4 |
| 4 | Fundamentals of plant biotechnology | 7 | 120 | 4 |
| 5 | Bioconversion of waste | 7 | 120 | 4 |
| **Total for Specialization** | | | **600** | **20** |
| **2.2.2. *Specialization "Agricultural biotechnology"*** | | | | |
| 1 | Environmental security in agriculture | 7 | 120 | 4 |
| 2 | GIT and environmental display | 7 | 120 | 4 |
| 3 | Agricultural biotechnology | 8 | 120 | 4 |
| 4 | Biomethods of plant protection | 8 | 120 | 4 |
| 5 | Biotechnological processes of agritechnologies | 7 | 120 | 4 |
| **Total for Specialization** | | | **600** | **20** |
| **Total (Disciplines offered by students)** | | | **600** | **20** |
| **Total for elective part** | | | **3090** | **103** |
| **3. OTHER TYPES OF TRAINING** | | | | |
| 1 | Military training course | 5-8 | 870 | 29 |
| 2 | Academic Practice | 2,4,6 | 300 | 10 |
| 3 | Production Practice | 6 | 60 | 2 |
| **Bachelor Thesis writing (Graduate thesis or Project)** | | | **60** | **2** |
| **State Attestation** | | | **60** | **2** |
| **Total for Specialty (without Military training course)** | | | **7200** | **240** |

## Annotations of disciplines in the curriculum

### 1. Standard academic disciplines

**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.

**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 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.

**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.

**Numerical analysis 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.

**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.

**Electrical engineering and electronics basics**. Learning the basics of electrical engineering, which are necessary for in-depth study of electric drives and controls workflow in biotechnology in agriculture.

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

**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.

## 2. Elective academic disciplines

### *2.1. Disciplines offered by University*

Annotations of disciplines “History of Ukraine 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.

**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.

**Biology (Zoology).** Students gain competence in the basics of taxonomy and faunal diversity of the functioning of individual systems and whole animal organism, the origin and evolution of the major types of wildlife, routes and destinations animal adaptations to living in a changing habitat.

**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.

**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.

**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.

**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.

**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.

**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.

**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.

**Immunegenetics.** We study the basic concepts and theoretical foundations of current regulations and laws immunegenetics, 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.

**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

**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 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.

**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 discussesed in the course of discipline "Ecobiotechnology".

**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.

### *2.2. Disciplines offered by students*

#### *2.2.1. Specialization «Environmental biotechnology»*

**Environmental Toxicology**.Exploring sources of ecotoxins and their behavior in abiotic components of ecosystems, bioavailability, metabolism and bioaccumulation in living organisms, toxic effects ekotoxins and products of their transformation on the ecosystem. Study of Environmental Toxicology, is to capture the essence of theoretical knowledge about the science of poisons, as well as practical skills of action and means of preventing adverse effects of toxicants on ecosystems and humans.

**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 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.)

#### *2.2.2. Specialization «Agricultural biotechnology»*

**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.

**Terrestrial ecosystems and biomonitoring methods.** Generates specific knowledge about the diversity of terrestrial ecosystems at various levels of the organization, diversity and similarity of functional relationships in ecosystems on different continents, and introduces the typical forms of anthropogenic transformation of terrestrial ecosystems and the possibility of using biomonitoring methods for their study and environmental control. Future specialists acquire basic theoretical principles and practical skills on the structure and functioning biocenotic land cover on Earth, which is the main habitat of man. In general, the course includes three sections: general understanding of terrestrial ecosystems and their components, natural terrestrial ecosystems in the world (major biomes of the world) and ecosystem Ukraine and biomonitoring methods in the study of man-land ecosystems.

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

**Biomethods 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 conditionsarea, 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.

**Bachelor**
**field of knowledge "Natural Sciences"**
**in specialty "ECOLOGY"**
**Educational 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 |

## 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 research-and-development farms Separated subdivision of NULES of Ukraine "Velykosnytinske Education and Research Farm named after O.Muzychenko", "Agronomic Research Station" and 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, "Svitanok-agrosvit" LLC, Ukrainian State Science and Research Institute "Resurs", Scientific and Productive company "Agroecosystema LTD" LLC.

## Proposed Topics for Bachelor theses

1. Environmental Assessment of crop production technology.
2. Environmental analyses of hydrologic systems function compatibility.
3. Health-related monitoring and ecological certification of safe water-source supply.

**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

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 Program "Ecology"

| № | Name of Academic Discipline | Semester | Number | |
|---|---|---|---|---|
| | | | hours | credits ECTS |
| **1. STANDARD ACADEMIC DISCIPLINES** | | | | |
| 1 | Mathematical physics | 1-2 | 240 | 8 |
| 2 | Informatics and Systematology | 3-4 | 90 | 3 |
| 3 | General Ecology (neoecology) | 3-4 | 180 | 6 |
| 4 | Chemistry and Fundamentals of Biochemistry | 7 | 150 | 5 |
| 5 | Biology | 2 | 180 | 6 |
| 6 | Hydrology | 2 | 90 | 3 |
| 7 | Geology with Fundamentals of Geomorphology | 3 | 90 | 3 |
| 8 | Meteorology and Climatology | 1 | 90 | 3 |
| 9 | Introduction to Specialty | 6 | 90 | 3 |
| 10 | Wildness protection | 5 | 90 | 3 |
| 11 | Landscape Ecology | 4 | 90 | 3 |
| 12 | Techno ecology | 5 | 120 | 4 |
| 13 | Ecological Compliance | 5 | 120 | 4 |
| 14 | Human Ecology | 4 | 90 | 3 |
| 15 | Environmental monitoring | 6 | 180 | 6 |
| 16 | Environmental legislation and environmental law | 8 | 120 | 4 |
| 17 | Regulatory Actions Anthropogenic Load upon Environment | 4 | 150 | 5 |
| 18 | Economics of Nature Management | 7 | 90 | 3 |
| 19 | Ecology of Urban Systems | 7 | 120 | 4 |
| 20 | Modeling and Environment State Forecasting | 5,8 | 240 | 8 |
| 21 | Environmental Assessment | 4 | 90 | 3 |
| 22 | International environmental policy | 4 | 120 | 4 |
| 23 | Organization and management in environmental activities | 5 | 180 | 6 |
| **Total for standard part** | | | **3000** | **100** |
| **2. ELECTIVE ACADEMIC DISCIPLINES** | | | | |
| **2.1. *Disciplines offered by University*** | | | | |
| 1 | History of Ukraine Statehood and Etnocultural | 1 | 150 | 5 |
| 2 | Philosophy | 5 | 90 | 3 |
| 3 | Ukrainian for professional purposes | 1 | 90 | 3 |
| 4 | Foreign language (English, German, French, Spanish) | 1-6 | 240 | 8 |
| 5 | Physical training | 1-4 | 180 | 6 |
| 6 | Labour and life safety | 3 | 90 | 3 |
| 7 | Fundamentals of environmental education and culture | 3 | 90 | 3 |
| 8 | Scientific Activities Fundamentals | 7 | 90 | 3 |
| 9 | Ecology of Biological Systems | 5 | 150 | 5 |
| 10 | Environmental Protection | 7-8 | 120 | 4 |
| 11 | Sustainable Nature Management: | 7-8 | 180 | 6 |
| 12 | Agro ecology | 6 | 150 | 5 |
| 13 | Ecotoxicology | 7 | 120 | 4 |
| 14 | Environmental Biotechnology | 7 | 90 | 3 |
| 15 | Agricultural Products Quality Management | 8 | 60 | 2 |
| 16 | Chemistry (inorganic and bioorganic) | 1 | 150 | 5 |
| 17 | Chemistry (organic and bioorganic, physical and colloidal) | 2 | 150 | 5 |
| 18 | Chemistry (analytical) | 4 | 150 | 5 |
| 19 | Radiobiology and Radioecology | 5 | 90 | 3 |
| 20 | Topographies with Cartography Fundamentals | 4 | 180 | 6 |
| 21 | Psychology and pedagogy | 3 | 120 | 4 |
| **Total (Disciplines offered by University)** | | | **2730** | **91** |

| | | | | |
|---|---|---|---|---|
| **2.2. *Disciplines offered by students*** | | | | |
| **2.2.1. *Specialization* «Ecological Agricultural sphere»** | | | | |
| 1 | Environmental Protection Agricultural Ecosystem | 8 | 150 | 5 |
| 2 | Ecological Farming | 8 | 120 | 4 |
| 3 | Land Improvement | 8 | 90 | 3 |
| 4 | Agricultural Chemistry | 8 | 180 | 6 |
| **Total for Specialization** | | | **540** | **18** |
| **2.2.2. *Specialization "Ecological problems of rural agglomerations"*** | | | | |
| 1 | Recreational potential of agrolandscapes of Ukraine | 7 | 150 | 5 |
| 2 | Balanced development of rural areas | 8 | 120 | 4 |
| 3 | Social Ecology | 8 | 90 | 3 |
| 4 | Ecological safety of residential and industrial areas | 6 | 180 | 6 |
| **Total for Specialization** | | | **540** | **18** |
| **Total (Disciplines offered by students)** | | | **540** | **18** |
| **Total for elective part** | | | **3270** | **109** |
| **3. OTHER TYPES OF TRAINING** | | | | |
| 1 | Military training course | 5-8 | 360 | 12 |
| 2 | Academic Practice | 2,4,6 | 330 | 11 |
| 3 | Production Practice | 4,6 | 360 | 12 |
| **Bachelor Thesis writing (Graduate thesis or Project)** | | | **60** | **2** |
| **State Attestation** | | | **180** | **6** |
| **Total for Specialty (without Military training course)** | | | **7200** | **240** |

## Annotations of disciplines in the curriculum

### 1. Standard academic disciplines

**Mathematical 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.

**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.

**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.

**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.

**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.

**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.

**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.

**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.

**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.

**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.

**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.

**Techno Ecology.** 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.

**Ecological Compliance**. Generates knowledge on fundamental and applied aspects of ecological safety of environment and skills for using techniques and methodologies to assess the environmental impact, the risks of disasters, processing, analyzing, organizing and summarizing information on environmental safety.

**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.

**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 agrocenosises, skills and abilities of environmental-monitoring reclamation of irrigated and drained lands, to determine the extent of disease assessment.

**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

**Regulatory Actions Antropogenic 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.

**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.

**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 Assessment** Provides knowledge about the normative and legislative basis of ecological-expert activity, general requirements for carrying out ecological examination, peculiarities of conducting geoecological 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 geoecological expertise; students acquire the skills: to conduct an ecological examination of technologies, raw materials and products.

**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 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.

## 2. Elective academic disciplines

### *2.1. Disciplines offered by University*

Annotations of disciplines “History of Ukraine 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.

**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.

**Fundamentals of scientific activity**. 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.

**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.** Provides acquisition of knowledge and professional abilities and skills of basic and applied ecology, environmental protection (in various industries) skills to solve environmental challenges by selecting the application of environmental scientific research and expert control methods of environmental forecasting, of the environment condition design, environmental control, monitoring, certification, auditing, assessment and inspection of various components of the environment, predict, prevent and eliminate environmental risks and hazards at local, regional, national and global levels.

**Sustainable nature management**. 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.

**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.

**Environmental biotechnology**. Generates knowledge about biotransformation, biodegradation and bioavailability of the major biochemical pathways of microbiological transformation of organic xenobiotics, genetic basis for the creation of recombinant microorganisms, skills and abilities for the biological removal of heavy metals and radionuclides, making phytoremediation, biological purification and deodorization gas-emission of microbial processing of organic waste.

**Agricultural Products Quality Managment**. 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.

**Chemistry (inorganic and bioorganic).** The program includes theoretical positions of modern inorganic chemistry and peculiarities of chemistry of biogenic elements, such as Hydrogen, Halogens, Oxygen, Sulfur, Nitrogene, Fluor, Carbon, metals. Chemical processes involving these elements and their compounds are considered from the standpoint of electrolytic dissociation, hydrolysis, ocean-bearing processes and the possibility of formation of complex compounds. The main classes of inorganic compounds are considered: oxides, hydroxides, acids, salts.

**Chemistry (organic and bioorganic, physical and colloidal).** 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.

**Chemistry (analytical).** Includes the basics of qualitative and quantitative chemical analysis. Quantitative methods of gravimetry, acid-base titration, redoximetry, complexometry are considered.

**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.

## *2.2. Disciplines offered by students*

### *2.2.1. Specialization «Ecology of agrosphere»*

**Ecological Protection of agroecosystems**. Generates knowledge about the structure and functioning of agricultural ecosystems, methods for optimizing agricultural landscapes, forecasts of crop diseases in agrocenosises, the ability to identify and take records of pests and diseases, to predict their development, optimizing agricultural landscapes based on contour reclamation of agricultural areas.

**Ecological farming** Involves the study of the specificity of formation and functioning of agroecosystems, key anthropogenic factors that affect the environmental sustainability of agro-landscapes, their performance and ways to improve the ecological basis of the principles of ecological basic technological units receiving agricultural products and raw materials. To be able to develop projects of rotation for a particular sector, their development plans, identify common weed species in Ukraine, which vegetate and seed germination make predictions weeds and develop a system of integrated resource-saving protection against them.

**Land Improvement** Provides knowledge on the patterns of placement and development of various activities aimed at radically improving the natural environment; skills and habits of environmental assessment of methods and techniques of land reclamation, determination of expediency and efficiency of reclamation and their complexes in different natural zones, forecasting the development of land reclamation complexes in the territorial and temporal aspects.

**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.

### *2.2.2. Specialization "Ecological problems of rural agglomerations"*

**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.

**Balanced development of rural areas.** 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.

**Social Ecology.** 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.

**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 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.

## 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 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 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 Povoznikov, 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: zasukha_y_u@ukr.net
Head of Department - Yuri Zasuha, Professor, Doctor of Agricultural Science.

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

| | |
|---|---|
| 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 "Kyyivrybhosp", 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 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 Program «Water Bioresources and Aquaculture»

| № | Name of Academic Discipline | Semester | Number | |
|---|---|---|---|---|
| | | | hours | credits ECTS |
| **1. STANDARD ACADEMIC DISCIPLINES** | | | | |
| 1 | Introduction to core professional course | 1 | 90 | 3 |
| 2 | Chemistry | 1 | 150 | 5 |
| 3 | Zoology | 1, 2 | 270 | 9 |
| 4 | Hydrochemistry | 2 | 150 | 5 |
| 5 | Hydrobiology | 2, 3, 4 | 330 | 12 |
| 6 | Ontogeny of fish | 2 | 120 | 4 |
| 7 | Hydrology and meteorology | 3 | 120 | 4 |
| 8 | Physiology and Biochemistry of fish | 3, 4 | 240 | 8 |
| 9 | Fish anatomy | 3 | 120 | 4 |
| 10 | Fish genetics | 3 | 120 | 4 |
| 11 | Ichthyology | 4, 5 | 270 | 8 |
| 12 | Hydroecology | 4 | 150 | 5 |
| 13 | Fishing | 5, 6 | 180 | 6 |
| 14 | Ichthyopathology | 5, 6 | 210 | 7 |
| 15 | Cultivation and breeding of fish | 5, 6 | 180 | 6 |
| 16 | Hydroengineering and designing of fish-breeding enterprises | 5 | 120 | 4 |
| 17 | Aquatic toxicology | 5 | 120 | 4 |
| 18 | Feeding of fish | 6 | 150 | 5 |
| 19 | Biological basis of fish farming | 6 | 120 | 4 |
| 20 | Aquaculture of natural reservoirs | 7, 8 | 210 | 7 |
| 21 | Aquaculture of artificial reservoirs | 7, 8 | 300 | 10 |
| 22 | Fish processing technology | 7 | 120 | 4 |
| 23 | Economics of fishery enterprises | 8 | 180 | 6 |
| **Total for standard part** | | | **3900** | **130** |
| **2. ELECTIVE ACADEMIC DISCIPLINES** | | | | |
| **2.1. *Disciplines offered by University*** | | | | |
| 1 | The history of Ukrainian statehood | | | |
| 2 | Ethno culturology | | | |
| 3 | Philosophy | | | |
| 4 | Ukrainian language for professionals | | | |
| 5 | Foreign language | 3 | 120 | 4 |
| 6 | Physical education | 3 | 90 | 3 |
| 7 | Life and work safety | 6 | 150 | 5 |
| 8 | Personality's legal awareness | | | |
| **Total (Disciplines offered by University)** | | | **1380** | **46** |
| **2.2. *Disciplines offered by students*** | | | | |
| 1 | Latin | 1 | 90 | 3 |
| 2 | Mathematical Methods in Biology | 2 | 150 | 5 |
| 3 | Biophysics aquatic | 2 | 150 | 5 |
| 4 | Aquatic microbiology | 3 | 120 | 4 |
| 5 | Fundamentals of fishery protection | 4 | 120 | 4 |
| 6 | Bioresources of hydrosphere and their use | 5 | 120 | 4 |
| 7 | Raw material of fishery | 6 | 120 | 4 |
| 8 | Technical equipment in fish farming | 6 | 120 | 4 |
| 9 | Research methodology in fish farming | 7 | 120 | 4 |
| 10 | Acclimatization of hydrobionts | 7 | 90 | 3 |
| 11 | Pedagogics | 7 | 90 | 3 |
| 12 | Foundations of aquarium study | 7 | 90 | 3 |
| 13 | Principals of livestock farming | 8 | 120 | 4 |
| 14 | Fishery laws | 8 | 120 | 4 |
| **Total (Disciplines offered by students)** | | | **1620** | **54** |

| | | | | |
|---|---|---|---|---|
| **Total for elective part** | | | **2520** | **84** |
| **3. OTHER TYPES OF TRAINING** | | | | |
| 1 | Military training course | 5, 6 | **690** | **23** |
| 2 | Academic Practice | 2, 4 | **480** | **16** |
| 4 | Production Practice | 6 | **240** | **8** |
| **State Attestation** | | | **60** | **2** |
| **Total for Specialty (without Military training course)** | | | **7200** | **240** |

## Annotations of disciplines in the curriculum

### 1. Standard academic disciplines

**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.

**Chemistry.** This is a fundamental discipline of natural science taught to students with major in “Water Bioresources”. It provides a theoretical basis for studying fish physiology, biochemistry, aquatic, feeding fish, fish genetics, basics of biometrics and other training courses taught to ichthyologists and fish breeders. The purpose of this discipline is to educate future professionals modern concepts of organic chemistry enabling them to acquire in-depth knowledge necessary for study and application of related disciplines. In addition, this discipline provides an understanding of the animal tissues’ structure and chemical processes occurring in living systems.

**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.

**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.

**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 farmingThe 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

**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.

**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.

**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.

**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.

**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.

**Hydroecology.** The discipline examines ecological status of different water bodies in dynamics; establishes factors that cause seral changes in aquatic ecosystems; exposes major problems in the functioning of aquatic ecosystems of different types and ways of addressing them in conditions of human impact.

**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.

**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 designing fish-breeding enterprises.** 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 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.

**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.

**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.

**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, freezing, drying, curing, smoking, canning and achieving qualitative indicators of semi-finished and finished fish products; methods for determining quality indicators.

**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 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).

## 2. Elective academic disciplines

### *2.1. Disciplines offered by 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”, “Legal Personal Culture” see Section 2.1.

### *2.2. Disciplines offered by students*

**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.

**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 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.

**Fundamentals of fishery protection.** 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.

**Bioresources of hydrosphere and their use.** 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.

**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.

**Technical equipment in fish farming.** 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.

**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.

**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.

**Pedagogics.** Generates future specialists professional (general pedagogical) knowledge and skills that are in knowledge about the nature of learning, education and training, the main directions and principles, methods and forms of education and training, the principles of forming the content of education and training; approaches to evaluating the success of the training, skills characterize the organization of educational and training process.

**Foundations of 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.

**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.

# Bachelor
## Field of knowledge "Agricultural science and food"
## in specialty "TECHNOLOGY OF PRODUCTION AND PROCESSING OF LIVESTOCK PRODUCTS"
## Educational 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 |
| Credits 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 fufure profesionals 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 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.

# Bachelor`s Program and Curriculum in Specialty «Technology of production and processing of livestock products» Educational Program «Technology of production and processing of livestock products»

| № | Name of Academic Discipline | Semester | Number | |
|---|---|---|---|---|
| | | | hours | credits ECTS |
| **1. STANDARD ACADEMIC DISCIPLINES** | | | | |
| 1 | Chemistry | 1, 2 | 240 | 8 |
| 2 | Zoology | 1 | 180 | 6 |
| 3 | Introduction to core professional course | 1 | 150 | 5 |
| 4 | Morphology of agricultural animals | 1, 2 | 240 | 8 |
| 5 | Physiology of agricultural animals | 2, 3 | 270 | 9 |
| 6 | Biochemistry in animal husbandry | 3 | 120 | 4 |
| 7 | Genetics of animals | 3 | 120 | 4 |
| 8 | Mechanization of production processes in animal husbandry | 3 | 120 | 4 |
| 9 | Animal nutrition and feed technology | 4, 5 | 240 | 8 |
| 10 | Animal hygiene | 4, 5 | 240 | 8 |
| 11 | Animal breeding | 4, 5 | 240 | 8 |
| 12 | Technology of rabbit breeding and animal farming | 5 | 180 | 6 |
| 13 | Technology of poultry production | 6 | 210 | 7 |
| 14 | Technology of beekeeping | 6 | 180 | 6 |
| 15 | Technology of goats production | 6 | 180 | 6 |
| 16 | Technology of milk and beef production | 7, 8 | 210 | 7 |
| 17 | Technology of pig production | 7, 8 | 240 | 8 |
| 18 | Technology of sheep production | 7 | 180 | 6 |
| 19 | Horse husbandry | 7 | 180 | 6 |
| 20 | Technology of processing livestock products | 8 | 180 | 6 |
| **Total for standard part** | | | **3900** | **130** |
| **2. ELECTIVE ACADEMIC DISCIPLINES** | | | | |
| **2.1. *Disciplines offered by University*** | | | | |
| 1 | The history of Ukrainian statehood | 1 | 90 | 3 |
| 2 | Ethnoculturology | 1 | 90 | 3 |
| 3 | Philosophy | 3 | 120 | 4 |
| 4 | Ukrainian language (for professionals) | 1 | 120 | 4 |
| 5 | Foreign language | 1, 2 | 150 | 5 |
| 6 | Physical education | 1, 2, 3, 4 | 120 | 4 |
| 7 | Life and work safetyi | 4 | 120 | 4 |
| 8 | Personality's legal awareness | 2 | 90 | 3 |
| **Total (Disciplines offered by University)** | | | **900** | **30** |
| **2.2. *Disciplines offered by students*** | | | | |
| 1 | Applied mathematics | 1 | 90 | 3 |
| 2 | Biophysics in animal husbandry | 2 | 120 | 4 |
| 3 | Microbiology in animal husbandry | 3 | 120 | 4 |
| 4 | Forage production | 3 | 120 | 4 |
| 5 | Pedagogics | 4 | 90 | 3 |
| 6 | Research methodology | 4 | 120 | 4 |
| 7 | Ecology in animal husbandry | 4 | 120 | 4 |
| 8 | Biotechnology in animal husbandry | 5, 6 | 210 | 7 |
| 9 | Fishing | 5 | 120 | 4 |
| 10 | Principles of veterinary medicine | 7 | 90 | 3 |
| 11 | Meat stockbreeding | 7 | 120 | 4 |
| 12 | Economics of animal | 8 | 120 | 4 |
| 13 | Technology of slaughter products | 8 | 90 | 3 |
| 14 | Legal regulation in livestock | 6 | 90 | 3 |
| **Total (Disciplines offered by students)** | | | **1620** | **54** |
| **Total for elective part** | | | **2520** | **84** |

| 3. OTHER TYPES OF TRAINING | | | | |
|---|---|---|---|---|
| 1 | Military training course | 5, 6 | **540** | **18** |
| 2 | Academic Practice | 2, 4 | **480** | **16** |
| 4 | Production Practice | 6 | **240** | **8** |
| **State Attestation** | | | **60** | **2** |
| **Total for Specialty (without Military training course)** | | | **7200** | **240** |

## Annotations of disciplines in the curriculum

### 1. Standard academic disciplines

**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.

**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.

**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.

**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.

**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).

**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.

**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.

**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.

**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, preparation of forages with regard to environmental and economic conditions and animal welfare.

**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 tought 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 inroduces 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 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 tought 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.

## 2. elective academic disciplines

### *2.1. Disciplines offered by 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”, “Legal Personal Culture” see Section 2.1.

### *2.2. Disciplines offered by students*

**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.

**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.

**Pedagogics.** Generates future specialists professional (general pedagogical) knowledge and skills that are in knowledge about the nature of learning, education and training, the main directions and principles, methods and forms of education and training, the principles of forming the content of education and training; approaches to evaluating the success of the training, skills characterize the organization of educational and training process.

**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.

**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.

**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.

**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.

**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.

**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.

**Legal regulation of livestock.** It studies general characteristics of legal regulation of livestock; breeding regulation; beekeeping regulation; regulation of dairy production and selling; regulation i 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.

## 2.5. EDUCATION AND RESEARCH INSTITUTE OF FORESTRY AND GARDEN-PARK MANAGEMENT

**Director** - Doctor of Agricultural Sciences, professor **Petro Ivanovych Lakyda**
Tel: (+38044) 527-85-28 E-mail: 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 management*

Educational Program **"Forestry management"**

Graduating departments:

Forest biology and game management science:
Tel: (+38044) 527-82-38 E-mail: maksimchukn@bigmir.net
Head of the department - Candidate of Agricultural Sciences, associated professor Natalia Pyzrina

Silviculture:
Tel.: (+38044) 527-82-82 E-mail: lisivnutstvo@gmail.com
Head of the department - Doctor of Agricultural Sciences, professor Anatolii Bondar

Forest management:
Тел.: (+38044) 527-83-70 E-mail: domashovets@nubip.edu.ua
Head of the department - Candidate of Agricultural Sciences, associated professor Galina Domashovec

Forest inventory and forest regulation:
Tel.:(+38044) 527-85-23 E-mail: aagirs@ukr.net
Head of the department - Doctor of Agricultural Sciences, professor Oleksandr Hirs

Forest Restoration and Meliorations:
Tel.:(+38044)527-87-47E-mail: forest_crops@nubip.edu.ua
Head of the department - Candidate of Agricultural Sciences, professor Viktor Maurer

### *206 Park and Gardening Management*

Educational Program **"Park and Gardening Management"**

Graduating departments:

Landscape architecture and landscape construction:
Tel.: (+38044) 527-82-96E-mail: a-kushnir@ukr.net
Head of the department - Candidate of Agricultural Sciences, associated professor Anatolyi Kushnir

Landscape gardening and floral design/phytodesign:
Tel.: (+38044) 258-47-27, E-mail: kafdecsad.nubip@gmail.com
Head of the department - Doctor of Biological Sciences, professor Sergei Popovych

Dendrology and Forest Tree Breeding:
Tel.: (+38044) 527-85-18E-mail: dendrology.nubip@gmail.com
Head of the department - Candidate of Agricultural Sciences, associated professor Yuri Marchyk

Botany
Tel.:(+38044) 527-82-98 E-mail: botaniki@bigmir.net
Head of the department - Doctor of Biology Sciences, professor Yakubenko Boris

***187 Wood processing and furniture technologies***

Educational Program **"Wood processing and furniture technologies"**

Graduating department:

Wood products technologies and design:
Tel.: (+38044) 527-81-67 E-mail: opinchewska@gmail.com
Head of the department - Doctor of Technical Sciences, professor Olena Pinchevska

**Bachelor**
**field of knowledge "Agricultural science and food"**
**in specialty "FORESTRY MANAGEMENT"**
**Educational Program "Forestry management"**

| Form of study | Limit of licensed number of students |
|---|---|
| Full-time | 125 |
| Part-time | 140 |
| Learning time | 4 years |
| Credits | 240 ECTS |
| Language of teaching | Ukrainian |
| Qualification of graduates | Bachelor of Forestry Management |

## The concept of training

Forestry management 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 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 Management» Educational Program "Forestry management"

| № | Name of Academic Discipline | Semester | Number | |
|---|---|---|---|---|
| | | | hours | credits ECTS |
| **1. STANDARD ACADEMIC DISCIPLINES** | | | | |
| 1. | Higher mathematics | 1 | 120 | 4 |
| 2. | Chemistry | 1 | 150 | 5,0 |
| 3. | Botany | 1,2 | 240 | 8 |
| 4. | Fundamentals of Ecology and Nature Protection | 1 | 120 | 4 |
| 5. | Physics | 2 | 120 | 4 |
| 6. | IT Innovations | 2 | 180 | 6 |
| 7. | Geodesy | 2 | 120 | 4 |
| 8. | Dendrology | 3,4 | 210 | 7 |
| 9. | Forest zoology | 3 | 120 | 4 |
| 10. | Forest pedology | 3 | 150 | 5 |
| 11. | Biometry | 4 | 120 | 4 |
| 12. | Mechanization of forestry work | 4 | 180 | 6 |
| 13. | Forest phytopathology | 5 | 120 | 4 |
| 14. | Silviculture | 5,6 | 210 | 7 |
| 15. | Forest inventory | 5,6 | 210 | 7 |
| 16. | Forest entomology | 6 | 120 | 4 |
| 17. | Forest plants | 5-7 | 300 | 10 |
| 18. | Earth remote sensing | 3 | 120 | 4 |
| 19. | Economics of forestry | 7 | 120 | 4 |
| 20. | Forest melioration | 7 | 150 | 5 |
| 21. | Forest Management | 7,8 | 201 | 7 |
| 22. | Organization of Forestry Production | 8 | 180 | 6 |
| **Total for standard part** | | | **3540** | **118** |
| **2. ELECTIVE ACADEMIC DISCIPLINES** | | | | |
| **2.1. Disciplines offered by University** | | | | |
| 1. | Foreign language | 1,2 | 180 | 6 |
| 2. | Physical education | 1-4 | 120 | 4 |
| 3. | Information Technology of forestry | 7 | 120 | 4 |
| 4. | History of Ukrainian Statehood | 3 | 120 | 4 |
| 5. | Forestry entrepreneurship | 7 | 150 | 5 |
| 6. | Labour and Life Safety | 4 | 120 | 4 |
| 7. | Legal Personal Culture | 5 | 120 | 4 |
| 8. | Philosophy | 8 | 120 | 4 |
| **Total (Disciplines offered by University)** | | | **1050** | **35** |
| **2.2. Disciplines offered by students** | | | | |
| 1. | Professionally–oriented Ukrainian language | 2 | 120 | 4 |
| 2. | Cultural ethnic | | | |
| 3. | Technical mechanics | | | |
| 4. | Meteorology | | | |
| 5. | Plant physiology | 3 | 120 | 4 |
| 6. | Economic theory | 4 | 120 | 4 |
| 7. | Forest selection and genetics | 4 | 150 | 5 |
| 8. | Non-timber forest resources | 5 | 150 | 5 |
| 9. | Fundamentals of hydrotechnical reclamation | 5 | 150 | 5 |
| 10. | Urban landscaping | 6 | 120 | 4 |
| 11. | Forestry commodity | 6 | 120 | 4 |
| 12. | Forest pyrology | 6 | 120 | 4 |
| 13. | Accounting in Forestry | 7 | 120 | 4 |
| 14. | Politology and sociology | | | |
| 15. | Principles of professional training | 2 | 120 | 4 |
| 16. | Timber transportation | 8 | 120 | 4 |

| | | | | |
|---|---|---|---|---|
| 17. | Natural reserves | 8 | 120 | 4 |
| 18. | Fundamentals of forest exploitation | 8 | 150 | 5 |
| **Total (Disciplines offered by students)** | | | **1800** | **60** |
| **Total for elective part** | | | **2850** | **95** |
| **3. OTHER TYPES OF TRAINING** | | | | |
| 2 | Academic Practice | | **600** | **20** |
| 3 | Production Practice | | **90** | **3** |
| 4 | Preparation and defense of undergraduate final work | | **120** | **4** |
| **Total** | | | **810** | **27** |
| **Total for Specialty** | | | **7200** | **240** |

## Annotations of disciplines in the curriculum

### 1. Standard academic disciplines

**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, permanganatometry. 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**. 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.

**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.

**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.

**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.

**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.

**Mechanization of forestry work.** Structure of different machines used in forestry such as tree planters and others. Machines for the protection and preservation of the forest. The mechanization of thinning the forest. Information about machine and tractor units.

**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.** Sivics 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 inventory**. Inventory of wood and wood products. Forestry-taksatsiyni signs and taksatsiyna structure stands. 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. Needles and leaf-eating, stem pests. Seeds, nurseries, young plantations and wood pests.

**Forest planting.** Significance and organization of forest plant nurseries. Peculiarities of plant material cultivation. Planting seeds and seedlings and their maintenance. Cultivation of basic valuable tree species. Technology of artificial forest plantations.

**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.

**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.

**Forest reclamation.** Major forestry and agroforestry principles that determine the technology of establishment and cultivation of protective forest plantations. Soil erosion and the fight against it. Agrotechnical peculiarities of creation and cultivation of agroforestry plantations on eroded lands. Sands, their consolidation 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.

## 2. Elective academic disciplines

### *2.1. Disciplines offered by 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”, “Legal Personal Culture” see Section 2.1.

**Forestry entrepreneurship.** Study of Forest Management related Ukrainian Legislation. Business plan: compilation and execution. Organization activity of a forestry enterprise.

### *2.2. Disciplines offered by students*

**Technical mechanics.** Statics, kinematics, dynamics. Strength and deformation of wood under different types of loading. Elements of lifting equipment.

**Meteorology.** The influence of meteorological factors on the growth and development of plants, taking them into account during forest operations. Influence of wood on some meteorological parameters and climatic regime of terrain.

**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.

**Forest selection and genetics.** Methods of selection. Selective inventory of plants. Selection of main forest species. The basis of genetics/

**Non-timber forest resources**. The course examines the methods of rational use of non-wood forest resources, ways to improve the quality and productivity of grasslands, harvest methods, technology, collecting fodder, wild fruits, berries, mushrooms, medicinal plants, birch juice. Covers the basics of beekeeping.

**Basics of hydrotechnical reclamation.** The theoretical bases of hydrotechnical reclamation of forest lands, irrigation of forest nurseries and plantations. Sources of irrigation, salinity and measures to control it. D rainage by means of open channels and horizontal drainage system. Use of moisturizing drainage-systems and special drying methods.

**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.

**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.

**Forest pyrology.** Forest pyrology examines the basic theory of combustion, fire hazard depending on the nature of the forest and weather conditions and classifies forest fires. We study fire prevention, the role of communication in operational fire detection techniques and tactics of fighting forest fires, estimation of losses from fires. Basic theory of combustion. Classification of forest fires. Preventive measures. Technical ways and tactics of fighting forest fires. Estimation of the damage.

**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.

**Principles 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.

**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.

**Timber transportation.** Discipline includes the following major sections: Technology of logging and harvesting, organization of transport operations in forestry; automobile, railway and water transport.

**Natural reserves.** The concepts, the task of environmental education, basic directions, forms and methods of natural-guarding propaganda based on natural protected areas, ecological trail as a method of environmental education, training and recreation, environmental movement, religion and nature protection.

**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.

**Bachelor**
**field of knowledge "Agricultural science and food"**
**in specialty “PARK AND GARDENING MANAGEMENT”**
**Educational 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

Park and gardening management is the sector of the economy that deals with research, account and reproduction of forests, parks, gardens and public parks, protecting them from fires, pests and diseases, reforestation and afforestation, 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 park and gardening management and removal of social stress regarding the methods and means of forestry management by informing the public about close to nature forestry, 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, Trainig and Research Nursery of the Reforestation and Afforestation Department, Botanical Garden of NULES of Ukraine, MM Gryshko Central Botanical Garden, National Academy of Sciences of Ukraine; Fomin Botanical Garden; Corporation "Ukrzelenbud", CE "Kievzelenstroy" and regional trusts to maintain green spaces, regional and district communal enterprises of gardening.

## Proposed Topics for Bachelor theses

1. Natural regeneration of Scotch pine.
2. Economic features of management activities in the forest enterprise involving private structures.
3. Project proposals concerning the reconstruction of green plantations in Kirovograd’s park.

4. Project proposals with regard to the reconstruction of parks of landscape architecture memorial value.
5. Landscaping project of the school territory and kindergartens.
6. Dendrological evaluation of the existing assortment of gymnosperms and prospects to replenish the collection of decorative forms at the M.M. Gryshko National Botanic Garden.
7. Technological features of the forcing treatment of sorts Tulipa L. and Crocus L.
8. 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 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 Program "Park and Gardening Management"

| № | Name of Academic Discipline | Semester | Number | |
|---|---|---|---|---|
| | | | hours | credits ECTS |
| **1. STANDARD ACADEMIC DISCIPLINES** | | | | |
| 1 | Higher mathematics | 1 | 120 | 4,0 |
| 2 | Chemistry | 1 | 150 | 5,0 |
| 3 | Physics | 1 | 150 | 5,0 |
| 4 | Fine arts | 1 | 180 | 6,0 |
| 5 | Botany | 2 | 240 | 8,0 |
| 6 | Geodesy | 2 | 180 | 6,0 |
| 7 | General ecology | 2 | 120 | 4,0 |
| 8 | Plant physiology | 3 | 120 | 4,0 |
| 9 | Biometry | 3 | 120 | 4,0 |
| 10 | Decorative dendrology | 3,4 | 330 | 11,0 |
| 11 | Forest pedology | 3,4 | 210 | 7,0 |
| 12 | Floriculture | 4 | 180 | 6,0 |
| 13 | Breeding and Genetics ornamental woody plants | 4 | 180 | 6,0 |
| 14 | Pests and pathogens of woody ornamentals | 5 | 240 | 8,0 |
| 15 | Economic theory | 5 | 120 | 4,0 |
| 16 | Lawns | 6 | 120 | 4,0 |
| 17 | Urban gardening | 6 | 120 | 4,0 |
| 18 | Introduction and adaptation of decorative plants | 6 | 120 | 4,0 |
| 19 | Landscape Architecture | 6,7 | 240 | 8,0 |
| 20 | Economics of garden-park management | 7 | 120 | 4,0 |
| 21 | Garden and park construction | 7,8 | 210 | 7,0 |
| **Total for standard part** | | | **3540** | **118,0** |
| **2. ELECTIVE ACADEMIC DISCIPLINES** | | | | |
| **2.1. *Disciplines offered by University*** | | | | |
| 1 | Foreign language | 1,2 | 150 | 5,0 |
| 2 | Physical education ** | 1-4 | 120 | 4,0 |
| 3 | Principles of professional training | 1 | 120 | 4,0 |
| 4 | IT Innovations | 2 | 150 | 5,0 |
| 5 | Professionally–oriented Ukrainian language | 2 | 120 | 4,0 |
| 6 | History of Ukrainian Statehood | 3 | 120 | 4,0 |
| 7 | Labour and Life Safety | 4 | 120 | 4,0 |
| 8 | Legal Personal Culture | 5 | 120 | 4,0 |
| 9 | Philosophy | 7 | 120 | 4,0 |
| 10 | Entrepreneurship in the gardening industry | 8 | 120 | 4,0 |
| **Total (Disciplines offered by University)** | | | **1260** | **42,0** |
| **2.2. *Disciplines offered by students*** | | | | |
| ***2.2.1. Specialization* «Garden-Park Management»** | | | | |
| 1 | Mechanization of GPM | 3 | 120 | 4,0 |
| 2 | Basics of city planning | 4 | 120 | 4,0 |
| 3 | Plant nurseries and seeds | 5 | 120 | 4,0 |
| 4 | Recreational forestry | 5 | 120 | 4,0 |
| 5 | Basics of composition | 5 | 120 | 4,0 |
| 6 | Computer design | 5 | 120 | 4,0 |
| 7 | Topiary art | 6 | 120 | 4,0 |
| 8 | Decorative plants in greenhouses | 6 | 120 | 4,0 |
| 9 | Inventory of garden-park management | 6,7 | 180 | 6,0 |
| 10 | Fundamentals of afforestation | 7 | 120 | 4,0 |
| 11 | Urban ecology and phyto-melioration | 7 | 120 | 4,0 |
| 12 | Engineering equipment in GPM | 8 | 150 | 5,0 |
| 13 | Organization of garden-park management. | 8 | 120 | 4,0 |
| 14 | Natural reserves | 8 | 120 | 4,0 |

| | | | | |
|---|---|---|---|---|
| 15 | Basics of accounting in gardening | 8 | 120 | 4,0 |
| **Total (Disciplines offered by students)** | | | **1980** | **63,0** |
| **Total for elective part** | | | **3000** | **100,0** |
| **3. OTHER TYPES OF TRAINING** | | | | |
| **1** | Military training | | **870** | **29** |
| **2** | Academic Practice | | **300** | **10,0** |
| **3** | Production Practice | | **90** | **3,0** |
| **4** | Preparation and defense of undergraduate final work | | **90** | **3,0** |
| **5** | State attestation | | **30** | **1,0** |
| **Total** | | | **510** | **17,0** |
| **Total for Specialty** | | | **7200** | **240,0** |

## Annotations of disciplines in the curriculum

### 1. Standard academic disciplines

**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, permanganatometry. Determination of related substances in solution.

**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.

**Fine Arts.** It covers issues that provide the skills and abilities to find the necessary artistic means for the transfer of aesthetic value, coloristic features of landscape compositions by means of fine arts. The discipline is directed at acquaintance with the means of fine arts, which can be used to perform demonstrative drawings of the graphic part of the landscape projects.

**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.** The concepts, the task of environmental education, basic directions, forms and methods of natural-guarding propaganda based on natural protected areas, ecological trail as a method of environmental education, training and recreation, environmental movement, religion and nature protection.

**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.

**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.

**Breeding and Genetics ornamental woody plants.** Methods of selection. Selection inventory of plantings. Selection of the main forest species.

**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.

**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.

**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.** 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.

**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.

**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 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.

## 2. Elective academic disciplines

### *2.1. Disciplines offered by University*

Annotations of disciplines “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.

**IT Innovations.** Hardware and software of computers. Personal computers. The system software. Programming languages. Algorithmic and programming tasks. Solving problems on PC.

**Principles 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.

### *2.2. Disciplines offered by students*

#### 2.2.1. *Specialization "Garden-Park 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.

**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.

**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.

**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 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 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.

**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.

**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.

**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. **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.

**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.

**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 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.

**Bachelor**
**Field of knowledge "Production and technologies"**
**in specialty "WOOD PROCESSING AND FURNITURE TECHNOLOGIES"**
**Educational Program "Wood processing and furniture technologies"**

| Form of study | Limit of licensed number of students |
|---|---|
| Full-time | 50 |
| Part-time | 100 |
| Learning time | 4 years |
| Credits | 240 ECTS |
| Language of teaching | Ukrainian |
| Qualification of graduates | Bachelor of wood processing and furniture technologies |

## The concept of training

Specialists` training in the specialty involves the assimilation of knowledge and skills in developing the designs and technologies of wood materials and products manufacturing, the determination of their characteristics and quality level, mastering the techniques for analyzing the existing processes, planning and carrying out the researches aimed at optimization and woodworking industry improving processes. The basis of training is a systematic approach to the study of woodworking technology and forming students' ability to use rationally the equipment, wood and energy. Disciplines cover the theoretical and practical aspects of technologies of wood products manufacturing, trends of the woodworking technology, modern requirements for wood products, features of the modern woodworking machinery, new materials used in wood products manufacturing, new accessories, methods of the details dimensions calculations of the contemporary structural wood products, the design technologies development directions, requirements for furniture products, basics of artistic design, the main features of furniture styles, modern trends of the style solutions for the furniture products and the means of their implementation.

## Practical training

The bases of the practical training are educational, scientific, educational and industrial laboratories of the Departments of the institute VP NULES of Ukraine "Boyarka Forest Research Station", as well as the leading forestry enterprises of the State Agency of forest resources of Ukraine and private woodworking enterprises.

## Proposed Topics for Bachelor theses

1.Analysis of furniture design programs for bedrooms.
2.Analysis of the process of manufacturing of round timber on the DP.
3.Features of technological process of manufacturing of sectional doors.
4. Justification of the design and manufacturing technology of office furniture.
5. Analysis of the process of manufacturing parquet of low-value wood.
6. Proposals for improvement of door trim.
7. Features of the manufacture of parquet friezes.
8. Estimation of the possibility of expanding the assortment of floor coverings.
9. Analysis of methods of applying paint and varnish materials on furniture products.
10. Estimation of possibilities of improvement of technological process of decoration of kitchen products.

**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

After receiving the bachelor qualification the graduates can be employed in the forestry enterprises of the State Agency of forest resources, government and commercial enterprises of the production and sale of the construction materials, government and commercial woodworking and furniture enterprises.

# Bachelor`s Program and Curriculum
# in Specialty «Wood processing and furniture technologies»
# Educational Program "Wood processing and furniture technologies"

| № | Name of Academic Discipline | Semester | Number | |
|---|---|---|---|---|
| | | | hours | credits ECTS |
| **1. STANDARD ACADEMIC DISCIPLINES** | | | | |
| 1 | Descriptive Geometry and Engineering Graphics | 1 | 150 | 5 |
| 2 | Physics | 1,2 | 270 | 9 |
| 3 | Higher Mathematics | 1,2 | 240 | 8 |
| 4 | Computational Mathematics and Programming | 1,2 | 240 | 8 |
| 5 | Chemistry (general and organic) | 2 | 180 | 6 |
| 6 | Applied Mechanics (strength of materials, engineering) | 3 | 240 | 8 |
| 7 | Principles Heating Engineering | 4 | 120 | 4 |
| 8 | Electro Technology And Electric Drive | 3 | 120 | 4 |
| 9 | Wood Science | 3 | 120 | 4 |
| 10 | Equipment Of The Woodworking | 3,4 | 150 | 5 |
| 11 | Technology Of The Sawmills And Woodworking Industries | 4 | 180 | 6 |
| 12 | Technology Of Wood Drying And Protection | 4,5 | 270 | 9 |
| 13 | Ecology | 7 | 120 | 4 |
| 14 | Principles Of Automation And AVP | 6 | 120 | 4 |
| 15 | Computer Graphics | 5 | 120 | 4 |
| 16 | Technology Of Wood Products | 6 | 210 | 7 |
| 17 | Fundamentals of professional training | 1 | 120 | 4 |
| 18 | Design of wood products | 3 | 150 | 5 |
| 19 | Designing Of The Woodworking Enterprises | 7 | 120 | 4 |
| 20 | Technology of Protective and Decorative Coatings | 7,8 | 150 | 5 |
| 21 | Technology of joiner's products | 7,8 | 150 | 5 |
| 22 | Economy woodworking industry | 8 | 150 | 5 |
| **Total for standard part** | | | **3690** | **123** |
| **2. ELECTIVE ACADEMIC DISCIPLINES** | | | | |
| **2.1. Disciplines offered by University** | | | | |
| 1 | Foreign Language | 1,2 | 150 | 5 |
| 2 | Physical education | 1-4 | 120 | 4 |
| 3 | Professionally–oriented Ukrainian language | 2 | 120 | 4 |
| 4 | Labour and Life Safety | 4 | 120 | 4 |
| 5 | Philosophy | 8 | 120 | 4 |
| 6 | Sociology | 5 | 120 | 4 |
| 7 | Economic theory | 5 | 120 | 4 |
| 8 | Materials Science | 3 | 120 | 4 |
| 9 | Legal culture of personality | 8 | 120 | 4 |
| **Total (Disciplines offered by University)** | | | **1110** | **37** |
| **2.2. Disciplines offered by students** | | | | |
| 1 | Macromolecular Chemistry | 3 | 120 | 4 |
| 2 | Metrology, Standardization And Certification | 5 | 120 | 4 |
| 3 | Marketing in the woodworking industry | 8 | 120 | 4 |
| 4 | Management in the wood-processing enterprises | 7 | 120 | 4 |
| 5 | Fundamentals of Accounting and Auditing on woodworking enterprises | 6 | 120 | 4 |
| 6 | Wood composite materials technology | 4 | 120 | 4 |
| 7 | Technology of structural materials | 5 | 120 | 4 |
| 8 | Technology Of Wooden House Building | 6 | 120 | 4 |
| 9 | Protective Treatment Of Wooden Structures | 6 | 120 | 4 |
| 10 | Modifying of wood and wood-based materials | 6 | 120 | 4 |
| 11 | Furniture production | 7 | 240 | 8 |
| 12 | Organization Of woodworking industry | 8 | 120 | 4 |
| 13 | Technology of manufacturing structural wood elements | 8 | 120 | 4 |
| **Total (Disciplines offered by students)** | | | **1680** | **56** |

| | | | | |
|---|---|---|---|---|
| **Total for elective part** | | | **2790** | **93** |
| **3. OTHER TYPES OF TRAINING** | | | | |
| **1** | Academic Practice | | **420** | **16** |
| **2** | Production Practice | | **90** | **3** |
| **3** | Preparation and defense of undergraduate final work | | **150** | **5** |
| **Total** | | | **810** | **24** |
| **Total for Specialty** | | | **7200** | **240** |

## Annotations of disciplines in the curriculum

### 1. Standard academic disciplines

**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.

**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 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.

**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.

**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 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.

**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.

## 2. Elective academic disciplines

### *2.1. Disciplines offered by University*

Annotations of disciplines, “Philosophy”, “Ukrainian for Professional Purposes”, “Foreign Language (English, German, French, Spanish)”, “Physical Training”, “Labour and Life Safety”, “Legal Personal Culture”, “Materials Science”, “Economic theory”, “Sociology” see Section 2.1.

### *2.2. Disciplines offered by students*

**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.

**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.

**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.

**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 and methods of management. Leadership. Fundamentals of human resource management. Ethics and Culture Management.

**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.

**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.

**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.

**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.

**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.

**Furniture production.** General current state and prospects of development of production of furniture products in Ukraine and abroad. Classification of furniture products. Materials for the manufacture of furniture products. Furniture. Structure of furniture manufacturing technology. Manufacturing and technological process of furniture manufacturing. Typical technological processes for the manufacture of furniture furniture. Calculation of technological process and norms of costs of material and labor resources. Quality of furniture. Indicators and quality control of furniture. Slab and sheet materials cutting. Modern programs for cutting slabs and sheet materials. Equipment for cutting. Laser cutting of wood materials.

**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.

## 2.6. FACULTY OF VETERINARY MEDICINE

**Dean – Mykola I. 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
Adress: building № 12, room №324 “G”

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

***211 Veterinary Medicine***

Educational Program **«Veterinary Medicine»**

Graduating departments:

Anatomy, histology and pathomorphology animal named after acad. V.G.Kasyanenko
Тел.: (044) 527-86-17. E-mail: 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
Head of Department- Candidate of Veterinary Science, Associate Professor Valchuk Oleksandr Anatoliyovych

Veterinary-sanitary examination
Tel.: (044) 527-88-41 E-mail: vse@nubip.edu.ua
Head of Department - Doctor of Veterinary Sciences, Professor Yakubchak Olga Mykolaivna

Epizootiology and organization of veterinary medicine
Tel.: (044) 527-89-22 E-mail: epizootology@nubip.edu.ua
Head of Department - Doctor of Veterinary Sciences, Professor Nedosekov Vitaliy Volodymyrovych

Parasitology and Tropical Veterinary Medicine
Tel.: (044) 527-83-65 E-mail: parazitologia@nubip.edu.ua
Head of Department - Doctor of Veterinary Sciences, Professor Soroka Natalia Mykhaylivna

Therapy and clinical diagnosis
Tel.: (044) 527-87-92 E-mail: 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
Head of Department - Doctor of Veterinary Sciences, Associate Professor Malyuk Mykola Oleksiyovych

**Bachelor**
**field of knowledge "Veterinary"**
**in speciality "VETERINARY MEDICINE"**
**Educational Program «Veterinary Medicine»**

| | |
|---|---|
| Form of Training: | Licensed number of persons: |
| - full-time studies | 250 |
| Duration of training | 4 years |
| credits | 240 ECTS |
| Language of training | English, 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 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.

# Bachelor`s Program and Curriculum in Specialty "Veterinary Medicine" Educational program "Veterinary Medicine"

| № | Name of Academic Discipline | Semester | Number | |
|---|---|---|---|---|
| | | | hours | credits ECTS |
| **1. STANDARD ACADEMIC DISCIPLINES** | | | | |
| 1 | Ukrainian language (for professional purposes) | 1 | 90 | 3 |
| 2 | Foreign Language (for professional purposes) | 1 - 2 | 150 | 5 |
| 3 | Philosophy | 2 | 90 | 3 |
| 4 | The history of Ukrainian culture | 2 | 90 | 3 |
| 5 | Politology | 5 | 60 | 2 |
| 6 | Anatomy of domestic animals | 1 - 3 | 180 | 6 |
| 7 | Biochemistry of animals with the basics of physical and colloid chemistry | 2 - 3 | 120 | 4 |
| 8 | Cytology, histology, embryology | 2 - 3 | 150 | 5 |
| 9 | Bioinorganic Chemistry | 1 | 60 | 2 |
| 10 | Organic Chemistry | 2 | 60 | 2 |
| 11 | Biophysics | 1 | 60 | 2 |
| 12 | Animal physiology | 3 - 4 | 150 | 5 |
| 13 | Fundamentals of Biosafety, Bioethics | 2 | 60 | 2 |
| 14 | Veterinary Ecology | 2 | 60 | 2 |
| 15 | Veterinary Sanitation and Hygiene | 3 | 60 | 2 |
| 16 | Veterinary Microbiology | 3 - 4 | 90 | 3 |
| 17 | Veterinary Immunology | 4 | 60 | 2 |
| 18 | Veterinary virology | 5 | 90 | 3 |
| 19 | Biotechnology in veterinary medicine | 4 | 60 | 2 |
| 20 | Physiopathology | 4 - 5 | 120 | 4 |
| 21 | Obstetrics, Gynaecology and Animal Reproduction Biotechnology | 5 - 6 | 180 | 6 |
| 22 | Veterinary-sanitary examination | 7 - 8 | 150 | 5 |
| 23 | Epizootology and infectious diseases | 6 - 8 | 240 | 8 |
| 24 | General and Special Surgery | 6 - 7 | 180 | 6 |
| 25 | Operative surgery, anesthesiology and topographical anatomy | 4 - 5 | 120 | 4 |
| 26 | Parasitology and invasive disease | 6 - 7 | 180 | 6 |
| 27 | Pathological anatomy and dissection | 7 - 8 | 180 | 6 |
| 28 | Inner diseases of domestic animal | 6 - 8 | 270 | 9 |
| 29 | Veterinary Pharmacology | 5 - 6 | 180 | 6 |
| 30 | Veterinary clinical biochemistry | 7 | 60 | 2 |
| 31 | Clinical diagnostics animals diseases | 4 - 5 | 180 | 6 |
| 32 | The organization and economics of veterinary affairs | 6 | 90 | 3 |
| 33 | Veterinary toxicology | 7 | 90 | 3 |
| 34 | Latin | 1 | 60 | 2 |
| 35 | Occupational Health and Safety | 3 | 60 | 2 |
| **Total the obligatory component** | | | **4080** | **136** |
| **2. ELECTIVE ACADEMIC DISCIPLINES** | | | | |
| **2.1. *Disciplines offered by University*** | | | | |
| 1 | Business Ukrainian language | 1 | 60 | 2 |
| 2 | Foreign Language | 2 | 90 | 3 |
| 3 | Physical training | 1 - 2 | 60 | 2 |
| 4 | Anatomical features of domestic animals | 1 | 60 | 2 |
| 5 | Botany | 1 | 90 | 3 |
| 6 | Zoology | 1 | 90 | 3 |
| 7 | Feeding of animals | 4 | 90 | 3 |
| 8 | Basics of breeding | 3 | 90 | 3 |
| 9 | History of Veterinary Medicine | 1 | 90 | 3 |

| | | | | |
|---|---|---|---|---|
| 10 | Veterinary radiobiology | 4 | 90 | 3 |
| 11 | Medicinal Herbs | 2 | 90 | 3 |
| 12 | Professional Ethics | 5 | 60 | 2 |
| 13 | Genetics in Veterinary Medicine | 3 | 90 | 3 |
| 14 | Management and Marketing in Veterinary Medicine | 5 | 90 | 3 |
| 15 | History of Ukrainian nationhood | 1 | 90 | 3 |
| 16 | Etnoculturology | 1 | 90 | 3 |
| **Total offered by University** | | | **1320** | **44** |
| **2.2. *Disciplines offered by students*** | | | | |
| 1 | Sociology | 2 | 30 | 1 |
| 2 | Economic theory | 3 | 60 | 2 |
| 3 | Science of law | 2 | 30 | 1 |
| 4 | Ukrainian business language and culture of speech | 1 | 30 | 1 |
| 5 | Fundamentals of psychology and pedagogy | 3 | 30 | 1 |
| 6 | Anatomy of exotic animals | 3 | 60 | 2 |
| 7 | Computer science in Veterinary Medicine | 2 | 60 | 2 |
| 8 | Fundamentals of Veterinary Sanitation, Microbiology and Virology | 4 | 60 | 2 |
| 9 | Methods for microbiological studies | 7 | 60 | 2 |
| 10 | Infectious diseases of small animals | 7 | 120 | 4 |
| 11 | Quality and Safety of Agricultural Products | 8 | 90 | 3 |
| 12 | Biotechnology of Animal Reproduction | 6 | 90 | 3 |
| 13 | Surgical diseases of productive animals | 6 | 120 | 4 |
| 14 | Parasitic diseases of productive animals | 6 | 120 | 4 |
| 15 | Fundamentals of judicial Veterinary | 8 | 120 | 4 |
| 16 | Veterinary oncomorphology | 5 | 120 | 4 |
| 17 | Diagnosis and treatment of internal diseases of productive animals | 5 | 120 | 4 |
| 18 | Fundamentals veterinary legislation Ukraine | 8 | 120 | 4 |
| **Total chosen by the student** | | | **1110** | **37** |
| **Total for the selective component** | | | **2340** | **78** |
| | | | | |
| 1 | Military training | 5 - 8 | 660 | 22 |
| 2 | Educational practice | 2,4,6,7 | 360 | 12 |
| 3 | Production practice | 7 | 270 | 9 |
| **Preparation of bachelor work (thesis or project)** | | | **-** | **-** |
| **State certification** | | | **60** | **2** |
| **Total the direction of (without military training)** | | | **7200** | **240** |

## Annotations of disciplines in the curriculum

### 1. Standard academic disciplines

**Ukrainian language (for professional purposes).** Scientific terminology, terms and their usagethat are specific to veterinary specialty and playback previously acquired knowledge.

**Foreign Language (for professional purposes).** A comprehensive study of language activities (reading, listening, speaking). Learn how to communicate and translate.

**Philosophy.** The system of philosophical knowledge of the main parts of philosophy which develops the type of consciousness that is based on the constructive-critical approaches to the ideals of humanism.

**The history of Ukrainian culture.** Ukrainian mental culture as part of the global cultural process. The role of culture in the formation of identity in the lives of the Ukrainian people. Objective and subjective factors of growth of cultural norms at the present stage of Ukraine.

**Politology.** Politics as a particular social phenomenon, Ukrainian political science, its main and dominant and Ukrainian political thought in general.

**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.

**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.

**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.

**Fundamentals of Biosafety, Bioethics.** Examines the terms of use of laboratory animals in veterinary medicine, measures to prevent the spread of infectious and parasitic diseases, the rules of work with particularly dangerous infections.

**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.

**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 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. Imunomorphology and immunopathology. Special pathological anatomy, diseases of the respiratory, digestive, cardiovascular, genitourinary and nervous systems. Diseases of the

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.

**Latin.** Latin grammar, spelling rules and specific terms of veterinary medicine.

**Occupational Health and Safety.** The theoretical bases of labor protection. The legal basis for the protection of employees breeding and veterinary services. Fundamentals of industrial hygiene. Safety in livestock and poultry. Fire safety in livestock and poultry.

## 2. Elective academic disciplines

### *2.1. Disciplines offered by University*

Annotations of disciplines “History of Ukrainian Statehood”, “Ethnocultural”, “Foreign Language (English, German, French, Spanish)”, “Physical Training”, see Section 2.1.

**Business Ukrainian language.** Preparing students for oral and written business communication that involves working with various types of scientific and business documents. Working with special texts by profession.

**Anatomical features of domestic animals.** Studies the anatomical features of the structure and systems of domestic animals in conjunction of their organs and systems, interdependence of their structure and functions on the background of development in ontogenesis and phylogenesis.

**Botany.** Learn plant life, structure, diversity, geographic distribution, environmental cenotic features, biological and economic properties of plants.

**Zoology.** Studies the animal world from the simplest to the chordate animals, patterns of their occurrence and development of animal organisms, body composition, reproduction of different types of certain animals

**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.** 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 plants.** 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, 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.

### *2.2. Disciplines offered by students*

**Sociology.** Explore the society as a complete system, social institutions, and community groups, social causes of individual and mass behavior, the processes of human social relations.

**Economic theory.** The content of the basic laws and categories of economic theory, characteristics of the market economy and solving the problems of its creation in Ukraine of the positive experience of the market economy in developed countries.

**Jurisprudence.** Patterns of State and Law, certain areas of legislation Ukraine. Description of the constitutional, labor, environmental, land, civil, administrative, criminal and family law.

**Ukrainian business language and culture of speech.** Preparing students for oral and written business communication, which involves working with different kinds of scientific and business documents. Working with special lyrics by profession.

**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.

**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.

**The 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. Veterynano-sanitary inspection of food in the markets.

**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.

**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.

**Fundamentals of Forensic veterinary medicine.** 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.

**Principles of 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.

## 2.7. FACULTY OF ALIMENTARY TECHNOLOGIES AND MANAGING BY QUALITY OF PRODUCTS OF AGRICULTURAL COMPLEX

**Dean** – doctor of sciences, professor **Bal-Prylypko Larissa Vatslavivna**
Phone: (044) 527-89-50, E-mail: 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 Program **«Food Technologies»**

Graduating department:

Technology of meat and fish products, and of seafoods
Phone: (044) 527- 88-85, E-mail: slob2210@ukr.net
Head of the chair – doctor of biological sciences, professor Derevianko Liudmila Petrivna

# Bachelor
# Field of knowledge of "Manufacturing and technologies"
# in Specialty "FOOD TECHNOLOGIES"
# Educational Program «Food Technologies»

| | |
|---|---|
| Form of training: | Licensed number of persons: |
| – daytime | 100 |
| – extramural | 100 |
| Term of training | 3 years and 10 months |
| Credits | 240 ECTS |
| Language used in training | Ukrainian, English |
| Qualification of graduates | engineer-techologists |

## Concept of training

The successful practical realization of solutions used in realization of important 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 fundament 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-packing factory» Poltava region, STOV «Agricultural firm KUibyshevo» Poltava region, TOV «Agricultural firm Stolychna» 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 pidpryyemstvo 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 workshop of productive 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 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 put 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 Program «Food Technologies»

| # # | Name of training discipline | Semester | Duration of training | |
|---|---|---|---|---|
| | | | Hours | credits ECTS |
| **1. OBLIGATORY TRAUINING DISCIPLINES** | | | | |
| 1 | Higher mathematics | 1, 2 | 210 | 7,0 |
| 2 | Chemical base of alimentary technologies, including: | 1, 2, 3, 4 | 690 | 23,0 |
| 2.1 | General and inorganic chemistry | 1 | 180 | 6,0 |
| 2.2 | Analytical chemistry | 2, 3 | 150 | 5,0 |
| 2.3 | Organic chemistry | 2 | 180 | 6,0 |
| 2.4 | Physical and colloid chemistry | 3, 4 | 180 | 6,0 |
| 3 | Engineering and computer' graphics | 1, 2 | 210 | 7,0 |
| 4 | Physics | 2, 3 | 150 | 5,0 |
| 5 | Biochemistry | 3, 4 | 180 | 6,0 |
| 6 | Informatics and information policy | 3 | 90 | 3,0 |
| 7 | Heat engineering | 4 | 90 | 3,0 |
| 8 | Electric engineering | 4 | 90 | 3,0 |
| 9 | Processes and apparatus used in alimentary technologies | 4, 5 | 300 | 10,0 |
| 10 | Technical microbiology | 4 | 90 | 3,0 |
| 11 | Generalized technologies used in industry by producing of alimentary production | 5, 6 | 600 | 20,0 |
| 12 | Information technologies used in engineering calculations in the branch-industry | 5 | 90 | 3,0 |
| 13 | Technology of producing of polysaccharides and their use in food industry | 6 | 90 | 3,0 |
| 14 | Automation of process of manufacturing | 6 | 90 | 3,0 |
| 15 | Technology of producing of sanitary foodstuffs | 7 | 90 | 3,0 |
| 16 | Fundamental of protection of labor | 7 | 120 | 4,0 |
| 17 | Technological equipment used in the branch-industry | 6, 7 | 150 | 5,0 |
| 18 | Standardization, metrology, certification and quality management | 8 | 150 | 5,0 |
| 19 | R&D work of students | 8 | 120 | 4,0 |
| 20 | Economy of enterprises | 7 | 90 | 3,0 |
| 21 | Theoretical base of alimentary technologies | 3 | 90 | 3,0 |
| 22 | Fundamental principles of mechanics and reliability of equipment used in the branch-industry | 3 | 90 | 3,0 |
| 23 | Material science | 3 | 90 | 3,0 |
| **In total by the obligatory constituent of training** | | | **3960** | **132** |
| **2. SELECTIVE TRAINING DISCIPLINES** | | | | |
| **2.1. *Disciplines studied by choose of the University*** | | | | |
| 1 | History of Ukraine | 1 | 120 | 4,0 |
| 2 | Ukrainian language (by profession) | 1 | 120 | 4,0 |
| 3 | History of Ukrainian culture | 1 | 90 | 3,0 |
| 4 | Foreign language | 1, 2 | 150 | 5,0 |
| 5 | Jurisprudence | 3 | 90 | 3,0 |
| 6 | Philosophy | 3 | 120 | 4,0 |

| | | | | |
|---|---|---|---|---|
| 7 | Fundamentals of religion | 4 | 90 | 3,0 |
| 8 | Fundamentals of psychology | 5 | 90 | 3,0 |
| 9 | Physical training | 1, 2, 3, 4 | 120 | 4,0 |
| **In total by choose of the University** | | | **870** | **29** |
| **2.2. *Disciplines studied by choose of students*** | | | | |
| 1 | Political science and fundamentals of sociology | 1 | 90 | 3,0 |
| 2 | Education in universities | 1 | 90 | 3,0 |
| 3 | Ethics and culture of nutrition | 2 | 90 | 3,0 |
| 4 | Fundamentals of animal husbandry | 4 | 120 | 4,0 |
| 5 | Fundamentals of physiology and hygiene of nutrition | 6 | 90 | 3,0 |
| 6 | Hygiene and sanitary at enterprises that produce foods | 6 | 90 | 3,0 |
| 7 | Management at enterprises of the branch-industry and fundamentals of business undertakings | 6 | 90 | 3,0 |
| 8 | Fundamentals of construction in industry | 6 | 90 | 3,0 |
| 9 | Physicochemical and technical base of processes of refrigeration | 7 | 90 | 3,0 |
| 10 | Technological calculations and accounting in the branch-industry | 7 | 90 | 3,0 |
| 11 | Industrial ecology of reprocessing enterprises | 8 | 105 | 3,5 |
| 12 | Control of quality and safety of production of branch-industry | 8 | 105 | 3,5 |
| 13 | Merchandising and packing of foodstuffs | 8 | 90 | 3,0 |
| **In total** | | | **1230** | **41** |
| **2.2.1. *Specialization «Technology of meat and meat products»*** | | | | |
| 1 | Physicochemical and biochemical processes of reprocessing of meat | 4 | 120 | 4,0 |
| 2 | Technologies used in the branch-industry | 5, 6, 7, 8 | 390 | 13,0 |
| 3 | Biochemistry of meat and meat products | 7 | 90 | 3,0 |
| 4 | Projecting of enterprises of meat-processing industry | 7 | 90 | 3,0 |
| 5 | Microbiology of meat and meat products | 7 | 90 | 3,0 |
| **In total by specialization** | | | **780** | **26,0** |
| **2.2.2. *Specialization «Technology of fish and seafood»*** | | | | |
| 1 | Physicochemical and biochemical works by reprocessing of fish and seafood | 4 | 120 | 4,0 |
| 2 | Technologies used in the branch-industry | 5, 6, 7, 8 | 390 | 13,0 |
| 3 | Biochemistry of fish and seafood | 7 | 90 | 3,0 |
| 4 | Projecting of enterprises of fish-processing industry | 7 | 90 | 3,0 |
| 5 | Microbiology of fish and seafood | 7 | 90 | 3,0 |
| **In total by specialization** | | | **780** | **26,0** |
| **In total by choose of students** | | | **2010** | **67,0** |
| **In total by the selective constituent** | | | **2880** | **96,0** |
| **3. OTHER TYPES OF TRAINING** | | | | |
| 1 | Military training | 5, 6, 7, 8 | 675 | 22,5 |
| 2 | Work experience courses | 2 | 60 | 2,0 |
| 3 | Practical training | 4 | 60 | 2,0 |
| 4 | Practical training | 6 | 90 | 3,0 |
| **Preparation of bachelor' diploma (project)** | | | | **5,0** |
| **State attestation in total by profile of training** | | | **7200** | **240** |

## Annotations of disciplines in the curriculum

### 1. Standard academic disciplines

**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, oxidative 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, aminoacids, 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.

**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 un 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. 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.

## 2. Elective academic disciplines

### *2.1. Disciplines offered by University*

Annotations of disciplines of “History of Ukraine”, “Philosophy”, “Ukrainian language (by profession)”, “Foreign language”, “Physical training”, “Safety of work and life”, “Legal culture of the personality” see Chapter 2.1.

### *2.2. Disciplines offered by students*

**Political science and fundamentals of sociology.** Formation of knowledge (basic stages of formation and progress of psychology of personality; methods used in its development, interpersonal relations, processes occurred in groups, basic problems, concepts, social and psychological phenomenon.

**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.

**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.

**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.

**Industrial ecology of reprocessing enterprises.** Ecological state of enterprises that produce foods and the foodstuffs proper, energetics and ecology, monitoring of environment, sources of pollution and classification of pollutants of biosphere, environmental norms, protection of aerial environment, water resources and biosphere.

**Control of quality and safety of production of the branch-industry.** Inventory of raw materials in its accepting. Control of quality of raw materials in its acceptance for reprocessing, control of quality of finished products. Identification of loss of raw materials in processes of their transportation and preliminary treatment. Identification of mass parts of water, dry substances, pH, mineral substances, albumens, fats, hydrocarbons, vitamins pectin etc. in raw materials, semi-finished and finished products.

**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.

### *2.2.1. Specialization «Technology of meat and meat products»*

**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.

**Technologies used in the branch industry.** Structure of the branch-industry. Assortment of products of the branch-industry. Nutritional value and properties of products in their consumption, their organoleptic and physicochemical indices of quality. Technology of producing of products of preliminary and finishing reprocessing of raw materials used in the branch-industry. Complex reprocessing of raw materials used in the branch-industry. Advanced methods of fabrication of foodstuffs. Imperfections of products, causes of their origination and methods of prevention of their repeated appearance.

**Biochemistry of meat and meat products.** Identification of chemical composition of muscular and other tissues, which form meat of various kinds of domestic animals and birds; studying of biochemical processes that occur in live and slaughtered animals (in process of afterripening of meat and in process of its deterioration), identifying of their influence on passing of processes of producing of high-quality products; studying of biochemical indices of quality of meat and meat products, as well as identification of influence on their quality of various factors (quality of fattening, conditions of keeping, season, sex, physiological conditions of animals, conditions of environment etc.).

**Projecting of enterprises of meat-processing industry.** Studying by students of methods of projecting, carrying out of calculation of technological parameters of

enterprises and their graphical representation in process of projecting of technological lines used in meat-processing industry.

**Microbiology of meat and meat products.** Role of microorganisms in various processes of reprocessing and storage of meat raw materials; acquiring of practical experience in indication and identification of microorganisms, which vital activity influences on indices of quality and safety of meat and meat products; studying of etiology of ripening of meat and meat products; studying of systematics of prophylactic measures to be taken for prevention of occurrence of food poisoning and inflectional diseases of men caused by consumption of rotten meat and meat products.

### *2.2.2. Specialization «Technology of fish and seafood»*

**Physicochemical and biochemical works by reprocessing of fish and seafood.** Physicochemical and biochemical processes occurred in raw materials and products in process of their salting, freezing, thermal treatment, smoking, drying and new methods of technological treatment that have the purpose of reaching of optimum conditions of producing, forming of functional properties of raw materials and quality of finished products.

**Technologies used in the branch-industry.** Theoretical and practical problems arisen in realization of processes of reprocessing of fish, backboneless and other hydrobiontes; acquirement by students by knowledge of chemical composition, biological and energetic value of fish and seafood, basic technologies of their reprocessing, reasoning of decisions taken in development of related technologies, choose of methods of carrying out of technological operations and calculation of parameters of processes of manufacturing.

**Biochemistry of fish and seafood.** Biochemical processes occurred in tissues and organs of fish during its life, during the postmortal period and in process of its reprocessing; acquainting with chemical methods of identification of level of quality and freshness of fish and seafood.

**Projecting of enterprises of fish-processing industry.** The program of training presumes studying of theoretical and practical problems that arise in process of realization of typical processes of storage, preservation and reprocessing of fish, use of elements of the system of automated projecting of fish-processing enterprises, technological projects of manufactures of fish and seafood; technological projects of enterprises by producing of fish products; accounting and graphical chapters of works by projecting of related enterprises.

**Microbiology of fish and seafood.** Studying of morphology and physiology of basic groups of microorganisms, which vital activity influences on quality of fish and seafood; causes of deterioration of quality of fish and seafood; studying of the system of prophylactic measures to be taken for prevention of occurrence of food poisoning and inflectional diseases of men caused by consumption of rotten fish and seafood.

## 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 Agricultural Engineering*

Educational Program **"Agricultural Engineering"**

Graduating departments:

Agricultural machinery and systems engineering them. Acad. PN Vasylenka
Tel .: (044) 527-85-37 E-mail: _Vtesluk @ i / ua
Head of Department - d.s.n., prof. Teslyuk Victor Vasylovych

Mechanization of livestock
Tel .: (044) 527-85-35 E-mail: gagolub@mail.ru_gagolub@mail.ru
Head of Department - Doctor of Technical Sciences prof Golub Gennady Anatolievich

Technical service and engineering management . im MP Momotenka
Tel. :( 044) 527-88-53_ E-mail: vdv-tsim@ukr.net
Head of Department - 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 Volodymytrovych

Tractors and cars
Tel. :( 044) 527-88-95
Head of Department - PhD. Syera Catherine Myhaylivna

Mechanization of livestock. Tel .: (044) 527-85-35 E-mail: gagolub@mail.ru
Head of Department - Doctor of Technical Sciences prof Golub Gennady Anatolievich

Tractors and cars Tel. :( 044) 527-88-95 E-mail:
Head of Department - PhD. Syera Catherine Myhaylivna

Technical service and engineering management . im MP Momotenka
Tel. :( 044) 527-88-53_ E-mail: vdv-tsim@ukr.net
Head of Department - 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 Volodymytrovych

## *275 Transport Technologies (on Motor Transport)*

Educational Program **“Transport Technologies (on Motor Transport)”**

Graduating departments:

Transport technology and tools in agriculture
Tel. :( 044) 527-86-32 E-mail: kozypytsya@mail.ru
Head - prof. Fryshev Sergei G.

Tractors and cars
Tel. :( 044) 527-88-95 E-mail: syera_kateryna @ mail.ru
Head of Department - PhD. Syera Catherine Myhaylivna

Technical service and engineering management. Im. MP Momotenka
Tel. :( 044) 527-88-53_ E-mail: vdv-tsim@ukr.net
Head of Department - Prof .. Voytyuk Valery D.

## Bachelor
## field of knowledge "Agricultural Science and Food"
## in specialty “AGRICULTURAL ENGINEERING”
## Educational Program “Agricultural Engineering”

| | |
|---|---|
| Form of Training: | Licensed number of persons: |
| – Full-time | 200 |
| – Part-time | 200 |
| Terms of Learning | 4 years |
| Credits | 240 ECTS |
| Language of instruction | Ukrainian, English |
| Qualification graduate | Master (Technical), Engineer-Research of Mechanization’s Agriculture |

### 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: Claas Ukraine; John Deere Ukraine; Amaco Ukraine; Technician enerzhi; Astra; Zeppelin Ukraine; Lemken Ukraine; Vaderstadt Ukraine; Tan; Komsomolets; NSC "Institute of Mechanization and Electrification of Agriculture"; UkrNDIPVT them. Leonid Pogorelogo.

### 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 (vivtsefermy, 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 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 "Agricultural Engineering" Educational Program “Agricultural Engineering”

| № | Name of Academic Discipline | Term | Scope | |
|---|---|---|---|---|
| | | | hours | ECTS |
| **1. STANDARD ACADEMIC DISCIPLINES** | | | | |
| 1 | Physics | 1.2 | 120 | 4.0 |
| 2 | Descriptive geometry and computer graphics | 1.2 | 180 | 6.0 |
| 3 | Higher Mathematics | 1,2,3 | 300 | 10.0 |
| 4 | Materialscience and TCM | 2.3 | 180 | 6.0 |
| 5 | Theoretical Mechanics | 2.3 | 210 | 7.0 |
| 6 | Chemistry | 2 | 120 | 4.0 |
| 7 | Theory of mechanisms and machines | 3 | 180 | 6.0 |
| 8 | Mechanics of materials and structure | 3, 4 | 180 | 6.0 |
| 9 | Tractors and cars | 3,4,5 | 360 | 12.0 |
| 10 | Agriculture machines | 4,5,6 | 360 | 12.0 |
| 11 | Fuel and lubricants and other operating supplies | 4 | 120 | 4.0 |
| 12 | Standartization and teachical measurements | 5 | 90 | 3.0 |
| 13 | Parts of machines | 5 | 120 | 4.0 |
| 14 | Lifting machines | 6 | 90 | 3.0 |
| 15 | Machines and equipment for livestock | 6 | 120 | 4.0 |
| 16 | Machines in stockbreeding | 7.8 | 180 | 6.0 |
| 17 | Machines in cropgrowing | 7.8 | 180 | 6.0 |
| 18 | Techical servis of machines | 7.8 | 180 | 6.0 |
| 19 | Reability and repair of machines | 7.8 | 180 | 6.0 |
| 20 | Machines and equipment for processing of agricultural products | 7 | 120 | 4.0 |
| 21 | Machines in processing industry | 8 | 90 | 3.0 |
| **Total for standard part** | | | **3660** | **122** |
| **2. ELECTIVE ACADEMIC DISCIPLINES** | | | | |
| **2.1. *Disciplines offered by University*** | | | | |
| 1 | Ukraine history | 1 | 90 | 3.0 |
| 2 | Ethnocultural | 1 | 90 | 3.0 |
| 3 | Ukrainian language for professional purposes | 1 | 90 | 3.0 |
| 4 | Foreign Language | 1 | 210 | 7.0 |
| 5 | Physical Culture | 1,2,3,4 | 90 | 3.0 |
| 6 | Philosophy | 5 | 150 | 5.0 |
| 7 | Social sciences | 6 | 210 | 7.0 |
| 8 | Safety and life | 2.8 | 120 | 4.0 |
| **Total (Disciplines offered by University)** | | | **1050** | **35** |
| **2.2. *Disciplines offered by students*** | | | | |
| 1 | Technology of growing, processing and storage agriculture products | 2 | 180 | 6.0 |
| 2 | Computers and Computer Technology | 2 | 90 | 3.0 |
| 3 | The " machine -field - biological matrix " | 3.4 | 90 | 3.0 |
| 4 | Hydraulics and Heating Engineering | 3.4 | 120 | 4.0 |
| 5 | Fundamentals Driving and s.h.tehnikoyu | 4 | 150 | 5.0 |
| 6 | TOE , electrical and electric agriculture Appliances | 4.5 | 150 | 5.0 |
| 7 | Mechanical and technological properties agriculture materials | 5 | 90 | 3.0 |
| 8 | History and philosophy agriculture techincs | 5 | 90 | 3.0 |
| 9 | Standardization and certification machinery and equipment | 6 | 90 | 3.0 |

| | | | | |
|---|---|---|---|---|
| 10 | Hydro and Pneumodrive s.h.tehniky | 6 | 120 | 4.0 |
| 11 | Economic discipline | 6.7 | 180 | 6.0 |
| 12 | Machinery and equipment for biotechnology | 7 | 120 | 4.0 |
| **Total (Disciplines offered by students)** | | | **1470** | **49** |
| **Total for elective part** | | | **2520** | **84** |
| **3. OTHER TYPES OF TRAINING** | | | | |
| 1 | Military training | 5,6,7,8 | 870 | 29.0 |
| 2 | Cultural education training | 1,2,3,4 | 180 | 6.0 |
| 3 | Teaching practice | 2.4 | 420 | 14.0 |
| 4 | Practical training | 6 | 210 | 7.0 |
| **Preparation to diplom project** | | | **150** | **5.0** |
| **State certification** | | | **60** | **2.0** |
| **Total for Specialty (without Military training course)** | | | **7200** | **240** |

## Annotations of disciplines in the curriculum

### 1. Standard academic disciplines

**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.

**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 on the basic laws of nature on which settlement schemes create needed in the construction business, but also as a means of education to the future builders skills for scientific generalizations.

**Chemistry.** Submit student basic theoretical issues of physical chemistry and basic concepts of Macromolecular Chemistry.

**Teoreiya mehanizimiv 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.

**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.

**Interchangeability, 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.

**Machine parts.** 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.

**Hoisting machinery.** 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.

**Mashynovykorystannya livestock.** 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.

**Mashynovykorystannya in crop.** 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 and repair of machines**. Mastering the future mechanical engineer basics of technological processes of repair of machines and assemblies; get practical skills perform common maintenance operations; mastering the basics of organizing repair facilities and bases of calculation and design of repair facilities.

**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.

**Mashynovykorystannya in the processing industry.** 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.

.

## 2. Elective academic disciplines

### *2.1. Disciplines offered by University*

Annotations disciplines "History of Ukraine and ethnocultural", "Philosophy", "Ukrainian language for professional orientation", "foreign language", "Physical Education", "Safety and life", "legal culture of personality" see. Section 2.1.

### *2.2. Disciplines offered by students*

**Technology of growing, processing and storage SH 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.

**Hydraulics and Heating Engineering.** 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. 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) and hidrohazodynamiky that make up the theoretical foundations of heat engineering.

**Fundamentals Driving and mobile agricultural machinery.** 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.

**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.

**The economy of agricultural production.** 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 Program «Transport Technologies (on Motor Transport)»**

| | |
|---|---|
| Form of Training: | Licensed number of persons: |
| – fixed-time | 100 |
| – correspondence | 100 |
| Terms of Learning | 4 years |
| Credits | 240 ECTS |
| Language of instruction | Ukrainian, English |
| Qualification graduate | Master (Technical), Researchers in Transport Sector |

## 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).
8. Development of measures to improve the use of vehicles in ATP.
9. Development of transport and production processes during transportation of agricultural products (milk and milk products, bread and bakery products, etc.) in terms of business.

**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

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 (Motor Transport)» Educational Program «Transport Technologies (on Motor Transport)»

| № | Name of Academic Discipline | Semester | Scope | |
|---|---|---|---|---|
| | | | hours | ECTS |
| **1. STANDARD ACADEMIC DISCIPLINES** | | | | |
| 1 | Physics | 1 | 90 | 3.0 |
| 2 | Higher Mathematics | 1,2,3 | 330 | 11.0 |
| 3 | Basics of customs legislation | 2 | 90 | 3.0 |
| 4 | Vehicles | 3 | 120 | 4.0 |
| 5 | Chemistry | 2 | 90 | 3.0 |
| 6 | Probability and mat.statystyky | 3 | 120 | 4.0 |
| 7 | Operations research in transport systems | 4 | 210 | 7.0 |
| 8 | Shipping trasologii | 4 | 90 | 3.0 |
| 9 | General course of transport | 4 | 120 | 4.0 |
| 10 | Principles and Control Theory | 5 | 240 | 8.0 |
| 11 | Basic theory of transport processes and systems | 5 | 210 | 7.0 |
| 12 | Organization of traffic | 5 | 120 | 4.0 |
| 13 | Operational properties of roads and buildings | 5 | 90 | 3.0 |
| 14 | Information Systems and Technology | 6 | 240 | 8.0 |
| 15 | Freight transport | 6 | 240 | 8.0 |
| 16 | Technologically transport processes in agriculture production | 6 | 120 | 4.0 |
| 17 | Passenger transportation | 7 | 210 | 7.0 |
| 18 | Interaction of transport | 7 | 180 | 6.0 |
| 19 | Technical means of traffic | 7 | 120 | 4.0 |
| 20 | Fundamentals of economy of transport ( tariffs and tariff system) | 7.8 | 180 | 6.0 |
| 21 | Tansportne right | 7.8 | 150 | 5.0 |
| 22 | Logistics | 8 | 120 | 4.0 |
| 23 | Rural Transport Planning | 8 | 90 | 3.0 |
| 24 | Vehicle safety | 8 | 90 | 3.0 |
| 25 | Organization of international road | 8 | 90 | 3.0 |
| **Total student's choice** | | | **3750** | **125** |
| **2. ELECTIVE ACADEMIC DISCIPLINES** | | | | |
| **2.1. *Disciplines offered by University*** | | | | |
| 1 | History and ethnocultural Ukraine | 1 | 90 | 3.0 |
| 2 | Ethnocultural | 1 | 90 | 3.0 |
| 3 | Ukrainian language for professional purposes | 1 | 90 | 3.0 |
| 4 | Foreign Language | 1 | 180 | 6.0 |
| 5 | Physical educationphilosophy | 1,2,3,4 | 120 | 4.0 |
| 6 | Philosophy | 5 | 120 | 4.0 |
| 7 | Social sciences | 6 | 210 | 7.0 |
| 8 | Legal culture of personality | 2 | 90 | 3.0 |
| 9 | Safety and life | 2.8 | 90 | 3.0 |
| **Total (Disciplines offered by University)** | | | **1080** | **36** |

| | | | | |
|---|---|---|---|---|
| **2.2. *Disciplines offered by students*** | | | | |
| 1 | Engineering and Computer Graphics | 1 | 90 | 3.0 |
| 2 | The " machine - biological matrix " | 2 | 90 | 3.0 |
| 3 | History and philosophy s.h.tehniky | 2 | 90 | 3.0 |
| 4 | Technical mechanics | 2 | 90 | 3.0 |
| 5 | Basics of Criminalistics | 2 | 90 | 3.0 |
| 6 | Hygiene and features of the transport of animals and animal products | 3 | 90 | 3.0 |
| 7 | Eksperyza of accident | 3 | 90 | 3.0 |
| 8 | Knowledge of cargo | 3 | 90 | 3.0 |
| 9 | Hoisting machinery | 3 | 90 | 3.0 |
| 10 | Lubricants and other operating supplies | 4 | 90 | 3.0 |
| 11 | Performance Features vehicles | 4 | 90 | 3.0 |
| 12 | Fundamentals of Engineering Management | 6 | 90 | 3.0 |
| 13 | Traffic rules | 4 | 90 | 3.0 |
| 14 | Maintenance vehicle | 7 | 90 | 3.0 |
| 15 | Technology storage of agricultural products during transportation | 7 | 90 | 3.0 |
| **Total (Disciplines offered by students)** | | | **1350** | **45** |
| **Total for elective part** | | | **2430** | **81** |
| **3. OTHER TYPES OF TRAINING** | | | | |
| 1 | Military training | 5,6,7,8 | 870 | 29.0 |
| 2 | Cultural education preparing | 1,2,3,4 | 180 | 6.0 |
| 3 | Teaching practice | 2.4 | 420 | 14.0 |
| 4 | Manufacturing Practice | 6 | 210 | 7.0 |
| **Preparation diploma project** | | | **150** | **5.0** |
| **State certification** | | | **60** | **2.0** |
| **Total for Specialty (without Military training course)** | | | **7200** | **240** |

## Annotations of disciplines in the curriculum

### 1. Standard academic disciplines

**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 chance of factors affecting any processes, principles of mathematical statistics used in the planning, organization and management of production and technological processes.

**Basics of customs legislation.** Mastering the students basic theoretical and methodological foundations of customs regulation of foreign economic activity in the integration of Ukraine into the world community, as well as providing them with knowledge of tariffs as a tool to implement foreign policy and national security of Ukraine, the formation of the state budget.

**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 chance of factors affecting any processes, principles of mathematical statistics used in the planning, organization and management of production and technological processes .

**Operations research in transport systems.** Formation of theoretical knowledge and practical skills formalize control problems in transportation systems using specialized optimization methods.

**Transport trasologii.** Provide students with a system of theoretical knowledge and practical skills to form a correct application of the law in the expert trasoloha.

**General course of transport**. Mastering the concept of "integrated transport system", "integrated transport network", and the acquisition of knowledge on the importance of all forms of transport for the timely and quality to meet the needs of industries and population in traffic, increase economic efficiency of the transport system.

**Principles and theories of management.** Forming students' knowledge on the general methodology of focus, methods, systems theory and systems analysis applied in the management of organizations and decision-making regarding administrative, financial and production problems, the theory of purposeful systems, their modeling and research, targeted for use in transportation technology .

**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.

**Operations research in transport systems.** Formation of theoretical knowledge and practical skills formalize control problems in transportation systems using specialized optimization methods.

**The 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.

**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.

**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.

**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.

**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.

**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.

**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. 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.

**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.

**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.

**Security vehicles.** 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.

## 2. Elective academic disciplines

### *2.1. Disciplines offered by University*

Annotations disciplines "History of Ukraine and Ethnocultural", "Philosophy", "Ukrainian language for professional orientation", "foreign language", "Physical Education", "Safety and life", "legal culture of personality" see. Section 2.1.

### *2.2. Disciplines offered by students*

**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.

**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.

**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.

**Basics of criminology.** Formation of skills that allow to make the right choice simulate crime investigation techniques previously developed by the plot, rationally determine the sequence of investigative and search actions, disclosure practices, investigation and prevention of crime, the mechanism of the events that took place, the disclosure of internal connections and contradictions in the studied phenomena and facts transport.

**Hygiene and features of the transport of animals and animal products**. Formation of theoretical knowledge of students about the kinds of transportation for animals and their products, modern techniques and methods of sanitization transport, packaging machinery and equipment. The course combines technological expertise with the student mastered sanitary norms and processes that are needed in growing animals, livestock production, transportation and sales. Helps master the normative documents and sanitary requirements for varieties of the vehicles involved in the transport of animals and animal products, which can be used in practice.

**Examination of the accident**. Study position detection and investigation of crimes adjudication process of proof, proof in proceedings when the accident to establish the facts of the past, information that fall dodiznavacha and investigator in the form of information requiring special discovers, research and interpretation, implementation expertise ensure the establishment of objective truth in the crime of traffic accident.

**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.

**Maintenance vehicles**. To study the main factors that determine the organization of maintenance and repair of vehicles, economic and geographical characteristics of the city (district) mode of production divisions, selection and adjustment of standards for the design of transport, the calculation of the production program of the company TOR, the calculation of the production program of maintenance and repair by the number of technical acts, the calculation of the production program of maintenance and repair work units, the calculation of the production program ancillary works.

**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 requirements for the quality of raw materials and finished products during transportation of agricultural products.

## 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 the educational process of bachelors in the following specialties:

### *133 Industrial Mechanical Engineering*

Educational Program **"Industrial Mechanical Engineering"**

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

Tractors and automobiles and bio energy system
Tel.: +38 (044) 527-88-95 E-mail: gagolub@ukr.net Head of department – Doctor of Technical Sciences, professor Golub Gennady Anatolievich

Reliability of Machinery
Tel.: (044) 527-87-71 E-mail: relability_chair@twin.nauu.kiev.ua
Head – Dr. Sc., Professor Anatoliy Boyko

Mechanics
Tel.: +38 (044) 527-83-25 E-mail: berezovyi@nubip.edu.ua
Head of department – Ph.D. (Technical Sciences), associate professor Mykola Berezovyi

Agricultural machinery and systems engineering them. acad. P.M Vasilenko
tel. (044) 527-85-37 E-mail: sgms@ukr.net
Head of department - PhD Engineering Sciences, Docent, Gumeniuk Iurii Olehovych.

### *192 Construction and Civil Engineering*

Educational Program **"Construction and Civil Engineering"**

Graduating departments:

Technology and Organization of Building
Tel.: (044) 527-85-78 E-mail: biult_chair@twin.nauu.kiev.ua
Head - Dr. Sc., Professor Olexander Davydenko

Mechanics
Tel.: +38 (044) 527-83-25 E-mail: berezovyi@nubip.edu.ua
Head of department – Ph.D. (Technical Sciences), associate professor Mykola Berezovyi

## Bachelor
## field of knowledge «Mechanical engineering and processing of materials»
## in specialty «INDUSTRIAL MECHANICAL ENGINEERING»
## Educational Program "Industrial Mechanical Engineering"

| | |
|---|---|
| Form of Training: | Licensed number of persons: |
| – full-time studying | 170 |
| – part-time studying | 120 |
| Duration of studying: | |
| – full-time studying | 4 years |
| – part-time studying | 5 years |
| Credits | 240 ECTS |
| 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 "Velykosnytinske 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. An improvement of oil filter in the diesel biofuel production line;
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 nebulizing 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 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 "Industrial Mechanical Engineering" Educational Program "Industrial Mechanical Engineering"

| № | Name of Academic Discipline | Semester | Number | |
|---|---|---|---|---|
| | | | hours | credits ECTS |
| **1. STANDARD ACADEMIC DISCIPLINES** | | | | |
| 1 | Higher mathematics | 1-3 | 300 | 10 |
| 2 | Chemistry | 1 | 90 | 3 |
| 3 | Informatics and computer equipment | 1, 2 | 90 | 3 |
| 4 | Descriptive geometry | 1 | 90 | 3 |
| 5 | Physics | 1, 2 | 150 | 5 |
| 6 | Applied mathematics | 4 | 90 | 3 |
| 7 | Theoretical mechanics | 2, 3 | 180 | 6 |
| 8 | Material sciences | 3, 4 | 150 | 5 |
| 9 | Technology of constructing materials | 2, 3 | 120 | 4 |
| 10 | Mechanics of materials and constructions | 3, 4 | 210 | 7 |
| 11 | Interchangeability, Standardization and technical measuring | 4, 5 | 150 | 5 |
| 12 | Theory of mechanisms and machines | 4, 5 | 240 | 8 |
| 13 | Engineering and computer graphics | 1-3 | 180 | 6 |
| 14 | Mechanical and technological properties of agricultural materials | 5 | 90 | 3 |
| 15 | Parts of machines | 5, 6 | 210 | 7 |
| 16 | Machines and equipment for crop production | 5, 6 | 180 | 6 |
| 17 | Basis of machines constructions for animal production | 6, 7 | 180 | 6 |
| 18 | Machinery and equipment for bioenergetics | 6 | 90 | 3 |
| 19 | Hydraulic driving devices of agricultural technics | 6 | 120 | 4 |
| 20 | Heating engineering | 6 | 90 | 3 |
| 21 | Dynamics and durability | 5 | 90 | 3 |
| 22 | Professional orientation | 1 | 90 | 3 |
| 23 | Technology of mechanical engineering | 4-6 | 210 | 7 |
| 24 | Basis of constructing of mobile power vehicles | 6, 7 | 210 | 7 |
| 25 | Lifting and transporting machines | 7 | 90 | 3 |
| **Total for standard part** | | | **3690** | **123** |
| **2. ELECTIVE ACADEMIC DISCIPLINES** | | | | |
| ***2.1. Disciplines offered by University*** | | | | |
| 1 | Sociology and political science | 7 | 90 | 3 |
| 2 | Philosophy | 4 | 90 | 3 |
| 3 | Іноземна мова | 1, 2 | 150 | 5 |
| 4 | History of Ukraine | 1 | 90 | 3 |
| 5 | Ukrainian for professional purposes | 2 | 90 | 3 |
| 6 | Basis of scientific researches | 7 | 90 | 3 |
| 7 | Basis of electrical engineering | 2 | 90 | 3 |
| 8 | Labor protection | 8 | 120 | 4 |
| 9 | Hydraulics | 4 | 90 | 3 |
| 10 | Physical training | 1-4 | - | - |
| 11 | Facilities for automation of technics | 7 | 90 | 3 |
| 12 | Basis of economic theory | 8 | 90 | 3 |
| **Total (Disciplines offered by University)** | | | **1080** | **36** |
| ***2.2. Disciplines offered by students*** | | | | |
| ***2.2.1. Specialization „Machines and equipment of agricultural productions"*** | | | | |
| 1 | Technology of animal products production | 5 | 90 | 3 |
| 2 | Technology of crop products production | 5 | 90 | 3 |
| 3 | Designing of agricultural machines | 8 | 150 | 5 |
| 4 | Ergonomics of agricultural machines | 8 | 90 | 3 |
| 5 | Computer design of agricultural processes | 8 | 180 | 6 |
| 6 | Fuels, oils and other consumables | 3 | 120 | 4 |
| 7 | Tillage mechanics | 7 | 90 | 3 |

| | | | | |
|---|---|---|---|---|
| 8 | Theory of cutting, metal-working and instruments | 4 | 150 | 5 |
| 9 | Bioenergy systems in livestock | 3 | 90 | 3 |
| 10 | Reliability of agricultural technics | 7, 8 | 180 | 6 |
| 11 | Constructing of agricultural machines | 7, 8 | 360 | 12 |
| 12 | Biosystems engineering | 8 | 90 | 3 |
| 13 | Fundamentals of technics control | 4 | 90 | 3 |
| **Total for Specialization** | | | **1770** | **59** |
| ***2.2.2. Specialization «Equipment of forest complex»*** | | | | |
| 1 | Timber plant species | 7 | 90 | 3 |
| 2 | Machines and equipment for forestry | 7, 8 | 240 | 8 |
| 3 | Theory of cutting, woodworking machine-tools and equipment | 4 | 180 | 6 |
| 4 | Fuels, oils and other consumables | 3 | 120 | 4 |
| 5 | Woods cutting and transporting | 3 | 90 | 3 |
| 6 | Designing of machines for forestry | 7 | 90 | 3 |
| 7 | Using of machines for forestry | 8 | 120 | 4 |
| 8 | Standardization and certification of machines | 5 | 90 | 3 |
| 9 | Quality measuring of woods | 4 | 120 | 4 |
| 10 | Constructing of machines for forestry | 8 | 270 | 9 |
| 11 | Biosystems engineering | 8 | 90 | 3 |
| 12 | Reliability equipment of forest complex | 7 | 150 | 5 |
| 13 | Technical maintenance of machines and equipment of forest complex | 8 | 120 | 4 |
| **Total for Specialization** | | | **1770** | **59** |
| **Total (Disciplines offered by students)** | | | **1770** | **59** |
| **Total for elective part** | | | **2850** | **95** |
| **3. OTHER TYPES OF TRAINING** | | | | |
| 1 | Military training course | 5-8 | 675 | 22,5 |
| 2 | Academic Practice | 2, 4 | 270 | 9 |
| 3 | Production Practice | 6 | 180 | 6 |
| 4 | Driver training | - | 90 | 3 |
| **Bachelor Thesis writing (Graduate thesis or Project)** | | | **180** | **6** |
| **State Attestation** | | | **30** | **1** |
| **Total for Specialty (without Military training course and driver training)** | | | **7200** | **240** |

## Annotations of disciplines in the curriculum

### 1. Standard academic disciplines

**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.)

**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.)

**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.)

**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.** (Principles, which determine structure and properties of materials depending on their composition and terms of treatment, are studied in this course. The course allows to study the modern high-efficiency methods of increasing the properties of durability, corrosive firmness, heating- and frost resistant alloys, effective methods of treatment of surface of wares with the purpose of substantial increasing of anticorrosive firmness, development and use of new polymeric and composition materials with the set complex 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.)

**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.)

**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.)

**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.)

**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.)

**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.)

**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.)

## 2. Elective academic disciplines

### *2.1. Disciplines offered by University*

Annotations of disciplines “Ukrainian for Professional Purposes”, “History of Ukraine”, “Foreign Language (English, German, French, Spanish)”, “Philosophy”, “Physical Training” see Section 2.1.

**Sociology and political science.** (The course studies principles of development and functioning of political life of society, mechanisms of political power, management of political processes. The basic stages of development of world and domestic political idea,

politician and political relations, power, process, political system of society, political mode, political parties, public organizations and motions in socio-political life of society, personality and policy, political culture, world political process are examined in discipline. There are studied a structure and functions of sociology, social structure of society (social class, ethnic, social, cultural and professional groups), social relations and social policy, problems of social justice, special sociological theories (sociology of labour and management, sociology of policy, sociology of public opinion, sociology of education), methodology of sociological researches.)

**Basis of scientific researches.** (The discipline studies the bases of scientific activity, in particular concept of method and methodology and their role in scientific cognition, stages of research work, question of organization of experiment execution, basis of inventing and also methods of the statistical processing of experimental data.)

**Basis of electrical engineering.** (The main task of the course is a study of bases of power supply, electromechanic and facilities of electricity safety. During studying student masters basic principles, applied at the analysis of electric circles, basic methods of analysis of electric circles, seizes the general method of construction of scheme and mathematical models of electrical engineering chains, able to analyze typical electrical engineering chains at typical external influences, has practical skills of analytical, numeral and experimental research of basic processes which take place in electrical engineering chains, knows rules and charts of power supply, electrical driving devices and safety of electricity.)

**Labour protection.** (In discipline legal and organizational questions of labour protection, dangerous and harmful factors of production environment and methods of their decline to the normative sizes, bases of fire protection safety and safety of electricity with the purpose of prophylaxis of accidents and professional diseases on a production are considered. The purpose of discipline study is a theoretical and practical preparation of specialists, which on the basis of the got knowledge would be able to develop and inculcate the safe terms of labour on the workplaces of workers of Agrarian complex, construct the safety of hardware. A task of discipline is preparation of future specialists, able to inculcate labor protection decisions, directed on the improvement of terms of labour, decline of traumatism and professional diseases in industry of Agrarian complex, increase of capacity.)

**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.)

**Facilities of automation of agricultural technicians.** (The purpose of course is to obtain knowledge on questions the features of construction and work of separate elements and systems of electrical equipment: principles and facilities of power supply, construction of facilities of lamplight and methods of its calculation, principles of construction and calculation of the electric heating and electrotechnology, construction of systems of electromechanic and use of separate types of electromechanic in a modern agricultural production.)

**Basis of economic theory.** (Economic theories and principles, relations and objective principles of development of public production, market theory and mechanism of its functioning, basis of enterprise, land rent are studied. There are analysed the general problems of transitions of Ukraine to social-market economy and its integration to world economy.)

## *2.2. Disciplines offered by students*

### *2.2.1. Specialization „Machines and equipment of agricultural productions"*

**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 ground-climatic terms, a future engineer, and also effectively to use ground-climatic resources and guard of environment.)

**Design 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.)

**Ergonomics of agricultural machines.** (In an educational course disciplines are examined substantive provisions of ergonomics – 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.)

**Modelling of agricultural processes.** (Bases of design of agricultural processes on the computer are considered, basic concepts and determinations are set, and the methods of application of computer are investigated for management processes in the production.)

**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 livestock.** (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 in livestock.)

**Reliability of agricultural machines.** (It is complex discipline which studies: engineering-physical bases of reliability of agricultural technique, test of machines are on reliability, methods of providing of reliability of agricultural machines, terms and determinations of the system of technical service and repair; technological processes of repair of machines; technologies of typical component, knots and aggregates overhaul; processes of loss and proceeding in the capacity of agricultural machines.)

**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 computer programs, that will allow promote the technical and aesthetically beautiful level of machines, reduce their prime price.)

**Biosystems engineering.** (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).

**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.)

### *2.2.2. Specialization „Equipment of forest complex”*

**Timber plant species.** (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.)

**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 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.)

**Using of machines for forestry.** (The study of discipline provides future specialists theoretical and practical knowledge on questions a technique and its exploitation in the new terms of technologies of purveyance of wood raw material, his roughing-out and supply to the users.)

**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.)

**Quality measuring of woods.** (This discipline provides to students the knowledge and professional skills about the methods to estimate the quality of trees, trees renewing methodical and commercial timbering requirements. The tasks of discipline is to study quantitative methods to evaluate the quality of trees, renewing of trees, terms of planting, tree fallings works, production of saw-timbers, commercial timbers and saw-timbers.)

**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.)

**Biosystems engineering.** (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).)

**Bachelor**
**field of knowledge "Building and Architecture"**
**in specialty "CONSTRUCTION AND CIVIL ENGINEERING"**
**Educational Program "Construction and Civil Engineering"**

| | |
|---|---|
| Forms of Learning: | Licensed number of persons**:** |
| – Full-time | 50 |
| – Part-time | 50 |
| Terms of Learning | 4 years |
| Credits | 240 ECTS |
| Language of instruction | Ukrainian |
| Qualification graduate | Bachelor (Technical) in Building |

## Concept of Learning

of 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 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 Program "Construction and Civil Engineering"

| № | Name of Discipline, Practice | Semester | Amount | |
|---|---|---|---|---|
| | | | Hours | ECTS |
| **1. STANDARD ACADEMIC DISCIPLINES** | | | | |
| 1 | Physics | 1,2 | 150 | 5 |
| 2 | Descriptive geometry and engineering graphics | 1,2 | 180 | 6 |
| 3 | Higher Mathematics | 1-3 | 300 | 10 |
| 4 | Chemistry | 1 | 90 | 3 |
| 5 | Theory of mechanisms and machines | 2,3 | 120 | 4 |
| 6 | Theoretical Mechanics | 2,3 | 180 | 6 |
| 7 | Mechanics of materials and structures | 3,4 | 180 | 6 |
| 8 | Construction machinery | 4 | 90 | 3 |
| 9 | Architecture buildings | 4,5 | 180 | 6 |
| 10 | Structural Mechanics | 4,5 | 180 | 6 |
| 11 | Bases and foundations | 6,7 | 180 | 6 |
| 12 | Fundamentals of design and construction business | 6 | 120 | 4 |
| 13 | Water supply and sanitation | 5 | 90 | 3 |
| 14 | Construction technology | 5 | 90 | 3 |
| 15 | Metal structures | 5,6 | 120 | 4 |
| 16 | Reliability construction equipment | 5 | 90 | 3 |
| 17 | Heat and ventilation | 6 | 90 | 3 |
| 18 | Building construction | 7 | 180 | 6 |
| 19 | Reinforced concrete and stone structures | 7,8 | 180 | 6 |
| 20 | The production base construction | 7 | 90 | 3 |
| 21 | Study trial. geodetic | 2 | 270 | 9 |
| 22 | Educational technology | 4 | 270 | 9 |
| **Total for standard part** | | | 4140 | 138 |
| **2. ELECTIVE ACADEMIC DISCIPLINES** | | | | |
| ***2.1. Disciplines offered by University*** | | | | |
| 1 | History of Ukrainian statehood | 1 | 90 | 3 |
| 2 | Ukrainian language (for professional purposes) | 1 | 90 | 3 |
| 3 | Foreign language (for professional purposes) | 1-3 | 180 | 6 |
| 4 | Philosophy | 5 | 90 | 3 |
| 5 | Labour protection (Integrated) | 8 | 180 | 6 |
| 6 | Computers and computer technology | 2 | 90 | 3 |
| 7 | Ethnocultural | 1 | 90 | 3 |
| 8 | Science of law (integrated) | 3,6 | 180 | 6 |
| 9 | Introduction to the profession | 1 | 90 | 3 |
| 10 | Physical education | 1-4 | | |
| **Total (Disciplines offered by University)** | | | 1080 | 36 |
| ***2.2. Disciplines offered by students*** | | | | |
| 1 | Economic theory | 5 | 90 | 3 |
| 2 | Engineering geodesy (general rate) | 2 | 90 | 3 |
| 3 | Engineering geology soil mechanics and foundations | 3 | 90 | 3 |
| 4 | Building materials | 2 | 90 | 3 |
| 5 | Construction economy | 7 | 90 | 3 |
| 6 | Inspection and testing of buildings | 8 | 120 | 4 |
| 7 | Seismology | 8 | 120 | 4 |
| 8 | Basics of computer-aided design in construction | 6,7 | 150 | 5 |
| 9 | Software engineering calculations | 8 | 150 | 5 |
| 10 | Technical maintenance and repair of buildings | 8 | 90 | 3 |
| 12 | Modern building materials | 6 | 150 | 5 |
| 13 | Constructions of wood and plastic | 5 | 90 | 3 |
| 14 | Metals and welding in construction | 6 | 90 | 3 |
| 15 | Engineering structures | 3 | 150 | 5 |
| 16 | Organization of construction | 7,8 | 180 | 6 |
| 17 | Metrology and Standardization | 4 | 150 | 5 |

| | | | | |
|---|---|---|---|---|
| 18 | Electrical construction | 4 | 90 | 3 |
| **Total (Disciplines offered by students)** | | | **1980** | **66** |
| **Total for elective part** | | | **3060** | **102** |
| **3. OTHER TYPES OF TRAINING** | | | | |
| 1 | Military training course | 5-8 | 675 | |
| 4 | Driver training | 3-4 | 90 | |
| **Total for Specialty (without Military training course and driver training)** | | | **7200** | **240** |

## Annotations of disciplines in the curriculum

### 1. Standard academic disciplines

**Economic Theory.** Formation solving skills of professional issues, formation of practical skills in organizational design, preparation of construction documents, financial management, etc., to train competent to make rational and informed decisions, analyze, generalize economic performance of construction organizations to defend their point of view for decisions, to discussion.

**Law**. Developing the knowledge of foundations of theory of law and key areas of law (constitutional, administrative, civil, financial, labor, international, etc.) assimilation methods of legal regulation of economy; clarify legal principles of business and economic activities.

**Sociology.** Forming holistic view of specifics of object and purpose of sociological knowledge of foreign history and sociology, prospects for its further development, skills acquisition and organization of empirical sociological research and practice effective use of their results.

**Politology.** Study of nature, theory and methodology of political science as science, development of skills of understanding political relations and processes, acquiring skills of practical application of theoretical, practical and instrumental components of political knowledge, analysis of international politics, geopolitical situation and political processes in Ukraine, its location, status and responsibility in modern political world.

**Physics.** Enhancing knowledge and understanding of phenomena and laws of nature that appear in classical and modern physics and related to their use in industry, technology and everyday life to environmental protection and life safety.

**Descriptive Geometry.** Formation of knowledge formation geometry, performance and reading technical drawings, construction images such as using computer graphics, geometric modeling to teach students facilities and processes, to provide them with knowledge and skills needed to perform and read drawings for various purposes as those carried out by hand or computer, and solving for pictures, drawings and models of geometric engineering problems.

**Higher Mathematics.** Formation of theoretical knowledge and practical skills in fundamentals of mathematical tools, main methods of quantitative measurement of random factors affecting any processes, principles of mathematical statistics, which is used during the planning, organization and management of production and technological processes.

**Applied Mathematics.** Formation of theoretical knowledge and practical skills in fundamentals of mathematical tools, main methods of quantitative measurement of random factors affecting any processes, principles of mathematical statistics, which is used during the planning, organization and management of production and technological processes.

**Computers and Computer Technology.** As required educational and professional program students should be able to: build complex drawings and axonometric images

three-dimensional objects, solve problems on intsydentnist two geometric shapes (point, line, plane surface) to solve problem on intersection of two geometric figures (straight, plane surface) to find distance between shapes and angles between them, for given legal education to build projection points of curves and surfaces and cross sections to perform complex geometric figures, finding life-size oblique sections, to issue engineering and construction drawings for standards; know: principles and methods of projection images, positional methods for solving problems; metric methods for solving problems, methods of formation curves and surfaces; state standards.

**Chemistry.** Submit student basic theoretical questions in physical chemistry as well as basic concepts of Macromolecular Chemistry.

**Theory of Mechanisms and Machines.** To deepen students' knowledge of theoretical material about fundamental laws of nature on which calculation schema create needed in construction business, but also as means of education in construction skills for future scientific generalizations.

**Theoretical Mechanics.** To deepen students' knowledge of theoretical material about fundamental laws of nature on which calculation schema create needed in construction business, but also as means of education in construction skills for future scientific generalizations.

**Mechanics of Materials and Structures.** Forming students knowledge of strength of materials, geometric properties of plane sections, external and internal forces, method of sections, diagrams of internal forces, tensile and compressive strength, mechanical properties of materials, the calculation of the strength and stiffness at stretching and compression, basic theory of stress and strain state; strength criteria, displacement, torsion, bending, bending theory further questions, complex impedance, general theorems, elastic systems, common methods for determining displacements, statically undetectable system, calculation of plane curves beams, calculation of thick-walled cylinders and rotating disks, elements of the theory of thin shells, to calculate design by boundary conditions, the stability of compressed rods, elastic vibrations, strength of materials of re-variable stress, accounts for shock loads, contact stresses, fracture mechanics basis.

**Engineering Geodesy (General Course).** 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 Machinery.** 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.

**Electrical Construction.** Forming students knowledge of electrical construction, linear range DC linear range of single-phase AC, three-phase current, transformers, electric machines DC machines AC, Low Voltage switchgear and relays, electrical measurements, choice of cross-section of wires and cables, rules Safety in electrical systems.

**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.

**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.

**Water and Wastewater.** Formation of future professionals with skills and knowledge of modern methods of design, construction and operation of water and wastewater systems 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 drainage settlements, residential and industrial projects, principles of selection and scheme water and wastewater facility; basic principles of sanitary equipment of buildings and structures, identifying the design parameters of sampling, preparation and filing of various water quality for water supply purposes, definition of estimated parameters of drainage and wastewater from different users).

**Technology Building Production.** To deepen students' knowledge of theory, and acquire skills to make independent technological and organizational solutions in matters installation of precast concrete structures, design technology and complex 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.

**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.

**Urban Planning and Transport.** Forming students urban world, understanding social significance of urban planning, and its dependence on natural, social and economic conditions and impact on people's lives. Addressing architectural and planning tasks and problems of engineering equipment reclaimed areas, improving transport system of city, including road network.

**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.

**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.

**Technology and Organization of Construction.** Systematized knowledge about mastering technology and forms of construction, study of rational organization of construction site quality control system design and construction.

**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 Masonry 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.

**Economics Building.** 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.

**Safety of Building.** Forming students' knowledge of legal and regulatory framework for occupational safety, government guarantees and conditions of labor, management and supervision of occupational safety and organization of production, training on safety, investigation and registration of accidents, occupational diseases and accidents; stimulation of labor and responsibility for its violation.

**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.

**Architecture buildings.** To develop the students' creativity, their creative ideas can be realized only in material form - in products and structures made of concrete materials; teach correctly select materials for buildings on which the material made house - in a tree or a stone, metal or reinforced concrete monolith - depends on architectural appearance and design solution, the cost, terms and conditions for the operation of the house.

**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).

**Technology building production.** 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.

**Reliability engineering construction.** 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.

**Reinforced concrete and stone structures**. Entry students knowledge of methods of calculation, design, construction and operation of concrete and masonry structures, taking into account the requirements for reliable and safe operation, efficiency and environmental cleanliness of these structures.

**The production base construction.** Learn the basics of technology and organization of production of building materials, structures and products; determine the direction of the production base construction; teach the technical and economic parameters to perform selection of technological schemes, raw materials and equipment.

**Engineering surveying (general rate).** Learning content and main directions of geodetic activities; mastering the techniques of basic geodetic works, geodetic shooting; development of surveying instruments.

## 2. Elective academic disciplines

### *2.1. Disciplines offered by 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”, “Legal Personal Culture” see Section 2.1.

**Professional Introduction.** Introducing students to basics of building as integrated production process. Trace entire construction process from project work linked to area of construction, preparation and provision of necessary equipment is actually process of construction of modern technologies, streamlining construction area, construction of communication.

**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.

**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.

**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.

**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.

**Construction 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.

**Ethnocultural**. Discipline studies the patterns of development and functioning of the cultural life of society, the mechanisms of formation of ethnic, managing cultural processes. In the discipline are considered main stages of the world and national culture, social organizations and movements in the socio-political and cultural life of the community, identity and politics, political culture, global cultural process.

**Labor protection.** Forming students' knowledge of the legal and regulatory framework for safety; state guarantee conditions and safety; management and supervision of work and its organization in the workplace; training on safety; investigation and registration of accidents, occupational diseases and accidents; stimulation of safety and responsibility for its violation.

**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.

**Intoduction 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.

## *2.2. Disciplines offered by students*

**Software Engineering Calculations.** Feasibility studies and calculations of different variant solutions design, research organizations for various kinds of design. Inspection and testing of buildings. Bachelor builders and engineers who have in-depth knowledge of methods and means of studying basic properties of building materials, study and evaluation of stress-strain state of structures, buildings and structures at all stages of process (from design to operation) are competent in organizing systems, application methods and means of nondestructive quality control of construction products, oriented in design scheme of buildings and structures, perfectly aware of methodology of experimental research, know and be able to apply the methods and tools appropriate measurements, capable of quality control in construction, carry out surveys and to test structures, buildings and structures to draw conclusions about their condition and 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.

**Fundamentals of Design Automation in Construction.** Familiarization with basic computer programs with computer-aided design of building structures, review latest and most current software systems of calculation and computer-aided design, introduction of integrated tools in Windows operating system and MS Office, as well as in most of software programming language VBA for Applications.

**Economics building.** The formation of future professionals heat and gas management system expertise and practical skills in economics of construction, planning and economic indicators of industrial activity, the use of economic construction management organization taking into account factors external and internal environment.

**Engineering surveying (general rate).** Learning content and main directions of geodetic activities; mastering the techniques of basic geodetic works, geodetic shooting; development of surveying instruments.

**Engineering geology.** Graphically display lithological rock areas, describe the terrain, perform analysis and assessment of the current state of the geophysical environment, execute the long-term forecast of and changes taking place in the geophysical environment in the form of relief for a long time to perform certain sections of engineering and survey reports in construction.

**Construction Materials.** The study fundamental properties of building materials and their changes in operating conditions; study technology range of building materials for their production; study of the characteristics of the relationship "composition - structure - properties", as well as their patterns of changes in physical and chemical, physical, mechanical and other influences; identify ways of effective use of building materials multifunctional purposes.

**Inspection and testing of buildings and structures.** 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.

**Fundamentals of design automation 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 rd s 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 maintenance of buildings.** Form the basis of maintenance of buildings, the frequency of interventions and facilities maintenance buildings in work condition.

**Constructions of wood and plastic**. To teach students properly handled and carry out installation work, use the beams, purlins, studs, rafters, arches, frames, trusses, spatial span and special designs.

**Construction management**. Obtaining theoretical knowledge and practical skills that will be needed in practice. Interconnected system of training to perform certain types of work, installation and maintenance of general order on the construction site, the order and timing of works, supplies all kinds of resources to ensure the effectiveness and quality of certain types of work or construction of

**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.

## 2.10. EDUCATION AND RESEARCH INSTITUTE OF ENERGETICS, AUTOMATICS AND ENERGY SAVING

**Director** – Doctor of Technical Sciences, Professor, Honored Worker of Science and Technique **Volodymyr Victorovych Kozyrskyi**
Tel.: (044) 527-85-80; E-mail: 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 Program **«Power Engineering, Electrical Engineering and Electrical Mechanics»**

Graduating departments:

Department of Power Supply named after Prof. V.M. Synkov
Tel.: (044) 527-85-80, E-mail: nditt@mail.ru
Head of department – Doctor of Technical Sciences, Professor
Mykola Vasyliovich Grebchenko.

Department of Electrical Machinery and Electrical Equipment Operation
Tel.: (044) 527-87-55; (044) 527-87-89; E-mail: elmash_nubip@ukr.net
Head of department – Doctor of Technical Sciences, Associate Professor
Andrei Volodymirovich Zhyltsov.

Department of Automatics and Robototechnical Systems named after acad. I. I. Martynenko. Tel.: (044) 527-82-22, E-mail: avto.ea@gmail.com
Head of department – Doctor of Technical Sciences, Professor, Honored Worker of Education Vitaliy Pylypovych Lysenko.

Department of Electric Drive and Electric Technologies named after Prof. S. P. Bondarenko. Tel.: (044) 527-87-73, E-mail: a.chmil.@mail.ru
Head of department – Doctor of Technical Sciences, Professor Larisa Evgenievna Nikiforova.

Department of Heat and Power Engineering
Tel.: (044) 527-87-48, E-mail:gorobetsv@ukr.net
Head of department – Doctor of Technical Sciences, Associate Professor
Valeryi Hrygorovych Gorobets.

## *151 Automation and Computer Integrated Technologies*

Educational 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
Head of department, Doctor of technical sciences, professor Lysenko Vitaliy Pylypovych.

# 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 | Technician-Electrician |

## 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 "Kyyivsilelektro", 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-vidhodivelnyku.
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.

# Bachelor`s Program and Curriculum in Specialty "Power Engineering, Electrical Engineering and Electrical Mechanics" Educational Program «Power Engineering, Electrical Engineering and Electrical Mechanics»

| № | Name of Academic Discipline | Semester | Number | |
|---|---|---|---|---|
| | | | hours | credits ECTS |
| **1. STANDARD ACADEMIC DISCIPLINES** | | | | |
| 1. | High Maths | 1, 2, 3 | 420 | 14,0 |
| 2. | Engineering and Computer Graphics | 1 | 180 | 6,0 |
| 3. | Physics | 1, 2 | 300 | 10,0 |
| 4. | Computer Technologies and Programming | 2 | 150 | 5,0 |
| 5. | Theoretical Mechanics | 2 | 90 | 3,0 |
| 6. | Fundamentals of Heat Engineering | 3 | 120 | 4,0 |
| 7. | Electronics and Microcircuitry | 3 | 120 | 4,0 |
| 8. | Electrical Materials | 3 | 90 | 3,0 |
| 9. | Electrotechnical Systems of Power Consumption | 3 | 120 | 4,0 |
| 10. | Theoretical Foundations of Electrical Engineering | 3 | 120 | 4,0 |
| 11. | Electrical Apparatus | 4 | 120 | 4,0 |
| 12. | Electrical Machines | 4, 5 | 240 | 8,0 |
| 13. | Electrical Networks | 4 | 120 | 4,0 |
| 14. | Foundations of Automation | 4, 5 | 240 | 8,0 |
| 15. | Electrical Part of Stations and Substations | 5 | 150 | 5,0 |
| 16. | Microprocesser Technique | 5 | 120 | 4,0 |
| 17. | Metrology and Electrical Measuring | 5 | 120 | 4,0 |
| 18. | Fundamentals of Electric Drive | 5, 6 | 240 | 8,0 |
| 19. | Fundamentals of Electricity Supply | 6 | 150 | 5,0 |
| 20. | Fundamentals of Relay Protection and Automation of Power Systems | 6 | 120 | 4,0 |
| **Total for standard part** | | | **3120** | **104** |
| **2. ELECTIVE ACADEMIC DISCIPLINES** | | | | |
| **2.1. *Disciplines offered by University*** | | | | |
| 1. | History of Ukraine | 1 | 90 | 3,0 |
| 2. | Ukrainian Language (for professional purposes) | 1 | 90 | 3,0 |
| 3. | Physical Education | 1, 2, 3, 4 | 300 | 10,0 |
| 4. | Foreign Language | 1, 2 | 180 | 6,0 |
| 5. | Philosophy | 2 | 90 | 3,0 |
| 6. | Ethnic Culture | 4 | 90 | 3,0 |
| 7. | Safety of Labour and Activity | 7 | 120 | 4,0 |
| 8. | Legal Culture of Personality | 7 | 90 | 3,0 |
| 9. | Energysaving and Alternative Energy Sources | 8 | 90 | 3,0 |
| 10. | Mathematical Problems of Energetics | 8 | 90 | 3,0 |
| 11. | Fundamentals of Scientific Research | 8 | 120 | 4,0 |
| **Total (Disciplines offered by University)** | | | **1050** | **35** |
| **2.2. *Disciplines offered by students*** | | | | |
| 1. | Software of Engineering Calculations | 1 | 90 | 3,0 |
| 2. | Technology of Production, Storage and Processing of Agricultural Products | 2 | 90 | 3,0 |
| 3. | Hydraulics | 3 | 90 | 3,0 |
| 4. | Ecological Fundamentals of Production, Distribution and Use of Electrical Energy | 3 | 90 | 3,0 |
| 5. | Mounting of Energy Equipment and Control Systems | 4 | 90 | 3,0 |
| 6. | Diagnostics of Power Equipment | 6 | 120 | 4,0 |
| 7. | Basics of Technical Operation of Energy Equipment and Control Facilities | 6 | 90 | 3,0 |
| 8. | Basics of Digital Control and Programming of Microcontrollers | 6 | 120 | 4,0 |
| 9. | Industrial Electronics and Transforming Equipment | 6 | 90 | 3,0 |

| | | | | |
|---|---|---|---|---|
| 10. | Electronic Devices in Control Systems | 7 | 90 | 3,0 |
| 11. | Machinery and Equipment of AIC | 7 | 90 | 3,0 |
| 12. | Basics of Business, Management and Marketing | 7 | 90 | 3,0 |
| 13. | Fundamentals of AIC Energy Objects Design | 7 | 150 | 5,0 |
| 14. | Electric Drive of Industrial Machinery and Mechanisms | 7 | 120 | 4,0 |
| 15. | Technical Service of Energy Equipment | 7 | 150 | 5,0 |
| 16. | Economy and Energy Services Organization | 8 | 90 | 3,0 |
| 17. | Heat Power Installations and Systems | 8 | 90 | 3,0 |
| 18. | Project Management | 8 | 120 | 4,0 |
| 19. | Software for Engineering Modeling | 1 | 90 | 3,0 |
| 20. | Mathematical Modeling on a Computer | 1 | 90 | 3,0 |
| 21. | Esthetics | 2 | 90 | 3,0 |
| 22. | Economic Theory | 2 | 90 | 3,0 |
| 23. | Ecology (for professional purposes) | 3 | 90 | 3,0 |
| 24. | Basics of Ecology | 3 | 90 | 3,0 |
| 25. | Marketing | 7 | 90 | 3,0 |
| 26. | Management | 7 | 90 | 3,0 |
| 27. | Psychology | 8 | 90 | 3,0 |
| 28. | Cultorology | 8 | 90 | 3,0 |
| **Total (Disciplines offered by students)** | | | **1860** | **62** |
| **3. OTHER TYPES OF TRAINING** | | | | |
| 1. | Military Training | **-** | 563 | 18,75 |
| 2. | Teaching Practice for the Production and Processing of Agricultural Products | **-** | 60 | 2,0 |
| 3. | Educational Electro Fittering Practice | **-** | 90 | 3,0 |
| 4. | Production Electro Mounting Practice | **-** | 150 | 5,0 |
| 5. | Industrial Operating Practice | **-** | 150 | 5,0 |
| **Bachelor Thesis writing (Graduate thesis or Project)** | | | **300** | **10** |
| **State Attestation** | | | **30** | **1** |
| **Total for Specialty (without Military training course)** | | | **7200,0** | **240,0** |

## Annotations of disciplines in the curriculum

### 1. Standard academic disciplines

**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**.**

**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**.**

**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.

**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.

**Fundamentals of Heat Engineering.** Fundamentals of Heat Mass Transfer. Thermal power plants and the application of heat in agriculture.

**Theoretical mechanics.** Theoretical mechanics. Theory of mechanisms and machines. Mechanics of materials and structures. Machine parts

**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.

**Physics.** Physical principles of mechanics. Fundamentals of molecular physics and thermodynamics. Electricity and magnetism. Elements of solid state physics. Optics. Nuclear Physics.

## 2. Elective academic disciplines

### *2.1. Disciplines offered by 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”, “Legal Personal Culture” see Section 2.1.

**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.

**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 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.

**Fundamentals of AIC Energy Objects Design.** Methods of design of electrification, automation and energy in agriculture. Computer technologies in design. Requirements for the project.

### *2.2. Disciplines offered by students*

**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 measurings and tests of electrical equipment. Modeling of emergency operating modes. Algorithms of troubleshooting technical products.

**Electrical Part of Stations and Substations.** Circuit breakers. Contactor. Devices of emergency shutdown. Olives switches. Vacuum switches. Gas circuit breakers.

**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.

**Machinery and Equipment of AIC.** 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.

**Ecological Fundamentals of Production, Distribution and Use of Electrical Energy.** Applied aspects of ecology. Ecological problems of Ukraine and its regions. Strategy and tactics of conservation and sustainable development of life on Earth. Fundamentals of theoretical ecology. Strategy and tactics of conservation and sustainable development of life on Earth.

**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.

**Fundamentals of AIC Energy Objects Design.** Sources of heat. Burning of fossil fuels. Boiler systems. Heat generators. Heating systems. Heating networks. Gas supply of agriculture. Alternative sources of heat supply in agricultural production.

**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.

**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.

# Bachelor
# field of knowledge " AUTOMATION AND INSTRUMENTATION"
# in specialty «AUTOMATION AND COMPUTER INTEGRATED TECHNOLOGIES»
# Educational 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 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.

# Bachelor`s Program and Curriculum in Specialty "Automation and Computer Integrated Technologies" Educational Program «Automation and Computer Integrated Technologies»

| № | Name of Academic Discipline | Semester | Number | |
|---|---|---|---|---|
| | | | hours | credits ECTS |
| **1. STANDARD ACADEMIC DISCIPLINES** | | | | |
| 1. | Ecology | 7 | 90 | 3,0 |
| 2. | High Maths | 1,2,3,4 | 540 | 18,0 |
| 3. | Numerical Methods | 3 | 150 | 5,0 |
| 4. | Physics | 2,3 | 300 | 10,0 |
| 5. | Chemistry | 1 | 90 | 3,0 |
| 6. | Engineering Graphics | 2 | 120 | 4,0 |
| 7. | Computer Technologies and Programming | 1,2,3 | 300 | 10,0 |
| 8. | Electrical Engineering and Electromechanics | 3,4 | 300 | 10,0 |
| 9. | Electronics and Microprocessor Technics | 4,5 | 300 | 10,0 |
| 10. | Automation Systems Design | 7,8 | 240 | 8,0 |
| 11. | Theory of automatic Control | 5,6 | 300 | 10,0 |
| 12. | Technical Means of Automation | 6 | 240 | 8,0 |
| 13. | Metrology, Measurement Technology and Instruments | 4,5 | 300 | 10,0 |
| 14. | Identification and Modeling of Technological Objects | 5 | 240 | 8,0 |
| 15. | Automation of Technological Processes and Productions | 6 | 210 | 7,0 |
| **Total for standard part** | | | **3720** | **124** |
| **2. ELECTIVE ACADEMIC DISCIPLINES** | | | | |
| **2.1. *Disciplines offered by University*** | | | | |
| 1. | History of Ukraine and Ethnocultural | 1 | 120 | 4,0 |
| 2. | Ukrainian Language (for professional purposes) | 1 | 120 | 4,0 |
| 3. | Philosophy | 3 | 120 | 4,0 |
| 4. | Foreign Language | 1,2 | 150 | 5,0 |
| 5. | Physical Education | 1,2,3,4 | 300 | 10,0 |
| 6. | Safety and Life | 2 | 90 | 3,0 |
| 7. | Computer Integrated Technologies | 6,7,8 | 195 | 6,5 |
| 8. | Microprocessor Devices Control | 7 | 120 | 4,0 |
| 9. | Computer Graphics | 3 | 90 | 3,0 |
| 10. | Automated Control Systems | 7 | 105 | 3,5 |
| **Total (Disciplines offered by University)** | | | **1110** | **37** |
| **2.2. *Disciplines offered by students*** | | | | |
| 1. | Information and Measuring Systems | 8 | 120 | 4,0 |
| 2. | Computer Equipment, Networks and Systems | 5 | 90 | 3,0 |
| 3. | Optimization of Control Systems Modelling | | 90 | 3,0 |
| 4. | Fundamentals of Systems Analysis | 8 | 90 | 3,0 |
| 5. | Basics of Management, Marketing and Business | 7 | 90 | 3,0 |
| 6. | Theory of Information | 7 | 90 | 3,0 |
| 7. | Technology of Production, Storage and Processing of Agricultural Products | 6 | 120 | 4,0 |
| 8. | Theoretical and Applied Mechanics | 1,2 | 90 | 3,0 |
| 9. | Electrical Technologies in Agriculture | 4 | 120 | 4,0 |
| 10. | Hydraulics and Heat Engineering | 5,6 | 105 | 3,5 |
| 11. | Basics Technical Operation of Automation Systems | 4 | 135 | 4,5 |
| 12. | Executive Mechanisms of Control Systems | 8 | 90 | 3,0 |
| 13. | Fundamentals of Scientific Research | 7 | 90 | 3,0 |
| 14. | Politology and Sociology | 8 | 90 | 3,0 |
| 15. | Economy of Automated Production in Agriculture | 6 | 90 | 3,0 |
| 16. | Law | 8 | 90 | 3,0 |
| 17. | Economic Theory | 6 | 90 | 3,0 |

| | | | | |
|---|---|---|---|---|
| 18. | Psychology | 4 | 90 | 3,0 |
| **Total (Disciplines offered by students)** | | | **1700** | **59** |
| **3. OTHER TYPES OF TRAINING** | | | | |
| 1. | Educational Practice | - | 300 | 10,0 |
| 2. | Industrial Practice | - | 150 | 5,0 |
| 3. | Diploma Project | - | 150 | 5,0 |
| 4. | Military Training | - | 562,5 | 18,8 |
| 5. | Cultural Education Training | - | 180 | 6,0 |
| **Total for Specialty (without Military training course)** | | | **7200** | **240** |

## Annotations of disciplines in the curriculum

### 1. Standard academic disciplines

**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.

**Engineering Graphics.** Projective drawing. Views, cuts and intersects. Sketches and working drawings. Assembly drawing. Detail drawing. The drawing by means of AutoCAD system.

**Programming and Algorithmic Languages.** 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.

**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.

## 2. Elective academic disciplines

### *2.1. Disciplines offered by 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”, “Legal Personal Culture” see Section 2.1.

**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.

**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.

**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.

### *2.2. Disciplines offered by students*

**Psychology**. Psychology of societies Principles of Constitutional Law Jurisprudence Ukraine Ownership.

**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.

**Hydraulics and Heat Engineering.** 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, Convention. 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.

## 2.11. FACULTY OF LAND MANAGEMENT

**Dean** - Ph.D., Associate Professor, **Taras O. Ievsiukov.**
Tel.: (044) 258 - 05 - 25 E-mail: landuse_dean@twin.nauu.kiev.ua,
yevsyukov@ukr.net,
Location: building No. 6 room 219

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

### 193 *"Geodesy and Land Management"*

Educational Program **"Geodesy and Land Management"**

Graduating departments:

Land Resources Administration Management
Tel.: (044) 258-05-25. E-mail: Uzr_k@ukr.net,
Head of department – Doctor of Economics, Professor O.S. Dorosh

Land-use Planning
Tel.: (044) 258-05-25. E-mail: agmartyn@gmail.com,
Head of department – Doctor of Economics, Professor A.G. Martyn

Land cadastre
Tel.: (044) 258-05-25. E-mail: v_zayats@ukr.net
Head of department – Doctor of Economics, Professor V.M. Zayats

Geodesy and Cartography
Tel.: (044) 258-05-25. E-mail: kovalchukip@ukr.net
Head of department – Doctor of geographical, Professor I.P. Kovalchuk

Geoinformatics and Aerospace Research of the Earth
Tel.: (044) 258-05-25. E-mail: k_svit@mail.ru
Head of department – Doctor of technical, Professor S.S. Kohan

**Bachelor**
**Field of knowledge" Architecture and building "**
**in specialty "GEODESY AND LAND MANAGEMENT"**
**Educational Program "Geodesy and Land Management "**

| | |
|---|---|
| Licensed number of students: | |
| – full time students | 90 persons |
| – by correspondence | 85 persons |
| Training duration | 4 years |
| Credits | 240 ECTS |
| Language | Ukrainian, English |
| Qualifications graduates | Bachelor in Geodesy and Land Management |

## The concept of training

The concept of training in " Annotations of disciplines “Ukrainian for Professional Purposes”, “History of Ukrainian statehood”, Ethnic and Cultural Studies”, “Foreign Language (English, German, French, Spanish)”, “Philosophy”, “Physical Training”, “Labour and Life Safety”, “Legal Personal Culture” see Section 2.1.

" is to build systematic knowledge in topography, geodesy, photogrammetry, cartography, land management and geoinformation technologies. During training, students receive the skills for creating various cartographic materials: cadastral and topographical plans and maps, creating and filling databases for various geographic information systems, as well as obtain knowledge in Land Management, 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 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

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 Program "Geodesy and Land Management"

| № | Name of Academic Discipline | Semester | Number | |
|---|---|---|---|---|
| | | | hours | credits ECTS |
| **1. STANDARD ACADEMIC DISCIPLINES** | | | | |
| 1 | Higher Mathematics | 1,2,3 | 330 | 11 |
| 2 | Physics | 1,2 | 300 | 10 |
| 3 | Computer Science and Programming | 1,2,3 | 270 | 9 |
| 4 | Topography | 1,2 | 360 | 12 |
| 5 | Topographic and land surveying drawings | 1 | 120 | 4 |
| 6 | Geology and geomorphology | 1 | 120 | 4 |
| 7 | History of land relations and land management | 3 | 90 | 3 |
| 8 | Geodesy | 3,4 | 300 | 10 |
| 9 | Mathematical processing of geodetic measurements | 4 | 90 | 3 |
| 10 | Electronic surveying instruments | 4 | 120 | 4 |
| 11 | GIS and Databases | 5 | 300 | 10 |
| 12 | Photogrammetry and Remote Sensing | 5 | 210 | 7 |
| 13 | Higher Geodesy | 5 | 180 | 6 |
| 14 | Satellite Geodesy and spherical astronomy | 6 | 180 | 6 |
| 15 | Land Cadastre | 5,6,7 | 390 | 13 |
| 16 | Land Management | 4,5,6,7,8 | 480 | 16 |
| 17 | Cartography | 7 | 90 | 6 |
| 18 | Land Law | 7 | 150 | 5 |
| 19 | Mathematical Methods and Models | 7 | 90 | 3 |
| 20 | Economics | 5 | 90 | 3 |
| **Total for standard part** | | | **4320** | **144** |
| **2. ELECTIVE ACADEMIC DISCIPLINES** | | | | |
| **2.1. *Disciplines offered by University*** | | | | |
| 1 | History of Ukrainian statehood | 1 | 120 | 4 |
| 2 | Philosophy | 3 | 120 | 4 |
| 3 | Ukrainian for professional purposes | 2 | 120 | 4 |
| 4 | Foreign language (English, German, French, Spanish) | 1,2 | 150 | 5 |
| 5 | Physical training | 1,2,3,4 | 120 | 4 |
| 6 | Labour and life safety | 4 | 120 | 4 |
| 7 | Legal culture of personality | 4 | 60 | 2 |
| 8 | Ethnocultural | 5 | 90 | 3 |
| **Total (Disciplines offered by University)** | | | **900** | **30** |
| **2.2. *Disciplines offered by students* specialization 1** | | | | |
| 1 | Soil Science and the basics of Agrochemistry | 2 | 120 | 4 |
| 2 | Design of local roads | 3 | 120 | 4 |
| 3 | Statistical methods in land management | 3 | 90 | 3 |
| 4 | Fundamentals of Ecology | 3 | 90 | 3 |
| 5 | Fundamentals of Agriculture and Crop Science | 4 | 90 | 3 |
| 6 | Infrastructure Engineering of Territories | 4 | 90 | 3 |
| 7 | Psychology | 4 | 90 | 3 |
| 8 | Geodetic works in Land Management | 5,6 | 120 | 4 |
| 9 | Land Resources Management | 6 | 90 | 3 |
| 10 | Digital maps and plans | 6 | 90 | 3 |
| 11 | Automated Cadastral System | 7 | 90 | 3 |
| 12 | Rational use and conservation of land | 7 | 90 | 3 |
| 13 | Technologies of land productivity restoration | 7 | 90 | 3 |
| 14 | Inventory of settlements | 7 | 90 | 3 |
| 15 | Planning residential areas | 8 | 90 | 3 |
| 16 | Agroforestry amelioration | 8 | 90 | 3 |

| | | | | |
|---|---|---|---|---|
| 17 | Remote monitoring of Land Resources | 8 | 90 | 3 |
| 18 | Investment analysis | 8 | 90 | 3 |
| 19 | Organization and management of production | 8 | 90 | 3 |
| **Total (Disciplines offered by students)** | | | **1800** | **60** |
| **Total for elective part** | | | **2700** | **90** |
| | | | | |
| **specialization 2** | | | | |
| 1 | Soil Science and the basics of Agrochemistry | 2 | 120 | 4 |
| 2 | Engineering geodesy | 3 | 120 | 4 |
| 3 | Statistical methods in land management | 3 | 90 | 3 |
| 4 | Management of soil quality | 3 | 90 | 3 |
| 5 | Fundamentals of Agriculture and Crop Science | 4 | 90 | 3 |
| 6 | Infrastructure Engineering of Territories | 4 | 90 | 3 |
| 7 | Psychology | 4 | 90 | 3 |
| 8 | Topographic and geodesic which support land management | 5,6 | 120 | 4 |
| 9 | GNSS bservations applied problems of geodesy | 6 | 90 | 3 |
| 10 | Digital maps and plans | 6 | 90 | 3 |
| 11 | Automated Cadastral System | 7 | 90 | 3 |
| 12 | Rational use and conservation of land | 7 | 90 | 3 |
| 13 | Regional geoecological monitoring | 7 | 90 | 3 |
| 14 | Inventory of settlements | 7 | 90 | 3 |
| 15 | Planning residential areas | 8 | 90 | 3 |
| 16 | Agroforestry amelioration | 8 | 90 | 3 |
| 17 | Remote monitoring of Land Resources | 8 | 90 | 3 |
| 18 | Thematic mapping of land | 8 | 90 | 3 |
| 19 | Assessment of the economic aptitude of relief | 8 | 90 | 3 |
| **Total (Disciplines offered by students)** | | | **1800** | **60** |
| **Total for elective part** | | | **2700** | **90** |
| | | | | |
| **specialization 3** | | | | |
| 1 | Soil Science and the basics of | 2 | 120 | 4 |
| 2 | Algorithms and Data Structures | 3 | 120 | 4 |
| 3 | Statistical methods in land management | 3 | 90 | 3 |
| 4 | Optimization of crops nutrition | 3 | 90 | 3 |
| 5 | Fundamentals of Agriculture and Crop Science | 4 | 90 | 3 |
| 6 | Global information resources in natural resources use | 4 | 90 | 3 |
| 7 | Psychology | 4 | 90 | 3 |
| 8 | GIS technology | 5,6 | 120 | 4 |
| 9 | Developing Web Applications | 6 | 90 | 3 |
| 10 | Digital maps and plans | 6 | 90 | 3 |
| 11 | Automated Cadastral System | 7 | 90 | 3 |
| 12 | Rational use and conservation of land | 7 | 90 | 3 |
| 13 | IT-infrastructure management monitoring systems | 7 | 90 | 3 |
| 14 | Inventory of settlements | 7 | 90 | 3 |
| 15 | Planning residential areas | 8 | 90 | 3 |
| 16 | Agroforestry amelioration | 8 | 90 | 3 |
| 17 | Photogrammetry and Remote Sensing II | 8 | 90 | 3 |
| 18 | Spatial organization of crop rotation | 8 | 90 | 3 |
| 19 | Spatial database design | 8 | 90 | 3 |
| **Total (Disciplines offered by students)** | | | **1800** | **60** |
| **Total for elective part** | | | **2700** | **90** |
| | | | | |
| **3. OTHER TYPES OF TRAINING** | | | | |
| 1 | Military training course | 5,6,7,8 | 645 | 22,5 |
| 2 | Academic Practice | 2 | 180 | 6 |
| 3 | Academic Practice | 2 | 90 | 3 |
| 4 | Academic Practice | 2 | 45 | 1,5 |
| 5 | Academic Practice | 2 | 45 | 1,5 |
| 6 | Academic Practice | 4 | 180 | 6 |

| | | | | |
|---|---|---|---|---|
| 7 | Academic Practice | 4 | 90 | 3 |
| 8 | Academic Practice | 4 | 45 | 1,5 |
| 9 | Academic Practice | 6 | 90 | 3 |
| 10 | Academic Practice | 6 | 90 | 3 |
| 11 | Production Practice | 6 | 180 | 6 |
| **State Attestation** | | | **90** | **3** |
| **Total for Specialty (without Military training course)** | | | **7200** | **240** |

## Annotations of disciplines in the curriculum

### 1. Standard academic disciplines

**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.

**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.

**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 drawings** 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.

**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.

**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.

**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.

**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.

**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 Management**. 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.

**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.

**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.

**Economics**. 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.

**The 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.

## 2. Elective academic disciplines

### *2.1. Disciplines offered by University*

Annotations of disciplines “Ukrainian for Professional Purposes”, “History of Ukrainian statehood”, Ethnic and Cultural Studies”, “Foreign Language (English, German, French, Spanish)”, “Philosophy”, “Physical Training”, “Labour and Life Safety”, “Legal Personal Culture” see Section 2.1.

### *2.2. Disciplines offered by students*

**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.

**Design 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 Crop 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.

**Infrastructure Engineering of Territories**. 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.

**Geodetic works in land management**. 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 plans and maps** 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 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.

**Inventory of settlements**. 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.

**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.

**Land reclamation** purpose - to familiarize students with the basic types of reclamation, the current state of agricultural reclamation, reclamation work on the influence of natural factors of soil formation, positive and negative effects of reclamation and environmental problems on land reclamation.

**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.

**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

**Topographic and geodesic which support land management.** 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 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 bservations 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 .

**Regional geoecological 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.

**Thematic mapping of land.** 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 works. Theoretical knowledge is reinforced by practical skills in electronic map editing using QGIS software.

**Assessment of the economic aptitude of relief.** The course is devoted to coverage of issues related to the study of relief as the basis deploy for various human geospatial activities, including land use. The nature of the relief, its genesis, morphology, structure, development, resistance to anthropogenic influences, is characterized. Typing of relief and its elements, the influence on the structure and condition of the relief of natural and anthropogenic factors are shown. The criteria determining the eligibility of economic aptitude of relief are proposed. Forms and elements of landscape of different genesis and morphology for their different economic use suitability are evaluated. The risks, arise during non-compliance ecosafety economy in the relief of various genesis, morphology, stability and development stage, are characterized. The possibilities of using data on relief for solving land use and environmental problems are shown.

**Spatial organization of crop rotation.** 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

**Spatial database design.** Course consists of topics related to fundamentals of building an object-oriented database models and methodology for object-oriented analysis and design of complex database systems. There is a study using UML to construct a unified spatial database structure. Students get practical experience in object-oriented models of complex systems.

**IT infrastructure management 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 sytems.

**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.

**GIS technology.** 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.

**Developing Web Applications.** 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.

**Optimization of crops nutrition.** During studying of the subject “Optimization of crops nutrition” students take knowledge about special feature of crop nutrition on different fit for use soils and methods of optimization of crops nutrition. Furthermore, future specialists take practical skills to ecological and economic effective optimization of crops nutrition into specific rotations in specific conditions of the every one farm according to heterogeneity of soil surface quality and to specific feature of nutritive regime of specific soil depending on agricultural grouping for maximal realization of genetic plant potential and soil fertility recreation. They study to develop methods for soil fertility improvement for pecuniary valuation of lands.

**Global information resources in natural resources use.** Course consists of topics related to principles of organization and operation of computer networks, WWW, composition, structure and principles of search engines, basic methods of information search, advanced search. There is a study of basic resource conservation perspective, electronic and depository library, AgroWEB, Copernicus, GMES, GEOSS and other Internet resources. Students get practical experience in implementing effective information retrieval and organization of the research, selection of best practices research, and presentation of results.

## 2.12. LAW FACULTY

**Dean –** Candidate of Science in Law, Associate professor **Yara Olena Sergiivna**
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 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, Piddubnyi 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

# Bachelor
# field of knowledge "Law"
# in specialty "LAW"
# Educational Program «Law»

| | |
|---|---|
| Licensed number of persons: | 250 |
| Form of Training: | Licensed number of persons: |
| – Full-time | 75 |
| – Part-time | 75 |
| Duration of Training | 4 years |
| Credits | 240 ECTS |
| Language of Teaching | Ukrainian, English |
| 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 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.

# Bachelor`s Program and Curriculum in Specialty "Law" Educational program «Law»

| № | Name of Academic Discipline | Semester | Number | |
|---|---|---|---|---|
| | | | hours | credits ECTS |
| **1. STANDARD ACADEMIC DISCIPLINES** | | | | |
| 1 | Judicial and law enforcement authorities of Ukraine | 1 | 120 | 4 |
| 2 | Legal ethics | 2 | 120 | 4 |
| 3 | Latin | 1 | 90 | 3 |
| 4 | Theory of state and law | 1,2 | 180 | 6 |
| 5 | History of state and law of foreign countries | 1,2 | 180 | 6 |
| 6 | History of state and law of Ukraine | 2 | 180 | 6 |
| 7 | Basics of Roman Law | 2 | 120 | 4 |
| 8 | Logic | 1 | 90 | 3 |
| 11 | Constitutional law of Ukraine | 2,3 | 210 | 7 |
| 12 | History of doctrines about state and law | 3 | 120 | 4 |
| 13 | Criminal law | 3,4,5 | 210 | 7 |
| 14 | Civil and family law of Ukraine | 3,4,5 | 240 | 8 |
| 15 | Administrative law of Ukraine | 3,4 | 210 | 7 |
| 16 | Criminal procedure | 4 | 270 | 9 |
| 17 | Economic law | 5,6 | 120 | 4 |
| 18 | Employment law | 4,5 | 120 | 4 |
| 19 | Land law | 7 | 120 | 4 |
| 20 | Economic procedure | 6,7 | 120 | 4 |
| 21 | Civil procedure | 6,7 | 120 | 4 |
| 22 | Environmental law | 6 | 120 | 4 |
| 23 | International law | 6 | 120 | 5 |
| 25 | Administrative procedure | 7 | 120 | 4 |
| 26 | Financial law of Ukraine | 7,8 | 120 | 4 |
| 27 | Agrarian law | 7,8 | 120 | 4 |
| 28 | Criminalistics | 8 | 120 | 4 |
| 29 | Criminology | 8 | 120 | 4 |
| 30 | Comparative law | 8 | 120 | 4 |
| **Total for standard part** | | | ***3900*** | ***130*** |
| **2. ELECTIVE ACADEMIC DISCIPLINES** | | | | |
| **2.1. *Disciplines offered by University*** | | | | |
| 1 | Philosophy | 3 | 120 | 4 |
| 2 | Ukrainian for professional purposes | 1 | 120 | 4 |
| 3 | Foreign language (English, German, French, Spanish) | 1,2,3,4 | 150 | 5 |
| 4 | Physical training | 1,2,3,4 | 120 | 4 |
| 5 | Labour and life safety | 2 | 90 | 3 |
| 6 | Ethnocultural | 4 | 90 | 3 |
| 7 | Information technologies | 4 | 90 | 3 |
| **Total (Disciplines offered by University)** | | | ***780*** | ***26*** |
| **2.2. *Disciplines offered by students*** | | | | |
| ***1*** | | | | |
| 1 | Basics of the economic theory | 5 | 150 | 5 |
| 2 | Basics of Business Design | 5 | 150 | 5 |
| 3 | Religion studies | 5 | 150 | 5 |
| ***2*** | | | | |
| 1 | Juridical psychology | 5 | 120 | 4 |
| 2 | Psychology of Management | 5 | 120 | 4 |
| 3 | Conflictology | 5 | 120 | 4 |
| ***3*** | | | | |
| 1 | History of political and legal thought in Ukraine | 5 | 150 | 5 |

| | | | | |
|---|---|---|---|---|
| 2 | Legal thought in Ukraine | 5 | 150 | 5 |
| 3 | Legal doctrines of the XX century | 5 | 150 | 5 |
| ***4*** | | | | |
| 1 | International and legal standards of human rights | 5 | 120 | 4 |
| 2 | International defence of human rights | 5 | 120 | 4 |
| 3 | Practice of European Court on Human Rights | 5 | 120 | 4 |
| ***5*** | | | | |
| 1 | Inheritance Law | 6 | 150 | 5 |
| 2 | Residential Law | 6 | 150 | 5 |
| 3 | Copyright law | 6 | 150 | 5 |
| ***6*** | | | | |
| 1 | Intellectual property law | 6 | 150 | 5 |
| 2 | Notary in Ukraine | 6 | 150 | 5 |
| 3 | Family Law | 6 | 150 | 5 |
| ***7*** | | | | |
| 1 | Law of social security | 6 | 120 | 4 |
| 2 | Town planning right | 6 | 120 | 4 |
| 3 | Recreational right | 6 | 120 | 4 |
| ***8*** | | | | |
| 1 | Advocacy Ukraine | 7 | 120 | 4 |
| 2 | Prosecutor's supervision | 7 | 120 | 4 |
| 3 | Medical jurisprudence and forensic psychiatry | 7 | 120 | 4 |
| ***9*** | | | | |
| 1 | European law | 7 | 120 | 4 |
| 2 | Institutional law of EU | 7 | 120 | 4 |
| 3 | National law of foreign countries | 7 | 120 | 4 |
| ***10*** | | | | |
| 1 | Banking Law | 8 | 120 | 4 |
| 2 | Tax law | 8 | 120 | 4 |
| 3 | Customs law | 8 | 120 | 4 |
| ***11*** | | | | |
| 1 | Corporate Law | 8 | 150 | 5 |
| 2 | Housing law | 8 | 150 | 5 |
| 3 | Exchange Law | 8 | 150 | 5 |
| ***12*** | | | | |
| 1 | International law of energy security | 8 | 120 | 4 |
| 2 | International law of nuclear safety | 8 | 120 | 4 |
| 3 | International maritime law | 8 | 120 | 4 |
| **Total (Disciplines offered by students)** | | | **1590** | **53** |
| **Total for elective part** | | | **2370** | **79** |
| **3. OTHER TYPES OF TRAINING** | | | | |
| **Militari training course** | | | **675** | **22,5** |
| **Academic Practice** | | | **420** | **14** |
| **Production Practice** | | | **480** | **16** |
| **State Atttestation** | | | **30** | **1** |
| **Total for Specialty (without Militari training course )** | | | **7200** | **240** |

## Annotations of disciplines in the curriculum

### 1. Standart academic disciplines

**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.

**Latin**. Study of Latin remains an essential part of the process of formation of specialist with higher education. A modern specialist must possess the skills of translation from Latin as the language of public educational function, this fulfills the role of an auxiliary subject as to qualification of specialist – legislator (representing a written sources of Roman law and international legislative language terminology). The aim of Latin course in the legal higher educational institutions is the mastery of the elementary grammar basics of Latin, to develop the ability to read and translate original legal text (medium difficulty), the accumulation of lexical stock with the help of dictionary , the ability to actually use legal terminology.

**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**. 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 politological knowledge and interpretation of the formalized language of the science of logic in the sphere of politology; 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.

**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.

**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.

**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.

**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 low 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.

**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.

## 2. Elective academic disciplines

### *2.1. Disciplines offered by University*

Annotations of disciplines “Ukrainian for Professional Purposes”, “History of Ukrainian Statehood”, “Foreign language”, “Philosophy”, “Physical Training”, “Labour and Life Safeti”, “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.

## *2.2. Disciplines offered by students*

***1***

**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.

**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.

***2***

**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.

***3***

**History of political and legal thought in Ukraine.** Higher legal education at the present stage of development of our state now becomes qualitatively new content under the new state law requirements. Academic discipline "History of political and legal thought in Ukraine" creates the students ability to analyze, to give their own assessment of a

particular concepts, doctrine, the views of local thinkers and scientists; laying the foundations of an alternative legal thinking.

**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.

**Legal doctrines of the XX century.** Legal thought in the twentieth century has reached one of the highest levels of development. This happened in the nascence event of a large number of different doctrines, concepts, political and legal doctrines. Discipline "Legal doctrines of the XX century" enable students based on complex analysis, synthesis and critical reflection of all available published materials research and analyze various legal doctrine and doctrine, to determine their impact on the development of human civilization.

***4***

**International and legal standards of human rights.** The usage of the nuclear energy for peaceful purposes opens extremely wide opportunities to improve the welfare of mankind. However, increasing of the number of scientific and industrial nuclear reactors, the intensification of nuclear materials trade and transportation, utilization of nuclear waste contain a potential risk of radioactive contamination of people and the environment. At the same time due to its physical and chemical properties, the radioactive contamination is a danger to the countries, which may be located far from the borders of the country, where the nuclear incident occurred. These circumstances require joint efforts of the international community in ensuring of the safe development of atomic energy and to prevent negative consequences of uses of the atom for peaceful purposes .

**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.

**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.

***5***

**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.

**Residential Law.** The purpose of discipline «Residential Law» is to develop in students a certain level of knowledge on legal and organizational issues of residential relations. The main objectives of studying the discipline «Residential Law» are students in

acquiring knowledge and ability to effectively solve the problem of professional activities must meet the requirements of safety and guaranteeing the preservation of life, health and disability in professional activities of lawyers.

**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.

***6***

**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.

**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.

**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.

***7***

**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.

**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.

**Recreational right.** Issues to be studied: scientific approaches and provisions of the current legislation on tourism and recreational activities, proper application of the environmental, economic, and other areas of international law, implementation of measures of the legal protection of natural resources as an object of tourist-recreational use.

***8***

**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 supervision.** 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.

**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.

***9***

**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.

**Institutional law of EU.** Creation of the European Union with its special system of legal norms was due to the development of the economic, political and legal integration on the European continent. We consider the competence of the EU as a form of institutionalization of the integration processes in Europe and make the legal description of the ratio of the exclusive competence of the EU and competence of the Member States, features of the legal nature of the EU, due to its supranational character, which affects the structure and activities of the institutional mechanism of this interstate integration association; characterize the basic principles of activities of the executive authorities of the EU: European Commission, which affects the development of integration processes within the EU; the legal nature and the order of adoption by the EU Council and the European Commission of the legal acts - regulations, directives, decisions.

**National law of foreign countries.** The task of the education subject is to develop students' theoretical and practical knowledge on the theory and practice of the educational subject National law of foreign countries, to learn the legislative base and the ability to put it into practice. The theoretical part aims to familiarize with the concept and essence of this educational subject, to familiarize with the laws, legal norms of different countries, domestic constitutional law of each country, constitutional and legal status of a person and citizen, forms of government, elections and referenda, system of higher authorities. The practical part aims to familiarize with depth study of the analysis of modern system of normative and legal acts of foreign countries, ability to put them into practice, to consider a certain range of public relations regulated by the norms of law of different countries.

***10***

**Banking law.** Banking law of Ukraine is the independent branch of law, which includes the system of norms and principles aimed at regulation of the banking activity, organisation and functioning of the banking system of Ukraine. The course of banking law, which was designed to help students to master the banking law as a separate branch, promotes the independent acquisition of skills and the professional solving of practical

problems in this sphere. The significance of the course is based on the increasing importance of the banking law in the system of legal sciences, mainly because of the transition of Ukraine to the principles of a market economy, the growth of the role of banks as financial intermediaries in the national financial and credit system.

**Tax law.** The objective of the course is to: understand the concept and characteristics of the tax law, tax legal relations, tax system of Ukraine; study the nature and direction of tax system reforming and tax legislation, to analyze the regulations that regulate the payment of taxes; consider the structure, functions and powers of tax control, liability for violation of tax legislation as well as ways to protect the rights and legal interests of taxpayers.

**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.

***11***

**Corporate Law.** Corporate law is a new institutional formation in the law system of Ukraine. The terms “corporate law”, “corporate relations” were practically not used for a long time in the domestic legal science, they occurred only in works, devoted to the study of foreign countries law. The purpose of subject “Corporate law” is to give students basic knowledge of the subject, provide training aimed at the formation of intellectual potential of highly qualified lawyers, which have basic theoretical knowledge in the field of corporate right, necessary for future activities

**Housing law.** The purpose of discipline «Housing law» is to develop in students a certain level of knowledge on legal and organizational issues of residential relations.The main objectives of studying the discipline «Housing law» are students in acquiring knowledge and ability to effectively solve the problem of professional activities must meet the requirements of safety and guaranteeing the preservation of life, health and disability in professional activities of lawyers.

**Exchange Law.** The purpose and objectives of discipline «Exchange Law» are: forming a system of knowledge on the legal regulation of exchange relationships in Ukraine, ordering of trends and ways to solve problems and put forward the accumulated exchange practice solving disputes.

***12***

**International law of energy security .** The purpose and objective of the course is to develop students' knowledge on appropriate international legal regulation of energy law, and therefore relations that arise in this area, namely the development of energy resources and active transit trade, development of interstate relations in energy sphere, etc.

**International law of nuclear safety.** The purpose and objective of the course is to develop students' knowledge on appropriate international legal regulation of nuclear safety and the principles of international nuclear law, namely nuclear safety; non-proliferation; control the proliferation of nuclear weapons; monitoring the peaceful nuclear activities; mutual assistance in case of a nuclear accident or radiological hazards.

**International maritime law.** The main objective of the discipline is to study: the concept, system and sources of international maritime law, the rights and jurisdiction of the coastal state, the institution of the continental shelf, the maritime area of international law and special legal regime, private international law of the sea, the legal status of the ship, international legal regulation of shipping, settlement of international maritime disputes, contemporary international legal problems of safety at sea.

## 2.13. ECONOMIC FACULTY

**Dean** – Professor, Doctor of Economics **Anatolii D. Dibrova**

Tel.: (044) 527-85-40 E-mail: __economy_dean@nubip.edu.ua
Location: Building № 10, Room 301

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

### *051 Economy*

Educational Program **"Economy"**

Graduating departments:

Enterprise economics named after prof. I.V.Romanenko, Tel.: (044) 527-81-01
E-mail: dibrova@nubip.edu.ua
Head of Department – Professor, Doctor of Economics Svitlana M. Rogach

Entrepreneurship and agribusiness organization, Tel.: (044) 527-86-60
E-mail: 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
Head of Department – Professor, Doctor of Economics Oleksandr Iu. Iermakov

Global Economy, Tel.:(044) 527-86-48 E-mail: dibrova@nubip.edu.ua
Head of Department – Professor, Doctor of Economics Natalia M. Vdovenko

### *071 Accounting and Taxation*

Educational Program **"Accounting and Taxation"**

Graduating departments:

Accounting and Taxation, Tel.:(044) _527-83-61 E-mail: oia616@ukr.net
Head of Department – Professor, Doctor of Economics, Ievheniia V. Kaliuga

Statistics and economic analysis, Tel.:(044) 527-82-36
E-mail: statistics_chair@twin.nauu.kiev.ua
Head of Department – Professor, Doctor of Economics_Vasyl K. Savchuk

Taxation and Insurance, Tel.:(044) 527-87-59 E-mail: tax_chair@twin.nauu.kiev.ua
Head of Department – Professor, Doctor of Economics Lybov M. Khudoliy

***072 Finance, Banking and Insurance***
Educational Program **“Finance, Banking and Insurance”**

Graduating departments:

Finance Tel.:(044) 527 88 90 E-mail: kafedfin@ukr.net
Head of Department – Professor, Doctor of Economics Nadiia M. Davidenko

Banking Tel.:(044) 527 88 90 E-mail: banking_chair@nubip.edu.ua
Head of Department – Professor, Doctor of Economics Olena O. Oliynyk-Dunn

Taxation and Insurance, Tel.:(044) 527-87-59 E-mail: tax_chair@twin.nauu.kiev.ua
Head of Department – Professor, Doctor of Economics Lybov M. Khudoliy

***076 Entrepreneurship, trade and stock activities***

Educational Program **"Entrepreneurship, trade and stock activities"**

Graduating departments:

Entrepreneurship and agribusiness organization, Tel.: (044) 527-86-60
E-mail: dibrova@nubip.edu.ua
Head of Department – Professor, Doctor of Economics Mykola M. Ilchuk

Exchange activity and trade Tel.: (044) 527-81-31 E-mail: kaf.birhga@ukr.net
Head – PhD, Professor Nadiia P. Reznik

**Bachelor**
**field of knowledge "Social and Behavioral Sciences"**
**in specialty "ECONOMY"**
**Educational Program "Economy"**

| 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 "Economy" Educational Program “Economy”

| № | Name of discipline | Semester | Volume | |
|---|---|---|---|---|
| | | | hours | ECTS credits |
| **1. MANDATORY TRAINING COURSE** | | | | |
| 1 | Political Economy | 1 | 150 | 5 |
| 2 | Microeconomics | 2 | 120 | 4 |
| 3 | Macroeconomics | 3 | 120 | 4 |
| 4 | Economic History | 1 | 150 | 5 |
| 5 | Mathematics for Economists | 1,2 | 210 | 7 |
| 6 | Probability and Mathematical Statistics | 2 | 150 | 5 |
| 7 | Computer Science | 1 | 120 | 4 |
| 8 | Econometrics | 5 | 90 | 3 |
| 9 | Optimization methods and models | 6 | 120 | 4 |
| 10 | Potential and Development Company | 6 | 150 | 5 |
| 11 | Business Strategy | 8 | 150 | 5 |
| 12 | Planning and control of the enterprise | 8 | 150 | 5 |
| 13 | Organization of production | 7 | 150 | 5 |
| 14 | Project analysis | 8 | 150 | 5 |
| 15 | Justification business decisions and risk assessment (done the English language) | 7 | 120 | 4 |
| 16 | Statistics | 3,4 | 150 | 5 |
| 17 | Money and credit | 3 | 120 | 4 |
| 18 | Finances | 4 | 120 | 4 |
| 19 | Accounting | 5,6 | 210 | 7 |
| 20 | Business Economics | 3,4 | 300 | 10 |
| 21 | Labor Economics and Labor Relations | 5,6 | 120 | 4 |
| 22 | Management | 4 | 120 | 4 |
| 23 | Marketing | 4 | 120 | 4 |
| 24 | International Economics | 3 | 120 | 4 |
| 25 | Cost management | 7 | 120 | 4 |
| 26 | University education and social communication | 1 | 60 | 2 |
| **Along with mandatory component** | | | **3660** | **122** |
| **2. Selective Courses** | | | | |
| **2.1. Disciplines by choice university** | | | | |
| 1 | History of Ukrainian statehood | 1 | 120 | 4 |
| 2 | Philosophy | 3 | 150 | 5 |
| 3 | Foreign Language | 1,2.3,4,5,6 | 270 | 9 |
| 4 | Physical Education | 1,2,3,4 | 120 | 4 |
| 5 | Safety and life | 2 | 120 | 4 |
| 6 | The technology of crop production | 1 | 150 | 5 |
| 7 | Technology of production of livestock products | 2 | 150 | 5 |
| **Total elective University** | | | **1080** | **36** |
| **2.2. *Subjects chosen by the student*** | | | | |
| 1 | Science of law | 8 | 120 | 4 |
| | Sociology | | 0 | |
| | Religious | | 0 | |
| | Cultural and educational training | | 0 | |
| | Logic | | | |
| | Basics of rhetoric | | 0 | |
| | Psychology and Pedagogy | | 0 | |
| | Foreign Language | | | |
| 2 | Accounting in applied software solutions | 6 | 120 | 4 |
| | Information Systems and Technology | | 0 | |
| | Databases and Database | | 0 | |
| 3 | The tax system | 5 | 120 | 4 |
| | Taxation of individuals and entities | | 0 | |

| | | | | |
|---|---|---|---|---|
| 4 | Insurance | 6 | 120 | 4 |
| | Insurance services | | 0 | |
| 5 | Fundamentals of stock | 5 | 120 | 4 |
| | Exchange Stock Market | | 0 | |
| 6 | Price and pricing | 8 | 120 | 4 |
| | Commodity exchange goods | | 0 | |
| 7 | Finance companies | 7 | 120 | 4 |
| | Investment | | 0 | |
| 8 | Enterprise reporting | 5 | 120 | 4 |
| | Audit | | 0 | |
| 9 | The economy of agricultural enterprises | 6 | 120 | 4 |
| | Environmental Economics | | 0 | |
| 10 | Fundamentals of Agricultural Consulting | 8 | 120 | 4 |
| | Economics of world agriculture | | 0 | |
| | Agricultural management | | 0 | |
| | Economics and organization innovation | | | |
| 11 | The economy of rural communities | 7 | 120 | 4 |
| | Basic scientific research in economics | | 0 | |
| 12 | Rationing, organization and payment of labor in agrarian formations | 7 | 120 | 4 |
| | Sociology of labor | | 0 | |
| 13 | Organization Theory | 5 | 120 | 4 |
| | Agribusiness Organization | | 0 | |
| 14 | Economic analysis (done the English language) | 7 | 120 | 4 |
| | Financial analysis | | 0 | |
| 15 | Regional economy | 8 | 120 | 4 |
| | National economy | | | |
| **Total elective students** | | | **1800** | **60** |
| **3. OTHER STUDIES** | | | | |
| 1 | Military training | | 690 | 23 |
| 2 | Educational practice | | 180 | 6 |
| 3 | Internship | | 240 | 8 |
| Preparation of bachelor work (thesis or project) | | | **120** | **4** |
| State attestation | | | **120** | **4** |
| At the direction of (without military training) | | | **7200** | **240** |

## Annotations of disciplines in the curriculum

### 1. Standard academic disciplines

**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.

**Microeconomics**. 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.

Macroeconomics purpose of discipline study course "Macroeconomics" is to 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;

**Economic history**. Formation of knowledge about the basic stages of formation and direction of economic development and economic studies, conditions and patterns of evolution of the world economy, economics, economic concepts and areas of major schools of economic thought.

Subject disciplines: economy of the world historical development, the emergence and development of economic views and ideas prevailing in the system.

Content modules: economy and economic thought primitive societies period of the day and early nineteenth century., The world economy and main directions of economic thought XIX - XX centuries.

**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.

**Probability and Mathematical Statistics** object of study discipline patterns are random events and use them to build economic stochastic models. The purpose of discipline is to develop basic knowledge and practical skills of the foundations of probabilistic and statistical system, the main methods of quantitative measurement of the randomness of the factors that affect any process, principles of mathematical statistics used in the planning, organization and production management, evaluation product quality, system analysis of economic structures and processes, application of mathematical methods in economics. The program involves the study of two structural modules - theory of probability and mathematical statistics.

**Computer Science** object develop 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

**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.

**Optimization 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.

**The potential development of the company** 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.

**Business Strategy** Objective: mastering the theoretical principles of strategic planning, mastering skills and tools of strategic analysis and a strategy of the company.

Objective: development tools, enterprise development strategies and selection of strategic alternatives; strategic thinking skills development and practical application of methodological apparatus discipline; mastering by case analysis, feasibility study skills to solve strategic problems.

**Planning and control of the enterprise** 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 purpose - 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.

**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.

**Justification economic decisions and assessing risks** 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.

**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;

**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** 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.

**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.

**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.

**Management** The purpose of discipline - 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 agromarket.

**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.

**Cost management** 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.

**University education and social communication** 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. Elective academic disciplines

### *2.1. Disciplines offered by University*

Annotations of disciplines “History of Ukrainian Statehood”, “Philosophy”, , “Foreign Language (English, German, French, Spanish)”, “Physical Training”, “Labour and Life Safety”, “The technology of crop production”, “Technology of production of livestock products”see Section 2.1.

## *2.2. Disciplines offered by students*

**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.

**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.

**Cultural and Educational Activities.** Culture and spiritual development of the individual and society. Features of enrichment of the spiritual world and cultural development of the nation.

**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.

**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.

**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.

**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.

**Information Systems and Technologies**. The basics of accounting, composition of accounting tasks, features of their solving using various technologies of economic information processing; acquiring skills to perform typical accounting problems; develop algorithms to solve them using database management systems and application programs.

**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.

**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.

**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

**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.

**Stock Exchange Activities.** Fundamentals of exchange activity. Commodity, stock and currency exchange. Stock exchange transaction, the procedure of agreements conducting and exchange trading mechanism.

**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.

**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.

**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.

**Agricultural Economy** The purpose of discipline is to acquire knowledge of the basic laws of economics innovation development of agriculture, the formation of resource potential of the agricultural sector, determining the economic efficiency of agricultural production and study measures for its improvement. The level of knowledge of agricultural economics provides students acquiring skills in economic activity and readiness to practice in agricultural enterprises. The task of discipline: students gain knowledge and skills on issues such as the economic basis of the effective use of land resources; formation of resource potential of agriculture and rational justification for the combination of its constituent elements; placing agriculture; intensification of agricultural production on the basis of innovation; providing the necessary conditions for expanded reproduction and accumulation in agriculture;

**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.

**Fundamentals of Agricultural Consulting Material** discipline "Fundamentals of Agricultural Consulting" aims to explore methods development, dissemination and innovation. The main objective of the course "Fundamentals of Agricultural Consulting" - form a system of student knowledge and skills in agricultural extension, agricultural experts emphasize the role profile as consultants. In the study course served characterization systems and models of advisory services in the world and Ukraine, their characteristics and place in the agrarian economy of the state, considered the objectives, methods advisory activity, its psychological and ethical aspects, especially the use of modern information technology and organization consulting international experience

**Economy of world agriculture.** The system of industrial relations in conjunction with the productive forces in agriculture. Ways and means of rational use of land, material and labor, intensification of agricultural production based on science and technology, specialization, cooperation and integration of agricultural enterprises, the development of commodity-money relations, ways to improve production efficiency.

**Agrarian Management** The purpose of the discipline is to provide an integrated system of knowledge about the essence of management in the enterprises and organizations of the agro-industrial complex and skills in managing the production processes in them; conditions for ensuring the effectiveness of business structures; diagnosing and designing a system of agrarian management that is adequate to the goals and objectives of a market economy in agriculture.

**Economics and organization of innovation activity.** Acquisition of knowledge about innovation orientation of strategy and tactics of production development, innovation policy of the enterprise, principles and factors of its development, forms of innovations, methods and tools of their creation and methods of realization.

**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 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;

**Basics of 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.

**Rationing, organization and payment of labor in agrarian formations.** 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.

**Labor Sociology.** 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.

**Theory of Goal:** formation of a modern, system-based approach, the outlook for the establishment, operation and evolution of organizations.

Objective: To provide students knowledge about theory and practices of organizations in today's changing market socio-economic environment, the regulation of which they take place in conjunction with the environment, etc; study of organizational theories; study of theoretical and methodological principles of creation and functioning of organizations; mastering basic methodological approach of analyzing the internal and external environments of organizations; acquiring skills building organizational structures of different types of organizations; skills transformation, creating the image and culture organizations.

**Agribusiness Organization.** Entrepreneurship and business in agriculture: the nature, objectives, benefits. Characteristics of businesses. Drawing up of business plans.

**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.

**Regional economy** The objective of the discipline is learning the theory of productive forces and regional economy and regional development of scientific bases of regional economic policy; mastery of knowledge about territorial and sectoral structure of economic complex of Ukraine and its economic regions and so on. The aim of the course is to develop knowledge on the theoretical and practical bases of the territorial organization of the productive forces of Ukraine, the current state and trends of regional economic development.

**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.

**Bachelor**
**field of knowledge "Management and Administration"**
**in specialty "ACCOUNTING AND TAXATION"**
**Educational 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 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.

# Bachelor`s Program and Curriculum in Specialty «Accounting and Taxation» Educational Program "Accounting and Taxation"

| № | Name of Academic Discipline | Semester | Number | |
|---|---|---|---|---|
| | | | hours | credits ECTS |
| **1. STANDARD ACADEMIC DISCIPLINES** | | | | |
| 1 | Political Economy | 2 | 150 | 5 |
| 2 | Microeconomics | 3 | 120 | 4 |
| 3 | Macroeconomics | 4 | 120 | 4 |
| 4 | Economic History | 4 | 120 | 4 |
| 5 | Mathematics for Economists | 1,2 | 210 | 7 |
| 6 | Probability theory and Mathematical Statistics | 2 | 150 | 5 |
| 7 | Taxation System | 5 | 120 | 4 |
| 8 | Economic and Mathematiclal Modeling | 6 | 120 | 4 |
| 9 | Econometrics | 5 | 120 | 4 |
| 10 | Computer Science | 1 | 150 | 5 |
| 11 | Economics of Enterprise | 5 | 120 | 4 |
| 12 | Management | 4 | 120 | 4 |
| 13 | Marketing | 4 | 120 | 4 |
| 14 | Money and Credit | 3 | 120 | 4 |
| 15 | Finance | 4 | 120 | 4 |
| 16 | Theory of Accounting | 3,4 | 240 | 8 |
| 17 | Labor Economics and Social and Labor Relations | 5 | 120 | 4 |
| 18 | International Economy | 3 | 120 | 4 |
| 19 | Statistics | 3,4 | 180 | 6 |
| 20 | Analysis of Economic Activity | 6 | 120 | 4 |
| 21 | Financial Accounting | 5,6 | 240 | 8 |
| 22 | Managerial Accounting | 7 | 120 | 4 |
| 23 | Reporting of the Enterprises | 8 | 120 | 4 |
| 24 | Accounting in Banks | 8 | 120 | 4 |
| 25 | Accounting in the public sector | 6 | 120 | 4 |
| 26 | Accounting and Reporting in Taxation | 8 | 120 | 4 |
| 27 | Audit | 7 | 120 | 4 |
| 28 | Organization and Planning of Production in Agricultural Enterprises | 7 | 120 | 4 |
| 29 | Economic legislation | 7 | 120 | 4 |
| 30 | University education and social communication | 1 | 60 | 2 |
| **Total for standard part** | | | **4020** | **134** |
| **2. ELECTIVE ACADEMIC DISCIPLINES** | | | | |
| **2.1. *Disciplines offered by University*** | | | | |
| 1 | History of Ukrainian statehood | 1 | 120 | 4 |
| 2 | Philosophy | 3 | 150 | 5 |
| 3 | Foreign language | 1,2,3,4,5,6 | 270 | 9 |
| 4 | Labour and life safety | 2 | 120 | 4 |
| 5 | Physical training | 1,2,3,4 | 120 | 4 |
| 6 | Crop Production Technology | 1 | 150 | 5 |
| 7 | Livestock Production Technology | 2 | 150 | 5 |
| **Total (Disciplines offered by University)** | | | **1080** | **36** |
| **2.2. *Disciplines offered by students*** | | | | |
| 1 | Political Science | 5 | 120 | 4 |
| 1 | Sociology | 5 | 120 | 4 |
| 1 | Religious Science | 5 | 120 | 4 |
| 1 | Logics | 5 | 120 | 4 |
| 1 | Basics of Rhetoric | 5 | 120 | 4 |
| 1 | Ethics and Aesthetics | 5 | 120 | 4 |
| 1 | Psychology and Pedagogics | 5 | 120 | 4 |
| 1 | Labor Sociology | 5 | 120 | 4 |
| 2 | Fundamentals of stock activities | 5 | 150 | 5 |

| | | | | |
|---|---|---|---|---|
| 2 | Price and Pricing | 5 | 150 | 5 |
| 3 | Agribusiness Organization | 6 | 120 | 4 |
| 3 | Cost management | 6 | 120 | 4 |
| 4 | Accounting in applied software solutions | 6 | 120 | 4 |
| 4 | Computerized accounting in the public sector | 6 | 120 | 4 |
| 5 | Agricultural Economy | 6 | 120 | 4 |
| 5 | Environmental Economics | 6 | 120 | 4 |
| 5 | Insurance | 6 | 120 | 4 |
| 5 | International Taxation | 6 | 120 | 4 |
| 6 | Mortgage Lending | 7 | 120 | 4 |
| 6 | Banking System | 7 | 120 | 4 |
| 6 | Financial Market | 7 | 120 | 4 |
| 7 | Finance of the Enterprise | 7 | 120 | 4 |
| 7 | Investment | 7 | 120 | 4 |
| 8 | Accounting in Sectors of the National Economy | 7 | 120 | 4 |
| 8 | Accounting in Foreign Countries | 7 | 120 | 4 |
| 9 | Project Analysis | 8 | 150 | 5 |
| 9 | Models and Methods in Analysis and Audit | 8 | 150 | 5 |
| 10 | Basics of Research in Economics | 8 | 120 | 4 |
| 10 | Social Responsibility | 8 | 120 | 4 |
| 11 | Regional Economy | 8 | 150 | 5 |
| 11 | National Economy | 8 | 150 | 5 |
| **Total (Disciplines offered by students)** | | | **1410** | **47** |
| **Total for elective part** | | | **6510** | **217** |
| **3. OTHER TYPES OF TRAINING** | | | | |
| 1 | Military training | | 690 | 23 |
| 2 | Educational practice | | 180 | 6 |
| 3 | Internship | | 300 | 10 |
| **Bachelor Thesis writing (Graduate thesis or Project)** | | | **150** | **5** |
| **State Attestation** | | | **60** | **2** |
| **Total for Specialty (without Military training course)** | | | **7200** | **240** |

## Annotations of disciplines in the curriculum

### 1. Standard academic disciplines

**Political Economy.** Commodity production and business. Social reproduction and economic growth. Basic social forms of production and their evolution. World economy and global market.

**Microeconomics.** Modern elements of the microeconomic environment and their activities in terms of the social market economy. Techniques and methods of making economic decisions at the micro level for the businesses to survive in the current economic environment of the market economy.

**Macroeconomics.** Macroeconomic processes in terms of construction and development of market economy in Ukraine. The system definition, problem solving and ways to achieve solutions. Establishing relationships and determine the order of relations between objects and subjects of macroscopic environment. Solving macroeconomic challenges.

**Economic History.** Economic theory in the era of pre-capitalist modes of production. The classical school of bourgeois political economy. Economic thought in Ukraine. Neoliberalism and its various forms. The development of Soviet economic thought. Economic thought of the transition period.

**Mathematics for Economists.** Provides: forming of individuality of students to develop their intelligence, logical skills and algorithmic thinking; mastering the basics of mathematical tools necessary to solve theoretical and practical problems of the economy; ability to examine independently the scientific literature on mathematics and apply it; to increase the general level of mathematical culture; develop the ability to make mathematical models of certain economic processes; teaching methods of processing and analysis of the results.

**Probability theory and Mathematical Statistics.** Events, probability, repetition of experiments, the laws of probability distribution, numerical characteristics of random variables, system functions and random variables, probability theory, probability models of economic problems.

**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.

**Economic and Mathematiclal Modeling.** Creating models of economic systems through various economic and mathematical models and solving problems to anticipate the construction and management of modern agricultural enterprises. Methods of nonlinear programming, solving the transport problem and other urgent economic problems of the agricultural production.

**Econometrics.** The quantitative evaluation of the relationship between economic indicators for different sets of economic information, resorting to testing the latest on compliance of certain preconditions and to determine methods for quantitative measurement of relations, which should be used in each case in accordance with the peculiarities of economic information.

**Computer Science.** Principles of construction and operation of computers, organization of computing processes on the PC and their software, work on a PC with algorithmic programming languages, program structure and recommendations for its writing. Effective use of modern information and communication technologies in professional activity.

**Economics of Enterprise.** The economic mechanism of functioning of the company, its development and use of resource potential in order to optimize economic performance.

**Management.** Theoretical Foundations of Management, manager in the management system. The motivation and rules of managerial activities. The mechanism of control and accountability in the management system.

**Marketing.** The essence, content of marketing and its concept and system characteristics of modern marketing and marketing policies: heading, pricing, communication and distribution.

**Money and Credit.** Origin, essence and function of money and credit, the form of money and credit relations, structure of monetary and credit systems, patterns of money, the stability of financial systems and areas of improvement monetary and credit relations in Ukraine and particularly in agriculture.

**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.

**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.

**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.

**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.

**Statistics.** The organization of supervision, construction and analysis of statistical data using methods of groupings, averages and indicators variation, correlation and dispersion calculations, evaluation of time-spatial changes of mass social phenomena.

**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.

**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**.**

**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.

**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.

**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.

**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.

**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.

**University Education and Social Communication.** Preparing students to study at the university in accordance with modern international integration processes in education in the context of the Bologna Declaration.

## 2. Elective academic disciplines

### *2.1. Disciplines offered by University*

Annotations of disciplines “History of Ukrainian Statehood”, “Philosophy”, “Foreign Language”, “Labour and Life Safety”, “Physical Training”, “Crop Production Technology”, “Livestock Production Technology” see Section 2.1.

### *2.2. Disciplines offered by students*

**Political Science.** Laws, structure and functions of political science. Power and power relations. The political system of society, the place and role of the state in it. Political consciousness and political culture. Politics and national relationships. Politics and ecology. National and 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.

**Logics.** Forming of logical culture of professional thinking; understanding of general cultural significance of logical theory; development of natural capabilities of human thinking, enhancing its creative potential; clarifying the logical foundations of thinking activity formalization, algorithmic information technology.

**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.

**Ethics and Aesthetics.** Gives knowledge about the features and characteristics of moral and artistic relationship between man and the world, the development of basic functions performed by the ethics and aesthetics in the knowledge of all areas of human life, the structure of these areas, the content of the main categories and value of such knowledge to work in different areas of human activity .

**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.

**Labor Sociology.** 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.

**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.

**Price and Pricing**. Theories of pricing, pricing methods. Marginal utility of price, methodological atypical pricing in terms of inflation, ensuring equivalence of accounting and prices in AIC.

**Agribusiness Organization.** Entrepreneurship and business in agriculture: the nature, objectives, benefits. Characteristics of businesses. Drawing up of business plans.

**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 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.

**Accounting in applied software solutions.** Computer technology of accounting in agricultural enterprises.

**Computerized accounting in the public sector.** It is studied computer technology accounting in the public sector.

**Agricultural Economy.** The system of industrial relations in conjunction with the productive forces in agriculture. Ways and means of rational use of land, material and labor, intensification of agricultural production based on science and technology, specialization, cooperation and integration of agricultural enterprises, the development of commodity-money relations, ways to improve production efficiency.

**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.

**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.

**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.

**Accounting in Sectors of the National Economy**. Features of methods and organization of accounting in trade enterprises, budgetary institutions and credit institutions and industry.

**Accounting in Foreign Countries**. Theory and practice of financial and managerial accounting in foreign countries; acquiring skills in organization of accounting, analysis and control based on existing legislation.

**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.

**Basics of Research in Economics.** Scientific education of student, research in economics, methodology of scientific research.

**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.

**Regional Economy.** Scientific basis of productive forces and economic organization based on natural resources, scientific and technological progress. Features of economic development of individual regions of Ukraine.

**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.

## Bachelor
## field of knowledge "Management and Administration"
## in specialty "FINANCE, BANKING AND INSURANCE"
## Educational 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 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.

# Bachelor`s Program and Curriculum
# in Specialty "Finance, Banking and Insurance"
# Educational Program "Finance, Banking and Insurance"

| № | Name of discipline | Semester | Volume | |
|---|---|---|---|---|
| | | | hours | ECTS credits |
| **1. MANDATORY TRAINING COURSE** | | | | |
| 1 | Political Economy | 2 | 150 | 5 |
| 2 | Microeconomics | 3 | 120 | 4 |
| 3 | Macroeconomics | 4 | 120 | 4 |
| 4 | Economic History | 1 | 150 | 5 |
| 5 | Mathematics for Economists | 1,2 | 210 | 7 |
| 6 | Probability and Mathematical Statistics | 2 | 150 | 5 |
| 7 | Computer Science | 1 | 150 | 5 |
| 8 | Econometrics | 5 | 120 | 4 |
| 9 | Optimization methods and models | 5 | 120 | 4 |
| 10 | The tax system | 7,8 | 150 | 5 |
| 11 | Finance companies | 4 | 150 | 5 |
| 12 | Insurance | 7 | 150 | 5 |
| 13 | The budget system | 5 | 120 | 4 |
| 14 | Investment | 7 | 120 | 4 |
| 15 | Statistics | 3,4 | 120 | 4 |
| 16 | Money and credit | 3,4 | 300 | 10 |
| 17 | Finances | 3,4 | 300 | 10 |
| 18 | Accounting | 5,6 | 120 | 4 |
| 19 | Business Economics | 5 | 120 | 4 |
| 20 | Management | 8 | 120 | 4 |
| 21 | Marketing | 6 | 120 | 4 |
| 22 | Labor Economics and Labor Relations | 4 | 120 | 4 |
| 23 | International Economics | 3 | 120 | 4 |
| 24 | Banking system | 6 | 150 | 5 |
| 25 | Financial market | 5 | 120 | 4 |
| 26 | Financial analysis | 5 | 120 | 4 |
| 27 | Planning and starting your own business | 7 | 120 | 4 |
| 28 | University education and social communication | 1 | 60 | 2 |
| **Along with mandatory component** | | | **3810** | **127** |
| **2. Selective Courses** | | | | |
| **2.1. Disciplines by choice university** | | | | |
| 1 | History of Ukrainian statehood | 1 | 120 | 4 |
| 2 | Philosophy | 3 | 150 | 5 |
| 3 | Foreign Language | 1,2.3,4,5,6 | 270 | 9 |
| 4 | Physical Education | 1,2,3,4 | 120 | 4 |
| 5 | Safety and life | 2 | 120 | 4 |
| 6 | The technology of crop production | 1 | 150 | 5 |
| 7 | Technology of production of livestock products | 2 | 150 | 5 |
| **Total elective University** | | | **1200** | **40** |
| **2.2. *Subjects chosen by the student*** | | | | |
| 1 | Local finance | 6 | 120 | 4 |
| | International Finance | | 0 | |
| 2 | Financial activities of business entities | 6 | 120 | 4 |
| | Budgeting entities | | 0 | |
| 3 | Insurance services | 7 | 120 | 4 |
| | Bases of actuarial calculations | | 0 | |
| 4 | Tax accounting | 8 | 120 | 4 |
| | Tax control | | 0 | |
| 5 | Analysis Banking | 8 | 120 | 4 |
| | International credit-settlement and currency transactions | | 0 | |
| | Payment | | 0 | |
| 6 | Securities Transactions | 7 | 120 | 4 |

| | | | | |
|---|---|---|---|---|
| | Financial and credit system of foreign countries | | 0 | |
| 7 | Science of law | 8 | 120 | 4 |
| | Logic | | 0 | |
| | Sociology | | 0 | |
| | Politology | | 0 | |
| | Psychology and Pedagogy | | 0 | |
| | Ethics and aesthetics | | 0 | |
| | Religious | | 0 | |
| | Basics of rhetoric | | 0 | |
| 8 | Regional economy | 7 | 120 | 4 |
| | National economy | | 0 | |
| 9 | Enterprise reporting | 8 | 120 | 4 |
| | Audit | | 0 | |
| 10 | Economic analysis | 5 | 120 | 4 |
| | Strategic Analysis in Business | | 0 | |
| 11 | Economic and financial risks (in English) | 7 | 120 | 4 |
| | Economics of agro-industrial units | | 0 | |
| 12 | Price and pricing | 6 | 120 | 4 |
| | Fundamentals of stock | | 0 | |
| 13 | Rationing, organization and payment of labor in agrarian formations | 8 | 120 | 4 |
| | Labor market | | 0 | |
| 15 | Cost management | 7 | 120 | 4 |
| | Agribusiness Organization | | 0 | |
| **Total elective students** | | | **1680** | **56** |
| **3. OTHER STUDIES** | | | | |
| 1 | Military training | | 690 | 23 |
| 2 | Educational practice | | 180 | 6 |
| 3 | Internship | | 120 | 4 |
| Preparation of bachelor work (thesis or project) | | | **120** | **4** |
| State attestation | | | **60** | **2** |
| At the direction of (without military training) | | | **7200** | **240** |

## Annotations of disciplines in the curriculum

### 1. Standard academic disciplines

**Political Economy** purpose of discipline is mastering 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.

**Microeconomics** purpose of teaching this discipline is to develop a 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.

**Macroeconomics** purpose of discipline study course "Macroeconomics" is to 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;

**Economic History** The purpose of the study: the development of knowledge about the basic stages of formation and direction of economic development and economic studies, conditions and patterns of evolution of the world economy, economics, economic concepts and areas of major schools of economic thought.

Subject disciplines: economy of the world historical development, the emergence and development of economic views and ideas prevailing in the system.

Content modules: economy and economic thought primitive societies period of the day and early nineteenth century., The world economy and main directions of economic thought XIX - XX centuries.

**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.

**Probability and Mathematical Statistics** object of study discipline patterns are random events and use them to build economic stochastic models. The purpose of discipline is to develop basic knowledge and practical skills of the foundations of probabilistic and statistical system, the main methods of quantitative measurement of the randomness of the factors that affect any process, principles of mathematical statistics used in the planning, organization and production management, evaluation product quality, system analysis of economic structures and processes, application of mathematical methods in economics. The program involves the study of two structural modules - theory of probability and mathematical statistics.

**Computer science** Course objective science discipline is to develop 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

**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.

**Optimization 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

**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 budget system** 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.

**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.

**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;

**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** 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.

**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.

**Economics of Enterprise.** The economic mechanism of functioning of the company, its development and use of resource potential in order to optimize economic performance.

**Management** The purpose of discipline - 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 agromarket

**Labor Economics** and Labor Relations purpose of discipline "Labor Economics and Labor Relations" is the mastery of scientific principles of labor groups, the principles and methods of valuation, organization and stimulation of work at all levels of economic management, better use of factors improving the efficiency of labor, and application of social protection.

Objectives of the course: to form the student body of knowledge of the laws of the market in agriculture and features of employment in rural areas; provide students with the practical skills of effective work processes in agriculture; arm techniques and methods of valuation work in various jobs in agriculture, learn to use directories legal materials; to train future professionals use different motivational incentives work effectively employees, adequate for certain conditions, forms and systems of remuneration; provide mastering social analysis methods and techniques of social partnership; introduce the experience of international organizations in the field of industrial relations, including the International Labour Organization.

**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.

**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 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.

**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.

**Planning and starting your own business**. The purpose - to form a system of knowledge on the basis of organization, planning their own business. Objective: to study the theoretical principles of business planning and acquiring practical skills in developing business plans and assessing the effectiveness of business projects.

**University education** and social communication 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. Elective academic disciplines

### *2.1. Disciplines offered by University*

Annotations of disciplines “History of Ukrainian Statehood”, “Philosophy”, “Foreign Language (English, German, French, Spanish)”, “Physical Training”, “Labour and Life Safety”, “The technology of crop production”, “Technology of production of livestock products” see Section 2.1.

### *2.2. Disciplines offered by students*

**Local finance** Objective: to provide and deepen students' knowledge on the nature and role of local finance in the development of economic and social infrastructure of administrative units, the budget process at the regional level. Tasks of the course: to give the required extent theoretical material, which will include modern scientific developments, both domestic and foreign scientists and economists; - To give the correct understanding of the principles in the financial relations between the state, local, economy and population; uncover ways to use these laws in practice financial work; define a set of measures to ensure the use of finance as one of the effective tools of economic policy of the local government.

**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.

**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.

**Insurance services** aim of the course "Insurance services" is to get the students basic knowledge in the theory and practice of insurance. The challenge of course is to clarify the need and merits of insurance in order to create an effective system to protect the interests of citizens, businesses and the state, acquire the skills to implement reinsurance and financial activities of the insurer. In the process of teaching turns objective need insurance, revealed his nature, functions, principles and role in a market economy; highlights issues of organization on the lines of the insurance market and state regulation of insurance; 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.

**Tax accounting.** Studying of theoretical and practical bases of the procedure of tax accounting, tax calculations and reporting. The discipline covers theoretical and practical aspects of tax accounting, the order of acceptance and computer processing of accounting documents in the bodies of the state tax service, and so on.

**Tax control.** The purpose of teaching is to develop knowledge and skills in substantiating managerial decisions with varying degrees of uncertainty and risk.

**Analysis Banking** The aim of the course "Analysis of Banking" is mastering knowledge aimed at improving and increasing professional skills in the management of banks in terms of instability and internal environment. Formation of market financial and credit system requires banks to improve business performance and competitiveness of banking instruments and services through the introduction of scientific and technological progress, effective forms of economic management and banking. In such circumstances a significant role for the analysis of the Bank, the results of which justified the strategy and tactics of its development, refined plans and management decisions are controlled by their performance, identify financial reserves, estimated performance of management, individual departments and the bank as a whole.

**International credit-settlement and currency 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.

**Payment systems.** The purpose of the discipline is the formation of future masters of professional competencies in determining the features and rules of the functioning of international and national payment systems. To achieve the goal, the following main tasks have been set: studying the operating conditions and current standards of payment

systems of the leading countries of the world and Ukraine; determination of the main participants of payment systems and their functions; assimilation of methods and technological peculiarities of realization of settlement operations in payment systems; acquisition of skills to assess the level and complexity of the payment system, taking into account the security of payments.

**Securities transactions** work program of discipline "Securities Transactions" will help students understand the specifics of the stock market, especially the implementation of equity and investment banking transactions, understand the differences portfolios, to know the nature of accounting and analysis of securities in the portfolio, meaning risks investment banks in the securities market, understand the meaning of the listing of securities in the world and in Ukraine, and to know the function of banks as underwriters, dealers and brokers. Particular attention is paid to methodological principles of activities of securities trading and issue of securities trading.

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.

**Financial and credit systems of foreign countries**. mastering of regularities and basic stages of evolution, principles of construction and features of the forms of organization of monetary and credit systems of foreign countries in the conditions of developed financial markets and an extensive system of credit and financial institutions.

**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.

**Logic.** Aim: to provide basic training of students in the field of forming a system of knowledge about the basic laws and forms of logical thinking, formation of a conscious attitude to the process of correct thinking with the help of scientific concepts and terms, familiarization of students with the logical theory of thinking. The objective of the discipline is to create the skills of correct logical thinking for students to make correct decisions in future professional activities, to participate in discussions and business communication, to process information, to logically and correctly justify the arguments and convictions of the opponents; acquaint students and methodical help in mastering a certain set of knowledge about means of intellectual activity, its forms and laws, understanding and assimilation of the peculiarities of forms and laws of thinking; providing logical and methodological level of research in the training of specialists.

**Sociology.** Sociological essence. Formation of human behavior in the process of labor activity and the place in this process of the system of motivation and means of social control. The role of the labor collective and small group in achieving the goal of production.

**Political science** - Laws, structure and functions of political science. Power and power relations. Political system of society, place and role in it state. Political consciousness and political culture. Politics and national relations. Politics and ecology. National-state development of Ukraine.

**Psychology and pedagogy.** Formation of the system of knowledge about the psyche of the individual as the highest value of society; awareness of the essence of the mechanisms of mental processes, states, qualities of the person as the basis of its

formation in the process of education, education and education. Assimilation of the basic terms and concepts of psychology and pedagogy at the level of their reproduction and interpretation; the acquisition of skills and elementary skills to apply them in practical activities to increase the competitiveness of a specialist in the socio-psychological field. The psyche of man, the patterns of personality formation in the process of education, education and education.

**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.

**Religious studies.** This is a complex branch of humanitarian knowledge that studies the laws of origin, the history of development, and the general characteristics of religious beliefs. Investigates the socio-historical nature of religion, the mechanism of its social ties with the spiritual, political and economic systems of society. The study of the discipline allows students to substitute the spontaneous attitude to religion for conscious, contributes to the formation of the worldview and the possession of the achievements of world and domestic culture and a balanced attitude to different religious beliefs.

**Basics of rhetoric**. The subject of rhetoric, the main content of the concepts and all sections of classical rhetoric.

**Regional economy** The objective of the discipline is learning the theory of productive forces and regional economy and regional development of scientific bases of regional economic policy; mastery of knowledge about territorial and sectoral structure of economic complex of Ukraine and its economic regions and so on. The aim of the course is to develop knowledge on the theoretical and practical bases of the territorial organization of the productive forces of Ukraine, the current state and trends of regional economic development.

**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.

**Managerial Accounting** The purpose of discipline "Management Accounting" is to obtain knowledge and practical skills in forming credentials of the operational activities of the company and making effective management decisions on the basis of such information. The objective of discipline is to methodological foundations and familiarization with the regulatory framework regarding cost accounting financial and economic activities of enterprises, acquire the ability to draw up costing, to determine the costs that are relevant to specific management solutions make management decisions based on the relationship between costs, volume of activity and profit , build budgets and spending budget analysis. The subject of discipline is operating cost accounting and calculation of production cost of products, analysis of the relationship of costs, volume of activity and profit model management decisions based on analysis of relevant information.

**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.

**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.

**Strategic Analysis in Business.**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.

**Economic and 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 derivatives** The purpose of the course "Financial derivatives" is the formation of future professionals specialized knowledge of the organization of credit institutions and principles of functioning of the foreign exchange markets and international lending system as a whole.

Tasks of the course is mastering theoretical knowledge and practical skills execution and settlement of credit and foreign exchange transactions carried out in servicing foreign trade activities of exporters and importers.

**Price and Pricing**. Theories of pricing, pricing methods. Marginal utility of price, methodological atypical pricing in terms of inflation, ensuring equivalence of accounting and prices in AIC.

**Stock Exchange Activities.** Fundamentals of exchange activity. Commodity, stock and currency exchange. Stock exchange transaction, the procedure of agreements conducting and exchange trading mechanism.

**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.

**Rationing, organization and payment of labor in agrarian formations.** Within the course "Rationing and wages," the theoretical, methodological and practical issues related to the regulation and organization of wages in the process of modern enterprises. The main goal of discipline is to form future professionals understanding the conceptual bases of valuation work in modern conditions, the use of modern forms and pay systems in the enterprise. The subject of the study are common patterns and characteristics of regulation and remuneration of the personnel organizations. The primary purpose of teaching is to form a complex theoretical knowledge and skills to develop and implement a rational organization of personnel, rationing and wages that ensure high efficiency of the staff.

**The labor market** The issues of functioning and regulation of the labor market, development of its infrastructure, analysis of the labor market, state support for employment, improvement of social protection and overcoming of unemployment of the population, development of the international labor market are considered.

**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 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.

**Agribusiness Organization.** Entrepreneurship and business in agriculture: the nature, objectives, benefits. Characteristics of businesses. Drawing up of business plans.

## Bachelor
## field of knowledge "Management and Administration"
## in specialty "ENTREPRENEURSHIP, TRADE AND STOCK ACTIVITIES"
## Educational 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.

**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

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 Program "Entrepreneurship, trade and stock activities"

| № | Name of Academic Discipline | Semester | Number | |
|---|---|---|---|---|
| | | | hours | credits ECTS |
| **1. STANDARD ACADEMIC DISCIPLINES** | | | | |
| 1 | Political economy | 1 | 120 | 4 |
| 2 | History of entrepreneurship development | 1 | 120 | 4 |
| 3 | Computer science and computer technology | 1 | 120 | 4 |
| 4 | Higher mathematics | 1,2 | 210 | 7 |
| 5 | Microeconomics | 2 | 120 | 4 |
| 6 | Economics of Enterpride | 2 | 120 | 4 |
| 7 | Probability Theory and Mathematical Statistics | 3 | 120 | 4 |
| 8 | Exchange activity | 3 | 150 | 5 |
| 9 | Macroeconomics | 3 | 120 | 4 |
| 10 | Accounting | 3 | 120 | 4 |
| 11 | Finance and Credit | 3 | 120 | 4 |
| 12 | Commodity studies | 3 | 120 | 4 |
| 13 | Entrepreneurship | 4 | 150 | 5 |
| 14 | Economic and mathematical methods and models | 4 | 90 | 3 |
| 15 | Statistics | 4 | 120 | 4 |
| 16 | Marketing | 4 | 120 | 4 |
| 17 | Management | 4 | 120 | 4 |
| 18 | Business ethics | 4 | 120 | 4 |
| 19 | Price and pricing | 4 | 120 | 4 |
| 20 | Organization of agribusiness | 5 | 120 | 4 |
| 21 | Trade organization | 5 | 150 | 5 |
| 22 | Economic analysis | 5 | 120 | 4 |
| 23 | Logistics | 6 | 120 | 4 |
| 24 | Organization of production | 6 | 120 | 4 |
| 25 | E-commerce | 6 | 120 | 4 |
| 26 | Cost management | 7 | 120 | 4 |
| 27 | Business planning and evaluation of its effectiveness | 7 | 150 | 5 |
| 28 | Trading strategies | 7 | 120 | 4 |
| 29 | Organization and regulation of the stock market | 7 | 120 | 4 |
| 30 | Strategy and business development | 8 | 120 | 4 |
| 31 | Potential and business evaluation | 8 | 150 | 5 |
| 32 | Cooperation in entrepreneurship | 8 | 120 | 4 |
| 33 | Economic assessment of small and medium businesses | 8 | 120 | 4 |
| **Total for standard part** | | | **4170** | **139** |
| **2. ELECTIVE ACADEMIC DISCIPLINES** | | | | |
| **2.1. *Disciplines offered by University*** | | | | |
| 1 | History of Ukrainian statehood | 1 | 90 | 3 |
| 2 | Safety of work and life | 1 | 90 | 3 |
| 3 | Foreign Language | 1,2,3,4,5,6 | 360 | 12 |
| 4 | Physical Education | 1,2,3,4 | 120 | 4 |
| 5 | University education | 1 | 90 | 3 |
| 6 | Philosophy | 2 | 90 | 3 |
| 7 | Technology of production and processing of crop production | 2 | 120 | 4 |
| 8 | Technology of production and processing of livestock products | 2 | 120 | 4 |
| **Total (Disciplines offered by University)** | | | **1080** | **36** |
| **2.2. *Disciplines offered by students*** | | | | |
| 1 | Sociology | 5 | 90 | 3 |
| 1 | Sociology of Labor | 5 | 90 | 3 |
| 1 | Politology | 5 | 90 | 3 |

| | | | | |
|---|---|---|---|---|
| 1 | Cultural and educational activities | 5 | 90 | 3 |
| 2 | Regional economy | 5 | 120 | 4 |
| 2 | National economy | 5 | 120 | 4 |
| 3 | Labor economics and socio-labor relations | 5 | 120 | 4 |
| 3 | Rationing and organization of wages | 5 | 120 | 4 |
| 4 | Economics of agriculture | 5 | 120 | 4 |
| 4 | Economics of nature management | 5 | 120 | 4 |
| 5 | Religious studies | 6 | 90 | 3 |
| 5 | Logic | 6 | 90 | 3 |
| 5 | Rhetoric | 6 | 90 | 3 |
| 5 | Psychology and pedagogy | 6 | 90 | 3 |
| 6 | Agricultural hedging | 6 | 120 | 4 |
| 6 | Business risks | 6 | 120 | 4 |
| 7 | Economic diagnostics | 6 | 120 | 4 |
| 7 | Project analysis | 6 | 120 | 4 |
| 8 | Investment | 7 | 120 | 4 |
| 8 | Finance of Enterprise | 7 | 120 | 4 |
| 9 | Audit | 7 | 120 | 4 |
| 9 | Financial Accounting | 7 | 120 | 4 |
| 10 | Taxation of legal entities and individuals | 8 | 120 | 4 |
| 10 | The tax system | 8 | 120 | 4 |
| 11 | Economics and organization of production services | 8 | 120 | 4 |
| 11 | Economic relations between production and service spheres | 8 | 120 | 4 |
| **Total (Disciplines offered by students)** | | | **1260** | **42** |
| **Total for elective part** | | | **2340** | **78** |
| **3. OTHER TYPES OF TRAINING** | | | | |
| 1 | Military training | | 690 | 23 |
| 2 | Educational practice | | 180 | 6 |
| 3 | Internship | | 300 | 10 |
| **Bachelor Thesis writing (Graduate thesis or Project)** | | | **150** | **5** |
| **State Attestation** | | | **60** | **2** |
| **Total for Specialty (without Military training course)** | | | **7200** | **240** |

## Annotations of disciplines in the curriculum

### 1. Standard academic disciplines

**Political Economy.** Commodity production and business. Social reproduction and economic growth. Basic social forms of production and their evolution. World economy and global market.

**History of entrepreneurship development.** The main stages of the evolution of entrepreneurial activity; the basis of cultural relations in entrepreneurial activity; essence, content, specifics and types of entrepreneurial activity; the basic laws and regularities of business development.

**Computer science and computer technology.** System maintenance of information processes. Network Technology. The use of the Internet in the economy. Organization of computer security and information security. Basics of WEB design. Software tools for working with structured documents. Software tools for working with databases and repositories. Fundamentals of Office Programming. Utilities. Appointment and application of archival information programs. The basics of protecting your computer from malicious software.

**Higher mathematics.** Elements of linear and vector algebra, analytic geometry. Mathematical analysis: function, boundary, continuity of function, derivative, basic rules of differential equation, functions of one variable and research by its methods of differential numeric function of several variables.

**Microeconomics.** Modern elements of the microeconomic environment and their activities in a socially oriented market economy. Methods and methods of making economic decisions at the microeconomic level in order to survive in the current economic conditions of the functioning of market relations.

**Economics of Enterpride.** Economic mechanism of operation of the enterprise, formation and use of its resource potential with the purpose of optimization of economic results of activity.

**Probability Theory and Mathematical Statistics.** Events, probability, repetition of experiments, laws of probability distribution, numerical characteristics of random variables, systems and functions of random variables, boundary theorems of probability theory, probability of model of economic problems.

**Exchange activity.** Fundamentals of stock activities. Commodity, stock, currency exchanges. Exchange agreements, the order of conclusion and the mechanism of exchange trades.

**Macroeconomics.** Macroeconomic processes in the conditions of construction and development of market economy of Ukraine. The system of determination, ways of solving the objectives of its achievement. Establishing relationships and defining the order of the relationship between objects and subjects of the macroscopic environment. Solving macroeconomic problems.

**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.

**Finance and Credit.** 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.

**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.

**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.

**Economic and mathematical methods and models.** Creation of models of economic systems with the help of various economic and mathematical models and solving optimization problems with the purpose of forecasting the construction and management of modern agricultural enterprises. Methods of nonlinear programming, solution of transport problem, solving of actual economic problems of agricultural production.

**Statistics**. Organization of observation, compilation and analysis of statistical data using the methods of grouping, average variables and indicators of variation, dispersion and correlation calculations, estimation of time and space changes of mass social phenomena.

**Marketing.** The essence, content of marketing and its concept, system and characteristics of modern marketing, as well as marketing policies: commodity, pricing, communications and distribution.

**Management.** Theoretical basis of management, manager in the management system. Motivation and rules of managerial activity. Mechanism of control and responsibility in the management system.

**Business ethics.** 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.

**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. Organization of agribusiness. Entrepreneurship and business in the agrarian sector: the essence, tasks, advantages. Characteristics of business structures. Preparation of business plans.

**Trade organization.** Theoretical foundations of the organization of trade; organizational models in the trading system; organizational and economic principles of trade operations; organizational conditions for the implementation of wholesale and retail trade.

**Economic analysis.** 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.

**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.

**Ecommerce/** Basics of e-commerce systems, e-commerce business models and their specifics, e-commerce billing, marketing research and e-commerce planning.

**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.

**Business planning and evaluation of its effectiveness.** The concept of a management system; types of agricultural enterprises and associations; organization of use of land, labor and material resources; social forms of organization of production; planning and economic calculation in agricultural enterprises; organization of branches of plant growing, animal husbandry, industrial production and crafts.

**Trading strategies.** Types of trading strategies, namely: concepts and basic trading strategies; arbitration and option trading strategies; Short-term trading strategies, Concepts and types of long-term trading strategies.

**Organization and regulation of the stock market.** Theoretical and methodological provisions of the stock market regulation; organizational mechanism of regulation of the stock market; models of redistribution of powers between state bodies and self-regulatory organizations in the stock market.

**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.

**Potential and business evaluation.** Theoretical foundations, patterns, principles and peculiarities of the formation and development of the potential of entrepreneurial structures, theoretical foundations and methodical approaches to the assessment of their potential and its individual components, international and national standards for assessing the value of property and property rights, cases of evaluation and implementation of evaluation procedures, modern concepts , preconditions and methodical approaches to the definition of reserves for the development and evaluation of business structures.

**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.

**Economic assessment of small and medium businesses.** The role and importance of small business in a market economy; main organizational forms and types of small and medium-sized businesses in the agrarian sector of the economy; features of the functioning of small and medium-sized business structures in modern conditions; economic and social significance of small business development; criteria and methods for assessing the effectiveness of their activities.

## 2. Elective academic disciplines

### *2.1. Disciplines offered by University*

Annotations of disciplines “History of Ukrainian Statehood”, “Labour and Life Safety”, “Foreign Language”, “Physical Training”, “Philosophy”, “Technology of production and processing of crop production”, “Technology of production and processing of livestock products” see Section 2.1.

**University education**. University education in the context of the Bologna process. Fundamentalization and individualization of the training of specialists with higher education. Organization of the educational process at the university. Professional training in higher educational institution: introduction to specialty. Library of the University and the rules for the use of its funds. Socio-cultural infrastructure of the university. Student self-governance as an integral part of the democratization of higher education.

### *2.2. Disciplines offered by students*

**Sociology.** Sociological essence. Formation of human behavior in the process of labor activity and the place in this process of the system of motivation and means of social control. The role of the labor collective and small group in achieving the goal of production.

**Sociology of Labor.** The essence, content, character and function of labor. Formation of human behavior in the process of labor activity. The role of the labor collective and small group in achieving the goal of production. Optimization of socio-psychological climate in collectives.

**Politology.** Laws, structure and functions of political science. Power and power relations. Political system of society, place and role in it state. Political consciousness and political culture. Politics and national relations. Politics and ecology. National-state development of Ukraine.

**Cultural and educational activities.** Culture and spiritual development of personality and society. Features of enrichment of the spiritual world, cultural development of the nation.

**Regional economy.** Scientific fundamentals of the placement of productive forces and organization of farms depending on the natural resource potential and scientific and technological progress. Features of economic development of certain regions of Ukraine.

**National economy.** Theoretical and organizational bases for the regulation of the national economy. Forecasting, programming and macroeconomic planning in the national economy regulation system. Methods of state regulation of the economy.

**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.

**Rationing and organization of wages.** Organization of wages in modern economic conditions. Tariff system of wages. System of remuneration for labor. New approaches to wage organization. Documentary payment for payroll. Procedure for determination and application of average wages. Charges and deductions from salaries of employees. Saving documents on payroll records.

**Economics of agriculture.** System of production relations in relation to productive forces in agriculture. Ways and methods of rational use of land, material and labor resources, intensification of agricultural production on the basis of scientific and technological progress of specialization, cooperation and integration of agribusiness enterprises, development of commodity-money relations, ways to increase the efficiency of production.

**Economics of nature management.** Interaction of ecological and economic factors, maintaining the proper quality of the environment, resource conservation. Indicators characterizing ecological, economic and social effectiveness of environmental measures, changes in psychological conditions and socio-hygienic conditions.

**Religious studies.** This is a complex branch of humanitarian knowledge that studies the laws of origin, the history of development, and the general characteristics of religious beliefs. Investigates the socio-historical nature of religion, the mechanism of its social ties with the spiritual, political and economic systems of society. The study of the discipline

allows students to substitute the spontaneous attitude to religion for conscious, contributes to the formation of the worldview and the possession of the achievements of world and domestic culture and a balanced attitude to different religious beliefs.

**Logic.** Formation of a logical culture of thinking of a specialist; understanding of the general cultural significance of logical theory; development of natural possibilities of human thinking, increase of its creative potential; elucidation of the logical foundations of the formalization of reasoning activity, algorithmization of information technologies.

**Rhetoric.** The subject of rhetoric, the main content of the concepts and all sections of classical rhetoric. Modern sciences: rhetoric, stylistics, poetics, pragmatics, communication theory, etc.

**Psychology and pedagogy.** Formation of the system of knowledge about the psyche of the individual as the highest value of society; awareness of the essence of the mechanisms of mental processes, states, qualities of the person as the basis of its formation in the process of education, education and education. Assimilation of the basic terms and concepts of psychology and pedagogy at the level of their reproduction and interpretation; the acquisition of skills and elementary skills to apply them in practical activities to enhance the competitiveness of a specialist in the socio-psychological field. The psyche of man, the patterns of personality formation in the process of education, education and education.

**Agricultural hedging.** Organization of hedging futures and options, futures trading, pricing mechanism in the futures market; organization of the option market.

**Business risk.** Types of risks and methods of their management, namely: 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.

**Economic diagnostics.** Basic methods and approaches of economic diagnostics, its tools; methodology of working out of accounting reports for the purposes of economic diagnostics; bases of estimation of competitive environment and competitiveness of enterprise; levels and ratio of the limit values of the enterprise performance indicators, which determine the financial stability and solvency of the enterprise; the essence of the diagnosis of the formation, distribution and use of resources of the enterprise and all of its finances to increase profits and capital; methods of assessing the creditworthiness of a modern enterprise under the conditions of acceptable level of risk; the essence of the rating of the enterprise; the position of the diagnostics of the level of economic culture and security of the enterprise.

**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.

**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.

**Finance of Enterprise.** The purpose of teaching the course: providing and deepening students' knowledge on the theory and practice of financial relations of business entities. Tasks of the discipline: finding out the essence of financial resources of enterprises, methods and sources of their formation, organization of financial activities of enterprises; acquisition of skills in making payments for cash receipts, profit, distribution, impact of taxation on the use of profits; definition of the need for working capital, sources of funding for reproduction of basic productive assets, their effective use; mastering the methods of assessing the financial condition, reorganization of enterprises.

**Audit.** Features of application of elements of organization, registers of synthetic and analytical accounting. Burning of funds, calculations, inventory, fixed assets, intangible

assets, labor remuneration, systems, variants of production costs, determination of the cost of production. Audit functions: checking the correctness of the balance sheet and accounting for gains and losses, analysis of the accounting status, compliance with its requirements of the law; observance of the equality of rights of shareholders in distribution of dividends and voting.

**Financial Accounting.** Study methods and organization of financial assets accounting for enterprises using progressive forms and national standards. Study of methods and organization of keeping financial records of capital and obligations with enterprises using progressive forms and national standards.

**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.
**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.

**Economics and organization of production services.** Scientific fundamentals of organization of the system of production service of agrarian enterprises, its types and forms; the peculiarities of the formation and functioning of relations between agrarian commodity producers and service structures; approaches to business planning and optimization of the functioning system and strategy of development of enterprises of the service sector on the basis of modern methods and techniques (quality management methodology, business process reengineering, information technologies and systems, etc.).

**Economic relations between production and service spheres.** The essence of economic relations and their features in the agro-industrial complex; the features of the formation of marketing tariffs for production services, the equivalence of goods exchange between production and service spheres.

## 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
Address: Bldg. 10, room 313,525

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

### *075 Marketing*

Educational Program **"Marketing"**

Graduating department:

Department of marketing and international trade
Voice: (044)527-89-78
E-mail: market_chair@nubip.edu.ua
Department heard - Doctor of economic Sciences, Professor Jaroslava Larina

### *073 Management*

Educational Program **"Management"**

Graduating departments:

Department of management named after I.S.Zavadskiy
Voice: (044)527-84-80
E-mail: manag@nubip.edu.ua
Department heard - Doctor of economic Sciences, Professor Vasiliy Goryovyi

Department of business administration and foreign international activity
Voice: (044)527-86-51
E-mail: worldagro_chair@nubip.edu.ua
Department heard - Doctor of economic Sciences, Professor Valeriy Galushko

Department of Production and investment management
Voice: (044)527-80-81
E-mail: prodinvestman@nubip.edu.ua
Department heard - Doctor of Economic Sciences, Professor, Associate member of the National academy of sciences of Ukraine Lidiia Shynkaruk

**Bachelor**
**field of knowledge "Management and Administration"**
**specialty in «MARKETING»**
**Educational program "Marketing"**

| | |
|---|---|
| Form of training, licensed study amount: | |
| - full-time | 60 persons |
| - extramural | 60 persons |
| Term of training | 4 years |
| Credits | 240 ECTS |
| Language of instruction | Ukrainian |
| 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 cfn 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 programs specified in Table 1.2 Section 1.3 this Catalog.

## 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 marketingdepartment, 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.

# Bachelor`s Program and Curriculum in Specialty "Marketing" Educational program "Marketing"

| № | Title of the discipline, practice | Term | Amount | |
|---|---|---|---|---|
| | | | hours | credits ECTS |
| **1. STANDARD ACADEMIC DISCIPLINES** | | | | |
| 1. | High math for managers | 1 | 120 | 4 |
| 2. | Bases of economics theory | 1 | 180 | 6 |
| 3. | Probability theory and math statistic | 2 | 120 | 4 |
| 4. | Macroeconomics | 2 | 120 | 4 |
| 5. | Microeconomics | 2 | 120 | 4 |
| 6. | Psychology of Success | 2 | 120 | 4 |
| 7. | Business ethics | 2 | 120 | 4 |
| 8. | Legislative providing of managerial activities | 2 | 90 | 3 |
| 9. | Statistics | 3 | 180 | 6 |
| 10. | Finance, money and credit | 3 | 120 | 4 |
| 11. | Commodity market infrastructure | 3 | 120 | 4 |
| 12. | Management | 3 | 120 | 4 |
| 13. | Econometrics | 4 | 90 | 3 |
| 14. | Economy and finance of the Enterprise | 4 | 90 | 3 |
| 15. | Marketing | 4 | 150 | 5 |
| 16. | Accounting | 4 | 120 | 4 |
| 17. | Commodity Studing | 4 | 90 | 3 |
| 18. | Math programming | 5 | 120 | 4 |
| 19. | Business analysis | 5 | 120 | 4 |
| 20. | Logistic | 5 | 120 | 4 |
| 21. | Agricultural Marketing | 5 | 150 | 5 |
| 22. | Service marketing | 5 | 120 | 4 |
| 23. | Consumer Behavior | 6 | 120 | 4 |
| 24. | Marketing Pricing | 6 | 120 | 4 |
| 25. | Marketing research | 6 | 150 | 5 |
| 26. | Industrial Marketing | 7 | 120 | 4 |
| 27. | International Marketing | 7 | 120 | 4 |
| 28. | Marketing Pricing Policy | 7 | 150 | 5 |
| 29. | Entrepreneurship Management | 7 | 120 | 4 |
| 30. | Human resource management | 7 | 120 | 4 |
| 31. | Marketing Product Policy | 8 | 120 | 4 |
| 32. | Management of innovations | 8 | 120 | 4 |
| 33. | Marketing Communications | 8 | 120 | 4 |
| 34. | Methods of making managerial decisions | 8 | 120 | 4 |
| **The total number** | | | **4200** | **140** |
| **2. ELECTIVE** | | | | |
| ***2.1. Disciplines chosen by University*** | | | | |
| 1. | Economic Informatics | 1 | 120 | 4 |
| 2. | Foreign language | 1,2,3,4 | 360 | 12 |
| 3. | System of technologies: Crop Production | 1 | 120 | 4 |
| 4. | System of technologies: Livestock Production | 1 | 120 | 4 |
| 5. | Information systems in marketing | 3 | 120 | 4 |
| 6. | Business protocol and negotiation | 8 | 120 | 4 |
| 7. | Physical training | 1,2,3,4 | 120 | 4 |
| **Total number by university chosen** | | | **1080** | **36** |
| ***2.2. Disciplines chosen by students*** | | | | |
| ***2.2.1. Disciplines of common choice*** | | | | |
| 1. | Introductive to specialty | 1,2 | 240 | 8 |
| 2. | Philosophy | 3 | 120 | 4 |
| 3. | Sociology | 3 | 120 | 4 |

| | | | | |
|---|---|---|---|---|
| 4. | Technology of presentations and web-design | 3 | 120 | 4 |
| 5. | Methodology of social empirical research | 4 | 120 | 4 |
| 6. | Bases of scientific research | 4 | 120 | 4 |
| 7. | Conflict management | 6 | 120 | 4 |
| 8. | Foreign economic activity of enterprise | 6 | 120 | 4 |
| **The total number** | | | ***600*** | ***20 from 36*** |
| ***2.2.2. Choice of professional direction*** | | | | |
| ***2.2.2.1.*** **Professional direction** ***"Sales, advertising and Internet marketing"*** | | | | |
| 1. | Marketing distribution policy | 5 | 120 | 4 |
| 2. | Bases of Internet Marketing | 5 | 150 | 5 |
| 3. | International Trade | 6 | 120 | 4 |
| 4. | Marketing analyze | 6 | 150 | 5 |
| 5. | Bases of advertising | 7 | 120 | 4 |
| 6. | Public Relations | 7 | 150 | 5 |
| 7. | Branding | 8 | 120 | 4 |
| **Total** | | | **930** | **31** |
| ***2.2.2.2.*** **Professional direction** ***"Marketing in the markets of goods and services"*** | | | | |
| 1. | Ecological Marketing | 5 | 120 | 4 |
| 2. | Quality Management of Goods and Services | 5 | 150 | 5 |
| 3. | Marketing analyze | 6 | 120 | 4 |
| 4. | Innovation Marketing | 6 | 150 | 5 |
| 5. | Marketing in Tourism | 7 | 120 | 4 |
| 6. | Bank Marketing | 7 | 150 | 5 |
| 7. | Branding | 8 | 120 | 4 |
| **Total** | | | **930** | **31** |
| **Total by student's choice** | | | **1530** | **51** |
| **Total in selective constituent** | | | **2610** | **87** |
| **3. OTHER TYPES OF STUDY** | | | | |
| 2 | Studying practice | | 90 | 3 |
| 3 | Industry practice | | 240 | 7 |
| Bachelors qualification thesis (diploma or project) | | | 180 | 6 |
| State attestation | | | 30 | 1 |
| **Total for field of knowledge (without military training)** | | | **7200** | **240** |

## Annotations of disciplines in the curriculum

## 1. Standard academic disciplines

**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.

**Bases of economics theory.** The purpose of discipline is achievement of fundamental economic knowledge by fututre prospective specialists, formation of logic of economic thought and economic culture, teaching them basic methods of cognition and

analysis of economic processes, and the ability to make reasonable decisions about economic issues related with their future practical activities.

**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.

**Macroeconomics**. 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 ofmacroeconomic development and emergence of cycle and indicators of economic cycle;

**Microeconomics**. 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.

**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.

**Business ethics.** Business ethics as an educational discipline examines the ethical issues of management and business. Questions that are considered during the course: the subject of ethics of business, its importance and basic concepts; basic concepts of business ethics; a combination of ethics and business theory; ethical views on entrepreneurship; ethics of business and human morality; professional ethics and its impact on ethical business issues; Ethics of the relations of the firm and the employee; the essence and structure of the process of business communication; organization of business communication; business events; communicative etiquette; business etiquette as the basis of behavior in the business environment; business image; ethics and social responsibility of business; ethical norms, principles of doing business; corporate culture of organizations; corporate codes of business conduct; ethical code of an entrepreneur; business conflicts and ethical ways of overcoming them; national peculiarities of business ethics; features of the ethics of international business.

**Legislative providing of managerial activities**. Purpose of studying of the educational discipline is the necessity to prepare the specialists in the managerial sphere. They will be able to work in conditions of building law-government state and market economy, as well as studying the law norms which regulate public relations. These norms are formed during providing and protecting rights and freedoms as well as interests of

physical and juridical persons. The norms are also formed in the process of public administration of economy, social-cultural and administrative-political constructing in the country as well forming the law perception and law culture among the future representatives of business elite, legislative regulating of the economic activities and law based status of the economic subjects and public authorities.

**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.

**Finance, money and credit**. The aim of the course is to develop in the future specialists in marketing a modern economic thought and knowledge system concerning general normflities of development of modern financial and monetary relations of society. The purpose of discipline is to develop in students of modern economic thinking and system of specific knowledge about basic concepts regarding the economic and financial activity, contents of its specific

**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.

**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.

**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.

**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.

**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 studing 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.

**Commodity studying.** The purpose of discipline - to give the future specialists theoretical background and practical skills of the fundamental characteristics of the product using knowledge gained in solving the major problems of marketing activities. Problems Subjects: to give the theoretical knowledge of fundamental characteristics that make the use-value of goods; train future professionals to the principles and methods of goods movement; systemating the explore of the multitude of products through the rational application of classification and coding.

**Math programming.** This discipline teaches students to use methods of economic-mathematical models in their professional careers. The main directions of studing of the discipline are the following: mathematical model in the system of material and ideal models, the research of economic processes through mathematico-economic models, the main methods of modeling of economic processes, mathematical formalization of conditions with changable technical and economic factors, economico-mathematical analysis of optimal solutions.

**Business analysis.** Purpose of studying of the educational discipline is ability to form analytical conclusion of the presented and studied information, studying the structure of an enterprise, possessing the skills of forming business model of an enterprise, studying the role of business analysis at enterprises, possessing theoretical basics of forming successful business decisions, determining the tasks, functions and structure of management of business processes at enterprises, studying the process of business analysis and interpretation its results.

**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.

**Agricultural marketing**. 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 agricultural products. The task is to discipline students acquiring skills in market research of agricultural products (APC), predicting conditions of trade, inventory management and quality of agricultural products, pricing, promotion of goods on the domestic and foreign markets of food, distribution and marketing of domestic products.

**Services marketing.** The purpose of discipline "services marketing" 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). Objectives of the course: understanding the significance of marketing in the service sector, its features, market research services, its structure in the world and national levels, regulation and regulatory support, marketing tools absorption features in the organization, and businesses in the service sector, the ability to use this knowledge in practice activity. The object of the course is the theory and practice of marketing in services.

**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

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 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.

**Industrial marketing**. The purpose of discipline is: the formation of theoretical and practical knowledge about industrial marketing, modern concepts of development, methodological and organizational framework for use. Objectives of the course: the study of the theory of industrial marketing, market research methodology, design and planning of marketing strategies and sales industry, mastering modern management marketing communication activities in the areas of procurement, sales distribution.

**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.

**Entrepreneurship management.** This subject provides knowledge about the laws that govern the one hand, the economic property relations between entrepreneurs and employees, on the other - the actions of entrepreneurs in the process of selecting resources for production, exchange, distribution and consumption of goods and services.

**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.

**Marketing product policy.** The purpose of discipline is to learn 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 of the goods and services competitive products, the main areas of commercial policy formation.

**Management of innovations.** The primary objective of teaching of discipline is a capture modern theoretical bases and practical skills of management of organization innovative activity. Basic tasks which must be the disciplines decided in the process of teaching is theoretical preparation of students and forming for them of skills in the field of management of organization innovative activity. The result of study of discipline is acquisition of the special professional jurisdictions from management innovations.

**Marketing communications**. The purpose of discipline: mastering the knowledge of effective goods / services to take effective industrial, institutional and scientific solutions to date. The target of courses: learning the basic categories of marketing communications, exploring techniques budgeting advertising campaigns algorithms calculate the efficiency

of advertising appeal to the target audience and practical skills they use in promotion, finding stocks improving the promotion of goods.

**Methods of making managerial decisions.** The aim of the discipline is to give basic knowledge to students in the theory of methods for making managerial decisions on the basis of system analysis, mathematical modeling and optimization of business entities in a market economy and their applications; processing them on concrete, as close as possible to real, model case studies, examples and mathematical models of methods for determining optimal managerial decisions, using computer facilities, application software packages, modern information technologies, etc.

## 2. Elective academic disciplines

### *2.1. Disciplines offered by University*

**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.

**System of technology: crop production**. The main purpose of discipline is to provide knowledge to create optimal process (agro-ecological) conditions of the required number of high-quality crop production based on intensive photosynthesis in crops field crops while maintaining or improving soil fertility. The key task of it is: getting practical skills in production high-quality, environmentally friendly products with minimal energy and labor costs while maximizing its output per unit time per unit area that requires large-scale introduction of high-grade, intensive, energy-saving and environmentally appropriate technologies.

**System of technology: livestock production.** Scientific approaches and practical issues of discipline that anticipation for the study have immediate and direct relevance to future research or practice students. This applies both on scientific principles of economics and livestock industries, farms activities, planning and financing their technology of major livestock products, as well as a deep understanding and knowledge of them essentially biological properties of a living organism, patterns of development, the relationship of organism and environment and historical development of the organism. Also state animal that has emerged in Ukraine and introduction of new technologies livestock production requires the ability to assess the effectiveness of a particular technology based initiatives.

**Informational systems in marketing.** The goal of teaching of the discipline is to develop in future professionals a current level of informational and computeral culture, the acquirement of practical skills of work on modern computer equipment and the usage of modern information technologies to solve various problems in the practice activity of the specialty.

**Business protocol and negotiation**. The discipline examines modern requirements for management, in particular in such areas, business protocol and ethics, as an important component of it, enterprise responsibility - the first step towards ethical behavior, preparation for negotiations, negotiation (main stages and their characteristics), negotiation methods, styles Negotiation, analysis of negotiation results and implementation of agreements reached, rules and regulations for conducting business meetings, main points of agreement on a business meeting, preparation of premises and meeting delegate her.

**Physical training.** Physical education has the goal of strengthening the health and tempering of the body of a young person, promoting physical development and improving work capacity. Specifically, physical education is aimed at the formation, improvement of

motor qualities (speed, strength, endurance, flexibility, agility), a steady interest in systematic exercises, instilling hygienic skills.

### *2.2. Disciplines offered by students*

#### 2.2.1. Disciplines of common choice

**Introductive to specialty.** The purpose of discipline is to familiarize students with the features of future profession, its content and objectives of management, the role of managers at different levels in the management of modern enterprises, especially the training of specialists in management.

**Sociology.** The purpose of the discipline is to familiarize students with the history of sociological thought and problematic field of Ukrainian and world sociology. The following learning assignments are subjected to achieve the purpose: to provide students with a holistic view of society, to form the skills for operating the theoretical and factual material, to help to understand the processes occurring in contemporary society in its various manifestations.

**Technology of presentations and web-design.** 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.

**Methodology of social empirical research**. The students master the methods of scientific cognition of social research, methods and techniques of solving specific social problems independently.

**Bases of scientific research.** 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.

**Conflict management.** The aim of the discipline is to study the general laws, mechanisms of formation and development of cognitive mental processes, properties, states and formations in the process of management, under stress and conflict.

**Foreign economic activity of enterprise.** The purpose of discipline is a receipt of system knowledge students from objective conformities to law, terms, processes and specific features of foreign economic activity (FEA) of enterprise, and also acquisition of skills, them the practical use. The result of study of discipline is forming for the students of integral imagination about processes in the field of FEA; capture of modern economic thought a culture, by methodological approaches in relation to an analysis and estimation of efficiency of foreign economic activity; forming for the students of abilities and practical skills of the use of the purchased knowledge is in practice of realization of foreign economic activity of enterprises in relation to application of empiric.

## *2.2.2. Choice of professional direction*

### *2.2.2.1.* Professional direction *"Sales, advertising and Internet marketing"*

**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 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 trade.** The purpose of teaching the academic discipline is to inculcate among students an understanding of trends, patterns, and mechanisms of international trade, analysis of its development indicators; knowledge of modern forms and methods of organizing international exchange of goods, services and intellectual property products, as well as modern tools for international trade processes regulation. Objective is to form and develop the students' complete set of competences in planning, organization and regulation of export / import in the international trade relations system.

**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.

**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.

**Public relations.** The aim of the course "Public relations" is mastering the basics of PR. The purpose of teaching - the formation of students' theoretical knowledge and practical skills in establishing two-way communication to identify common ideas or common interests and mutual understanding based on truth, knowledge and full awareness.

**Branding.** The purpose of the discipline is to provide students with theoretical knowledge and practical skills in creating brands, implementing brand strategies in order to maximize the positive impact on the company. Objective: to ensure the formation of competencies in the following areas: understanding the nature and principles of the branding, teaching students to create their own brands, managing their brand assets

effectively, developing and maintaining brand strategy. The subject of the discipline are the methods, processes and actions for the company's brand creation.

### *2.2.2.2.* Professional direction *"Marketing in the markets of goods and services"*

**Ecological marketing.** The purpose of discipline is to provide students with knowledge on the ecological needs of consumers, analysis of marketing environment of the companies operating in the markets of environmental goods, environmental goods market characteristics and the principles of its segmentation, consumer behavior, marketing mix development for environmental goods. The discipline mission is to set up an effective body of students' competencies on the formation of demand for environmental products, certification, eco-labeling, pricing and the formation of distribution and communication channels for environmental goods.

**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.

**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.

**Innovation marketing.** The purpose of the discipline is to acquire theoretical knowledge in the field of innovation marketing and innovative marketing and gain practical skills of innovations promotion in the goods and services markets. While studying students are taught: to organize and implement marketing innovation at the enterprise; to determine the most perspective directions of innovative development of the enterprise; to generate and analyze the ideas of new products and to carry out their effective selection; to conduct an estimation of the commercial prospects of new products; to conduct analysis and oversee the conformity of the new product characteristics to meet the needs of the market; to develop effective measures for the formation of demand for product innovations and their promotion on the market; to manage the life cycle of product innovations.

**Marketing in tourism.** The purpose of the discipline is to provide the student with theoretical and practical market-oriented approaches aimed at addressing the needs of consumers for tourist services. As a result of studying, students are taught: to organize and implement marketing activities for tourist services at the enterprise; to explore the market of tourist services, to identify the existing and potential demand of consumers for these services; to optimize the assortment of tourist services and their distribution system,

to develop pricing policies; to generate demand for travel services and stimulate sales through communication tools.

**Bank marketing.** The purpose of the discipline is to provide the student with the knowledge of the basic principles, categories, methods and tools of marketing in banking industry and building skills for the marketing tools implementation in banking institutions of different specializations. As a result of studying the discipline, the student will obtain the knowledge of theoretical and modern marketing management practices in the banking sector; of planning and implementation of a marketing measures program for banking institutions and conducting internal and external audits of marketing activities; the ability to search for information in the process of developing and applying a marketing program for banking institutions; ability to make economic calculations for justification of managerial decisions aimed at increasing of marketing activities efficiency; ability to carry out a work package on the planning and implementation of a marketing program for banking institutions.

**Branding.** The purpose of the discipline is to provide students with theoretical knowledge and practical skills in creating brands, implementing brand strategies in order to maximize the positive impact on the company. Objective: to ensure the formation of competencies in the following areas: understanding the nature and principles of the branding, teaching students to create their own brands, managing their brand assets effectively, developing and maintaining brand strategy. The subject of the discipline are the methods, processes and actions for the company’s brand creation.

**Bachelor**
**field of knowledge "Management and Administration"**
**specialty in "MANAGEMENT"**
**Educational program "Management"**

| | |
|---|---|
| Form of training, licensed study amount: | |
| - full-time | 150 persons |
| - extramural | 60 persons |
| Term of training | 4 years |
| Credits | 240 ECTS |
| Language of instruction | English, Ukrainian |
| Qualification of graduates | Bachelor in management, manager administrator |

## The concept of training

The purpose of training as "Management" is to provide agribusiness companies and organizations highly skilled workers primary level management departments, operating systems and processes. Qualifications Bachelor of Management and Manager administrator can graduate quickly adapt to domestic economic relations of enterprises and organizations to quickly develop and implement the elements of the management system, establish an effective incentive system.

## Practical training

Future management specialists of specific companies gain working knowledge of modern management methods, knowledge of the technological issues of enterprise's ability to govern themselves, to build a clear personal goals, ability to solve problems, the ability to innovate, and the ability to influence others, knowledge of modern management approaches, the ability to control, the ability to train and develop subordinates; manage enterprise knowledge of the practical aspects of decision-making.

## Proposed Topics for Bachelor theses

1. System of human resource potential management improvement.
2. Improvment of system of working achievements and personal skills rates of managers.
3. Management of business activity of enterprises and ways of their improvement.
4. Improvment of organization and motivation of stuff on enterprise.
5. Improvment of management system in livestock business.
6. Development communication system in the structure of management of enterprise.
7. Increasing efficiency of making management decision and their implementation.
8. Creating competitive strategy of enterprise.
9. Creating system of quality management in agrarian enterprises.
10. Human resource management in cooperatives.

**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

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.

# Bachelor's Program Curriculum
# in Specialty «Management»
# Educational program "Management"

| № | Title of the discipline, practice | Term | Amount | |
|---|---|---|---|---|
| | | | hours | credits ECTS |
| **1. STANDARD ACADEMIC DISCIPLINES** | | | | |
| 1. | High math for managers | 1 | 120 | 4 |
| 2. | Bases of economics theory | 1 | 120 | 4 |
| 3. | Microeconomics | 1 | 150 | 5 |
| 4. | Probability theory and math statistic | 2 | 120 | 4 |
| 5. | Macroeconomics | 2 | 120 | 4 |
| 6. | Theory of organization | 2 | 120 | 4 |
| 7. | Business ethics | 2 | 120 | 4 |
| 8. | Legislative providing of managerial activities | 2 | 120 | 4 |
| 9. | Statistics | 3 | 120 | 4 |
| 10. | Finance, money and credit | 3 | 120 | 4 |
| 11. | Marketing | 3 | 120 | 4 |
| 12. | Management | 3 | 180 | 6 |
| 13. | Econometrics | 4 | 90 | 3 |
| 14. | Economy and finance of the Enterprise | 4 | 120 | 4 |
| 15. | International economic relations | 4 | 150 | 5 |
| 16. | Accounting | 4 | 120 | 4 |
| 17. | Selfmanagement | 4 | 120 | 4 |
| 18. | Math programming | 5 | 120 | 4 |
| 19. | Business analysis | 5 | 120 | 4 |
| 20. | Logistic | 5 | 120 | 4 |
| 21. | Operational management | 5 | 150 | 5 |
| 22. | Management of team interactions. | 5 | 105 | 3,5 |
| 23. | Economics of world agriculture | 5 | 105 | 3,5 |
| 24. | Human resource management (HR) | 6 | 120 | 4 |
| 25. | Controlling | 6 | 120 | 4 |
| 26. | Foreign economic activity of enterprise | 6 | 150 | 5 |
| 27. | Communication management | 7 | 90 | 3 |
| 28. | Risk-management | 7 | 90 | 3 |
| 29. | Strategic management | 7 | 150 | 5 |
| 30. | Entrepreneurship Management | 7 | 90 | 3 |
| 31. | Project management | 7 | 120 | 4 |
| 32. | Theory of leadership | 8 | 120 | 4 |
| 33. | Management of innovations | 8 | 90 | 3 |
| 34. | Financial and economic safety | 8 | 90 | 3 |
| 35. | Business foreign language | 8 | 150 | 5 |
| 36. | Methods of making managerial decisions | 8 | 90 | 3 |
| **The total number** | | | **4320** | **144** |
| **2. ELECTIVE ACADEMIC DISCIPLINES** | | | | |
| **2.1. *Disciplines offered by University*** | | | | |
| 1. | Economic Informatics | 1 | 120 | 4 |
| 2. | Foreign language | 1,2,3,4 | 360 | 12 |
| 3. | System of technologies: Crop Production | 1 | 120 | 4 |
| 4. | System of technologies: Livestock Production | 1 | 120 | 4 |
| 5. | Information systems in management | 3 | 120 | 4 |
| 6. | Business protocol and negotiation | 8 | 120 | 4 |
| 7. | Physical training | 1,2,3,4 | 120 | 4 |
| **Total number by university chosen** | | | **1080** | **36** |
| **2.2. *Disciplines offered by students*** | | | | |
| **2.2.1. Disciplines of common choice** | | | | |
| 1. | Introductive to specialty | 1 | 240 | 8 |

| | | | | |
|---|---|---|---|---|
| 2. | Sociology | 3 | 120 | 4 |
| 3. | Philosophy | 3 | 120 | 4 |
| 4. | Technology of presentations and web-design | 3 | 120 | 4 |
| 5. | Methodology of social empirical research | 4 | 120 | 4 |
| 6. | Bases of scientific research | 4 | 120 | 4 |
| 7. | International economic integration. Eurointegration | 6 | 120 | 4 |
| 8. | State and regional management | 6 | 120 | 4 |
| **The total number** | | | ***600*** | ***20 from 36*** |
| **2.2.2. Choice of professional direction** | | | | |
| ***2.2.2.1.*** **Professional direction** ***"Management organization and administration"*** | | | | |
| 1. | Основи кооперації | 5 | 150 | 5 |
| 2. | Маркетинговий менеджмент | 6 | 120 | 4 |
| 3. | Менеджмент підприємств агропромислового виробництва | 6 | 150 | 5 |
| 4. | Господарське право | 7 | 120 | 4 |
| 5. | Обліково-аналітичне забезпечення управлінської діяльності | 7 | 120 | 4 |
| 6. | Мотиваційний менеджмент | 8 | 120 | 4 |
| **Total** | | | **780** | **26** |
| ***2.2.2.2.*** **Professional direction** ***"Management of foreign activity"*** | | | | |
| 1. | Міжнародні організації | 5 | 150 | 5 |
| 2. | Маркетинг ЗЕД | 6 | 120 | 4 |
| 3. | Міжнародні перевезення | 6 | 150 | 5 |
| 4. | Митне регулювання зовнішньоекономічних операцій | 7 | 120 | 4 |
| 5. | Зовнішньоекономічна комерційна діяльність | 7 | 120 | 4 |
| 6. | Управління операціями з експорту-імпорту | 8 | 120 | 4 |
| **Total** | | | **780** | **26** |
| ***2.2.2.3.*** **Professional direction** ***"Management of foreign activity"*** | | | | |
| 1. | Інвестиційний аналіз | 5 | 150 | 5 |
| 2. | Міжнародна економічна статистика | 6 | 120 | 4 |
| 3. | Управління виробничими системами | 6 | 150 | 4 |
| 4. | Антикризовий менеджмент | 7 | 120 | 4 |
| 5. | Соціальний менеджмент | 7 | 120 | 5 |
| 6. | Управління активами і інвестиційним портфелем | 8 | 120 | 4 |
| **Total** | | | **780** | **26** |
| **Total by student's choice** | | | **1590** | **53** |
| **Total in selective constituent** | | | **2490** | **83** |
| **3. OTHER TYPES OF STUDY** | | | | |
| 2 | Studying practice | | 90 | 3 |
| 3 | Industry practice | | 240 | 8 |
| Bachelors qualification thesis (diploma or project) | | | 150 | 5 |
| State attestation | | | 30 | 1 |
| **Total for field of knowledge (without military training)** | | | **7200** | **240** |

## Annotations of disciplines in the curriculum

### 1. Standard academic disciplines

**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.

**Bases of economics theory.** The purpose of discipline is achievement of fundamental economic knowledge by future prospective specialists, formation of logic of economic thought and economic culture, teaching them basic methods of cognition and analysis of economic processes, and the ability to make reasonable decisions about economic issues related with their future practical activities.

**Microeconomics**. 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.

**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.

**Macroeconomics**. 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;

**Theory of organization.** The primary objective of teaching of discipline is forming modern, on the basis of approach of the systems, to the world view in relation to creation, functioning and evolution of organizations. Main tasks which must be the disciplines decided in the process of teaching is: providing of students knowledge is about a theory and practice of functioning of organizations in the changeable terms of modern market socio-economic environment, about adjusting of processes, which in them take place in relationship with an external environment and others like that.

**Business ethics.** Business ethics as an educational discipline examines the ethical issues of management and business. Questions that are considered during the course: the subject of ethics of business, its importance and basic concepts; basic concepts of

business ethics; a combination of ethics and business theory; ethical views on entrepreneurship; ethics of business and human morality; professional ethics and its impact on ethical business issues; Ethics of the relations of the firm and the employee; the essence and structure of the process of business communication; organization of business communication; business events; communicative etiquette; business etiquette as the basis of behavior in the business environment; business image; ethics and social responsibility of business; ethical norms, principles of doing business; corporate culture of organizations; corporate codes of business conduct; ethical code of an entrepreneur; business conflicts and ethical ways of overcoming them; national peculiarities of business ethics; features of the ethics of international business.

**Legislative providing of managerial activities**. Purpose of studying of the educational discipline is the necessity to prepare the specialists in the managerial sphere. They will be able to work in conditions of building law-government state and market economy, as well as studying the law norms which regulate public relations. These norms are formed during providing and protecting rights and freedoms as well as interests of physical and juridical persons. The norms are also formed in the process of public administration of economy, social-cultural and administrative-political constructing in the country as well forming the law perception and law culture among the future representatives of business elite, legislative regulating of the economic activities and law based status of the economic subjects and public authorities.

**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.

**Finance, money and credit**. The aim of the course is to develop in the future specialists in marketing a modern economic thought and knowledge system concerning general normflities of development of modern financial and monetary relations of society. The purpose of discipline is to develop in students of modern economic thinking and system of specific knowledge about basic concepts regarding the economic and financial activity, contents of its specific

**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.

**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.

**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 analyzing 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.

**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.

**Accounting**. The main purpose of teaching future marketers 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 studding 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.

**Selfmanagement.** The purpose of study of discipline is a capture theoretical knowledge and practical skills on questions personality development of manager; forming for the students of individual features and behavioral skills which need a future leader; development for the future managers of abilities to organize the personal labor.

**Math programming.** This discipline teaches students to use methods of economic-mathematical models in their professional careers. The main directions of studing of the discipline are the following: mathematical model in the system of material and ideal models, the research of economic processes through mathematico-economic models, the main methods of modeling of economic processes, mathematical formalization of conditions with changable technical and economic factors, economico-mathematical analysis of optimal solutions.

**Business analysis.** Purpose of studying of the educational discipline is ability to form analytical conclusion of the presented and studied information, studying the structure of an enterprise, possessing the skills of forming business model of an enterprise, studying the role of business analysis at enterprises, possessing theoretical basics of forming successful business decisions, determining the tasks, functions and structure of management of business processes at enterprises, studying the process of business analysis and interpretation its results.

**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.

**Operating management.** The primary objective of teaching of discipline is forming for the students of competence in relation to base principles, basic categories, modern conceptions, theoretical positions and practical methods of management of enterprises and abilities of development of operating strategy, creation and use of a particular branch operating subsystems basic activity, as basis of providing of achievement of mission of organization.

**Management of team interactions**. Purpose of studying of the educational discipline is possessing the skills of forming of effective teams as one of the perspective models of corporative management that can provide effective organizational development,

studying the essence and peculiarities of forming the managerial team, complex and constructive using of team effects, opening and development of students' opportunities during team work, explaining the reasons for positive team synergy.

**Economics of world agriculture.** The main goal of mastery of the course is a deep study of patterns of world agricultural equip future professionals systematized and generalized knowledge about agricultural economics of individual countries and regions in the context of global trends in agricultural production and international relations

**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.

**Controlling.** Discipline implies that the purpose of the enterprise, the current collection and processing of information for management decision making, executing control deviation evidence from the plan and, most importantly, prepare recommendations for management decisions. Controlling aimed at improving the management and efficiency of economic management at the micro level.

**Foreign economic activity of enterprise.** The purpose of discipline is a receipt of system knowledge students from objective conformities to law, terms, processes and specific features of foreign economic activity (FEA) of enterprise, and also acquisition of skills, them the practical use. The result of study of discipline is forming for the students of integral imagination about processes in the field of FEA; capture of modern economic thought a culture, by methodological approaches in relation to an analysis and estimation of efficiency of foreign economic activity; forming for the students of abilities and practical skills of the use of the purchased knowledge is in practice of realization of foreign economic activity of enterprises in relation to application of empiric.

**Communication management.** The purpose of teaching discipline is to form a system of special knowledge on the problems and perspectives of development of interpersonal, intergroup, mass and marketing communications of different types of organizational entities for fundamental and special education and practical activity in the specialty. The result of studying the discipline is: mastering of techniques, methods, procedures, technologies that provide effective information and emotional interaction between different levels of groups and individuals representing the organization and its environment; the ability of the applicant to establish and maintain the optimally favorable communication processes for the organization, to form and develop a positive image and public opinion, to ensure an atmosphere of consent, cooperation and recognition.

**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.

**Strategic management.** The primary objective of teaching of discipline is a capture of strategic management modern theoretical bases and by practical skills of acceptance of strategic decisions in the process of management activity and development of enterprise at the market. Basic tasks which must be the disciplines decided in the process of teaching is theoretical preparation of students and forming for them of skills in the field of strategic management an enterprise.

**Entrepreneurship management.** This subject provides knowledge about the laws that govern the one hand, the economic property relations between entrepreneurs and employees, on the other - the actions of entrepreneurs in the process of selecting resources for production, exchange, distribution and consumption of goods and services.

**Project management.** The main aim of the discipline is to form appropriate practical skills in application of universal instruments of project design and implementation in order to achieve effective functioning and development of an organization. The objective of the discipline is to provide students with scientific and methodological basis to master the main tools of project management in an organization.

**Theory of leadership**. The purpose of teaching discipline is to form a system of special knowledge on the problems and perspectives of development of interpersonal, intergroup, mass and marketing communications of different types of organizational entities for fundamental and special education and practical activity in the specialty. The result of studying the discipline is: student's learning of techniques, methods, procedures, technologies that provide effective informational and emotional interaction between different levels of groups and individuals representing the organization and its environment; the ability of the applicant to establish and maintain the optimally favorable communication processes for the organization, to form and develop a positive image and public opinion, to ensure an atmosphere of consent, cooperation and recognition.

**Management of innovations.** The primary objective of teaching of discipline is a capture modern theoretical bases and practical skills of management of organization innovative activity. Basic tasks which must be the disciplines decided in the process of teaching is theoretical preparation of students and forming for them of skills in the field of management of organization innovative activity. The result of study of discipline is acquisition of the special professional jurisdictions from management innovations.

**Financial and economic safety**. Purpose of studying of the educational discipline is possessing knowledge concerning creation a modern complex system of financial and economic safety of enterprises of different forms of property as well as effective managerial mechanism of financial and economic safety, possessing the theoretical and practical bases of organization the complex system of safety of an enterprise as a bases for avoiding the threats and risks of their activities, providing the financial and economic safety of enterprises , understanding of current threats and risks of enterprises' activities, choosing of appropriate means and tasks to avoid threats and risks at enterprises, estimation of different market and professional situations for working out and implementing the mot optimal decisions.

**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.

**Methods of making managerial decisions.** The aim of the discipline is to give basic knowledge to students in the theory of methods for making managerial decisions on the basis of system analysis, mathematical modeling and optimization of business entities in a market economy and their applications; processing them on concrete, as close as possible to real, model case studies, examples and mathematical models of methods for determining optimal managerial decisions, using computer facilities, application software packages, modern information technologies, etc.

## 2. Elective academic disciplines

### *2.1. Disciplines offered by University*

**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.

**System of technology: crop production**. The main purpose of discipline is to provide knowledge to create optimal process (agro-ecological) conditions of the required number of high-quality crop production based on intensive photosynthesis in crops field crops while maintaining or improving soil fertility. The key task of it is: getting practical skills in production high-quality, environmentally friendly products with minimal energy and labor costs while maximizing its output per unit time per unit area that requires large-scale introduction of high-grade, intensive, energy-saving and environmentally appropriate technologies.

**System of technology: livestock production.** Scientific approaches and practical issues of discipline that anticipation for the study have immediate and direct relevance to future research or practice students. This applies both on scientific principles of economics and livestock industries, farms activities, planning and financing their technology of major livestock products, as well as a deep understanding and knowledge of them essentially biological properties of a living organism, patterns of development, the relationship of organism and environment and historical development of the organism. Also state animal that has emerged in Ukraine and introduction of new technologies livestock production requires the ability to assess the effectiveness of a particular technology based initiatives.

**Information systems in management.** The aim of the discipline is the disclosure of modern scientific concepts, models, methods and technologies of information provision of management and research of the basic theoretical foundations of the construction and use of computer information systems as means of automation of information management support.

**Business protocol and negotiation**. The discipline examines modern requirements for management, in particular in such areas, business protocol and ethics, as an important component of it, enterprise responsibility - the first step towards ethical behavior, preparation for negotiations, negotiation (main stages and their characteristics), negotiation methods, styles Negotiation, analysis of negotiation results and implementation of agreements reached, rules and regulations for conducting business meetings, main points of agreement on a business meeting, preparation of premises and meeting delegate her.

**Physical training.** Physical education has the goal of strengthening the health and tempering of the body of a young person, promoting physical development and improving work capacity. Specifically, physical education is aimed at the formation, improvement of motor qualities (speed, strength, endurance, flexibility, agility), a steady interest in systematic exercises, instilling hygienic skills.

### *2.2. Disciplines offered by students*

#### *2.2.1. Disciplines of common choice*

**Introductive to specialty.** The purpose of discipline is to familiarize students with the features of future profession, its content and objectives of management, the role of managers at different levels in the management of modern enterprises, especially the training of specialists in management.

**Sociology.** The purpose of the discipline is to familiarize students with the history of sociological thought and problematic field of Ukrainian and world sociology. The following learning assignments are subjected to achieve the purpose: to provide students with a holistic view of society, to form the skills for operating the theoretical and factual material, to help to understand the processes occurring in contemporary society in its various manifestations.

**Technology of presentations and web-design.** 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.

**Methodology of social empirical research**. The students master the methods of scientific cognition of social research, methods and techniques of solving specific social problems independently.

**Bases of scientific research.** 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.

**International economic integration. Eurointegration.** The aim of teaching the discipline - to provide students with modern knowledge of international integration processes and European integration that will allow to form new model of training specialists in management, who will be able to make correct decisions in conditions of European integration of Ukraine. Students will examine: the nature, preconditions and goals of international economic integration; consequences and economic effects of the integration process; regional integration stages and its description; features of forming integration groups in different parts of the world; evolution and characteristics of creating the European Union and mechanism of its regulation; causes and consequences of establishment and reforming the Common Agricultural Policy of the EU etc.

**State and regional administration**. A purpose of course is forming of knowledge in industry of management on national and regional levels; acquisition of abilities and forming of jurisdictions, necessary for implementation functions and realization of plenary powers of public and local self-government authorities.

### *2.2.2. Choice of professional direction*

#### *2.2.2.1.* Professional direction *"*Management organization and business administration*"*

**Basics of cooperation.** The goal of study course is to explain the basics of formation cooperative identity to a student, understanding of how the cooperative works and its place in modern society. Study the origins of cooperation and influence cooperative identity in the task manager. Grounded cooperatives values and its principles. Analyzes the advantages of cooperatives over other forms of management based on consideration of current trends in global and local socio-economic systems.

**Management of agro-industrial enterprise.** The goal of teaching "Management in agriculture" is to provide students with a comprehensive system of knowledge and skills to manage business processes in agricultural production systems, conditions for effectiveness of economic structures, diagnosis and management system design,

adequate to the purposes and objectives of the market economy. Give students the theoretical knowledge and practical skills they study and justify specific proposals concerning topical issues of management in the agricultural sector, production in the agricultural enterprises, creating effective collective and individual farming, development of cadastre and land management.

**Marketing Management**. The discipline studies the system of administrative relations in marketing departments and their relationship with other business units. The aim is the formation of the modern approaches to understanding marketing management abilities to achieve the transition to a new level and forms of consumption by situational market analysis, forecasting the evolution of consumer needs and strategic planning of stimulating goods and services movement, sales, providing increased entrepreneurial resistance on the domestic market. The main tasks of discipline are to provide competences in basic opportunities of marketing management for broad entrepreneurial activity in various organizations and environments.

**Commercial law.** The purpose of discipline is forming for the students of the system of legal knowledge, integral associated with administrative activity; mastering of theoretical knowledge and practical skills, associated with the legal adjusting of economic activity, legal status of subjective manage and public authorities.

**Management of motivation.** The purpose of the discipline - to extend and deepen knowledge of basic theory and practice of management motivation, gain practical skills and motivation skills of different categories of management stuff. The subject of discipline "motivational management" is to determine motivation place in the socio-psychological structure of personality, motivational content of the process, the use of motivational theories in management practices; mastering different methods of motivation of different categories of workers, motivated management teams and groups.

**Accounting and analytical support of management activity**. The study discipline involves the study of theoretical and practical aspects of the use of accounting and analytical activity in substantiating, accepting and implementing managerial decisions. In the study of discipline, the future specialist gets knowledge of the methodology of collecting and analyzing information on a comprehensive assessment of the results of management, justification and determination of internal reserves of rational use of material, financial and labor resources.

### *2.2.2.2.* Professional direction *"*Management of foreign activity*"*

**Marketing in foreign international activity.** 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.

**International organizations.** The aim of the discipline is to provide students with comprehensive and systematic knowledge about the activities and influence of international organizations on the practice of doing business in a globalized world. The key tasks of the course include: to familiarize students with the preconditions for the emergence of international organizations in the world; to find out the essence, functions and types of international organizations; to substantiate the influence of international organizations on the results of the work of business entities at micro, meso- and macro levels; consider the current trends in the development of international organizations in the face of new challenges and threats to the global economy.

**International transportation.** The aim of the discipline is the formation of systemic theoretical knowledge and acquiring practical skills in the organization of international freight traffic. The main tasks of studying the discipline are to show to future specialists that a rational organization of international transportation provides for intensive use of rolling stock, timely delivery of goods from country to country, optimizes transportation costs when exporting and importing goods; student study of international legal acts, acts of bilateral agreements and norms of internal legislation, which establish the procedure for regulating transport activities in international traffic; acquaintance of students with the list and forms of transport document circulation for foreign economic operations; analysis and substantiation of the competencies of state licensing and certification authorities.

**Customs regulation of foreign economic operations.** The aim of the discipline is to provide students with knowledge on customs matters necessary future specialists to manage in the field of foreign trade. As a result of studying the discipline the student must know: the theoretical and organizational principles of customs; procedure for moving goods across borders Ukraine procedure of calculation and collection of tax payments that occur when moving goods across borders Ukraine; the order of customs clearance of goods; responsibility for violation of customs rules. be able: to carry out customs clearance of goods; to accrue taxes and fees arising from the movement of goods across the customs border of Ukraine; to calculate the amount of penalties for violation of customs rules; to resolve the discussion issues regarding customs legislation, to critically criticize it and to develop proposals for its improvement.

**Foreign commercial activity.** The students will study the methods and techniques of the trade policies of various countries, international pricing methods, technique and organization of various foreign commercial transactions. During the training course the following questions: commercial transactions in the system of foreign economic relations; features concluding international commercial transactions; functional provision of foreign business enterprise.

**Operations management of exports and imports.** The main tasks to be solved in the discipline is: to learn how to develop and use management models for the effective functioning of foreign trade enterprises in foreign markets; mastering the principles and methods of organizing management, planning and control over the implementation of export-import operations; acquiring skills in assessing the performance of export-import operations; assurance quality results of export-import operations; acquiring knowledge about the types, stages of implementation and features of realization of foreign trade operations of foreign economic activity of Ukraine; learning the basic principles of the settlement of foreign currency in Ukraine.

### *2.2.2.3.* Professional direction “Management of investment activity and international projects”

.

**Investment analysis**. The purpose of studying discipline is a set of methods and techniques that can be used to develop an effective investment strategy and make investment decisions, to substantiate the feasibility of implementing an investment project and to determine the optimal parameters of its implementation in conditions of uncertainty and limited financial resources, to form an optimal investment portfolio.

**International economic statistics.** The purpose of the study of discipline is to reveal the content of the main phenomena and processes occurring in the economy, to develop a system of economic indicators and methods of studying the economy of a country or region, characterizing social phenomena as massive, based on the account of the totality of factors that determine them, characterize the degree of development of phenomena, the direction and speed of their changes, the density of interconnections and

interdependencies, mastering not only theoretical knowledge, but also practical skills in the collection, processing, summing up and analysis of statistical material, the acquisition of future experts in knowledge and the ability to conduct research on the socio-economic state of the state, based on objective information of international economic statistics.

**Management of production systems.** The purpose of the study of discipline is to study the totality of processes or actions that cause the combination of elements, parts in the whole, the formation of the viability of a stable system, internal ordering, interaction of relatively independent parts of the whole, due to its structure; definition of ways to combine the resources of land, labor, capital (material means of production) and their coherent, 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 the possibilities and necessity of crisis management; key factors of crisis management; study of development trends and practical possibilities of crisis management, its functions and directions; the features of the use of basic organization management tools, the study of the impact of various factors on ensuring the effectiveness of the management system.

**Social management.** The purpose of studying the discipline is to get systematic knowledge about the objective laws of the functioning of the system of social management, as well as the acquisition of skills for their practical use; the assimilation of the content of the basic concepts, categories and terms of social management, the study of the essence of the basic laws, laws and functions of social management; definition of its principles, disclosure of methods, forms and mechanisms of management of various social phenomena and processes in modern society at macro and micro levels.

**Asset management and investment portfolio.** The purpose of studying the discipline is to provide students with theoretical and methodological knowledge and practical skills in asset management and portfolio investment, analysis of the investment market, selection and analysis of investment instruments. They will be able to solve specific tasks of asset management of enterprises and to carry out effective management of investment portfolio of enterprises.

## 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: Educational building 15, room 212

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

***051 "Economy"***

Educational program **«Economic Cybernetics»**

Graduating departments:

Economic Cybernetics Tel.: (044) 5278724
E-mail: ciber_chair@nubip.edu.ua
Head of department – Ds.Sc. in Economics, professor, Andrii Skrypnyk

Information systems Tel.: (044) 527-86-07
E-mail: systems_chair@nubip.edu.ua
Head of the department – Ph.D. in Economics, professor, Mykhailo Shvydenko

Educational program **"Digital Economy"**

Graduating department:

Economic Cybernetics Tel.: (044) 5278724
E-mail: ciber_chair@nubip.edu.ua
Head of department – Ds.Sc. in Economics, professor, Andrii Skrypnyk

***122 «Computer science»***

Educational program **«Computer science»**

Graduating department:

Computer Sciences Тел.: (044) 527-87- 23
E-mail: iusprog@nubip.edu.ua
Head of the department – Ph.D. in Information Technologies, associate professor Bella Golub

***121 «Engineering software»***

Educational program **«Engineering software»**

Graduating department:

Computer Sciences Тел.: (044) 527-87- 23
E-mail: iusprog@nubip.edu.ua
Head of the department – Ph.D. in Information Technologies, associate professor Bella Golub

***123 «Computer engineering»***

Educational program **«Computer engineering»**

Graduating department:

Computer Systems and Networks Тел.: (044) 527-81- 99
E-mail: csn@it.nubip.edu.ua
Head of the department – PhD. in Pedagogics, associate professor Dmytro Kasatkin

# Bachelor's
# in specialty "Economy"
# Educational 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 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.

# Bachelor's Program and Curriculum in Specialty "EconomY" Educational program "Economic cybernetics"

| № | Name of Academic Discipline | Semester | Number | |
|---|---|---|---|---|
| | | | hours | credits ECTS |
| **1. STANDARD ACADEMIC DISCIPLINES** | | | | |
| 1. | Modern economic theory | 1,2 | 240 | 8 |
| 2. | Macroeconomics | 4 | 120 | 4 |
| 3. | Microeconomics | 3 | 120 | 4 |
| 4. | Higher Mathematics | 2 | 240 | 8 |
| 5. | Probability Theory and Mathematical Statistics | 4 | 180 | 6 |
| 6. | Optimization Methods and Models | 3 | 150 | 5 |
| 7. | Informatics | 2 | 180 | 6 |
| 8. | Econometrics | 4 | 150 | 5 |
| 9. | Enterprise Economics | 6 | 120 | 4 |
| 10. | Management | 5 | 120 | 4 |
| 11. | Marketing | 5 | 120 | 4 |
| 12. | Finances | 7 | 120 | 4 |
| 13. | Money and credit | 3 | 120 | 4 |
| 14. | Accounting | 4 | 120 | 4 |
| 15. | Economy | 8 | 120 | 4 |
| 16. | International Economics | 8 | 120 | 4 |
| 17. | Agribusiness organization | 7 | 120 | 4 |
| 18. | Statistics | 5 | 120 | 4 |
| 19. | Economic Cybernetics | 2 | 120 | 4 |
| 20. | Operations Research | 6 | 240 | 8 |
| 21. | Modeling economy | 7 | 150 | 5 |
| 22. | Prediction of socio-economic processes | 7 | 150 | 5 |
| 23. | Decision-making systems | 8 | 120 | 4 |
| 24. | Technology design and administration of DB and SD | 6 | 180 | 6 |
| 25. | Information systems and technology management | 8 | 180 | 6 |
| 26. | Project Management Informatization | 7 | 120 | 4 |
| **Total for standard part** | | | **4380** | **146** |
| **2.ELECTIVE ACADEMIC DISCIPLINES** | | | | |
| ***2.1.Disciplines offered by University*** | | | | |
| 1. | Philosophy | 3 | 120 | 4 |
| 2. | History of Ukrainian statehood | 1 | 120 | 4 |
| 3. | Business protocol and communication ethics | 1 | 120 | 4 |
| 4. | Physical education | 1,2,3,4 | 120 | 4 |
| 5. | Foreign language | 1,2,3,4 | 240 | 8 |
| 6. | Safety of activity and life | 1 | 120 | 4 |
| 7. | Technology of crop production | 4 | 120 | 4 |
| 8. | Legal culture of personality | 4 | 120 | 4 |
| 9. | Technology production of livestock products | 2 | 120 | 4 |
| **Total (Disciplines offered by University)** | | | **1080** | **36** |
| ***2.2. Disciplines offered by student*** | | | | |
| **Cluster "Business analytics"** | | | | |
| 1. | Technology of software developing | 4 | 240 | 8 |
| 2. | Digital economy | 2 | 120 | 4 |

| | | | | |
|---|---|---|---|---|
| 3. | WEB programming | 7 | 240 | 8 |
| 4. | System analysis and design of IS | 8 | 120 | 4 |
| 5. | Science of risk | 5 | 120 | 4 |
| 6. | Mathematical models of agricultural sector | 6 | 120 | 4 |
| 7. | IBM SPSS Tools | 8 | 120 | 4 |
| 8. | Analysis with R | 5 | 120 | 4 |
| 9. | Applied econometrics | 6 | 120 | 4 |
| 10. | Simulation | 7 | 120 | 4 |
| 11. | Agribusiness Risks | 8 | 120 | 4 |
| | **Total (block)** | | **1740** | **58** |
| **Cluster "Business process modeling"** | | | | |
| 1. | Technology of software developing | 4 | 180 | 8 |
| 2. | Digital economy | 2 | 180 | 4 |
| 3. | WEB programming | 7 | 120 | 8 |
| 4. | System analysis and design of IS | 8 | 120 | 4 |
| 5. | Science of risk | 5 | 120 | 4 |
| 6. | Mathematical models of agricultural sector | 6 | 120 | 4 |
| 7. | IBM SPSS Tools | 8 | 120 | 4 |
| 8. | Modeling with R | 5 | 120 | 4 |
| 9. | Mathematical economics | 6 | 120 | 4 |
| 10. | Adaptive models in economics | 7 | 120 | 4 |
| 11. | Modeling of investment processes | 8 | 120 | 4 |
| | **Total (block)** | | **1740** | **58** |
| ***Total for elective part*** | | | **2820** | **94** |
| | | | | |
| **3. OTHER TYPES OF TRAINING** | | | | |
| 1 | **Military training course** | | **870** | **16** |
| 2 | **Academic Practice** | | **540** | **18** |
| **Bachelor Thesis writing (Graduate thesis or Project)** | | | **180** | **6** |
| **Total for Specialty (without Military training course)** | | | **7200** | **240** |

## Annotation of disciplines in the curriculum

### 1. Standard academic disciplines

**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

**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.

**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**.**

**Enterprise Economics.** 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: basic forms and systems. Technological base of production and production capacity. Fixed and working capital: estimation and performance of fixed assets and how they play, 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**.**

**Management.** Organization as an object of management, the nature and characteristics of the management, the development of ideas about management. Principles and methods of management. Internal and external environment of the organization: Communication in management and decision-making. Planning organization: Organizational structure. The motivation of the employees of the organization, system and process control in the organization. Formation and development of staff, management and leadership. The efficiency of the management of the organization**.**

**Marketing.** The essence of marketing and its modern concept. System and characteristics of modern marketing. Marketing Research. Marketing product policy. Planning for new products. Marketing pricing. Methods for marketing pricing. Marketing communications policy. Complex marketing communications. Marketing policy distribution. Managing channels of distribution. Organization and control of the marketing of the company**.**

**Finance.** The subject of financial science. Financial category. The genesis and evolution of finance. Finance and financial policies. Taxes and tax system. Budget. The budget system. Insurance. The insurance market. Financial Market. Finance businesses. International finance. Financial Management.

**Money and Credit.** Purpose and function of money, Money and cash flows, money market, money system, inflation and monetary reforms, foreign exchange market and currency system. Mechanism of the money supply and monetary policy, the role of money in a market economy; theory of money, credit essence and function, form, type and role of credit; Theoretical Foundations percent; Financial intermediation money market; Theoretical basis of commercial banks, central banks in the system monetary and banking management, international financial institutions and their cooperation with Ukraine..

**Accounting.** Overview of accounting, its subject and method. Balance. Accounts bookkeeping and double entry. Evaluation and calculation. Documentation, inventory, equipment and forms of accounting. Accounting for fixed assets. Accounting for inventories. Accounting for cash and receivables. Accounting of financial investments. Accounting for equity. Accounting for liabilities. Accounting for labor and its remuneration and social security staff. Expenditure of the company. Revenue and financial results. Financial Statements.

**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: basic forms and systems. Technological base of production and production capacity. Fixed and working capital: estimation and performance of fixed assets and how they play, 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**.**

**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. 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.

**Agribusiness organization.** Theoretical Foundations of production. Analyze of agro-processes. Technical and economic indicators rational organization of production systems. Selection and justification of the production structure of the enterprise. Specialization of production. Organizational, technical, and economic elements of production.

**Statistics.** methodological principles of statistics, statistical observations, reports and statistical clustering data summarizing statistical indicators, analysis of the distribution of numbers, concentration analysis, differentiation and similarity distributions, sampling method, statistical methods for measuring relationships, analysis of the intensity dynamics, analysis of trends and fluctuations; index method, presenting statistical data: tables, graphs, maps.

**Economic Cybernetics**. Terms of cybernetics. Introduction to applied mathematics. Introduction to information theory. Systems theory. Management of production systems. Methods of Economic Cybernetics.

**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 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.

**Prediction of 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.

**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.

**Information systems and technologies of 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.

**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.

## 2. Elective academic disciplines

### 2.1. *Disciplines offered by University*

Annotations of the disciplines: "Philosophy", “History of Ukrainian statehood", "Ethnic culture science", “Ukrainian language (for professional purposes)”, "Physical Education", "Foreign language", “Technology of crop production”, “Technology of livestock production” see. section 2.1.

**Public communications**. Research Methodology Social Communications. Theory and history of social communications. Social and communication technology. Social Communication in management.

**Legal culture of personality.** Basics of theory of law. Principles of Constitutional Law. Principles of justice and policing in Ukraine. Basics of administrative, financial and criminal law. Basics of civil, family, commercial, labor, environmental, agricultural, natural-resource and land rights**.**

### *2.2. Disciplines offered by student*

#### *Cluster "*Business analytics*"*

**Technology of software developing.** Basic concepts of modern programming. Linear, structural, procedural and modular programming. Basics of object-oriented modeling, design and programming. Processing complex data structures and files Design of a graphical user interface. The main stages of the life cycle of software.

**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.

**WEB programming**. The basic structure of language, layout techniques and communication with other development tools WEB-pages. Using of Cascade Style Sheets CSS in HTML. Description Syntax CSS, accommodation options describing CSS in the document body and beyond, CSS attributes for block and lowercase markup. Methods for positioning of the markup with CSS. Basics of programming in JavaScript. Logic development JavaScript-code and the basic principles of its use in the pages of World Wide Web programming language PHP. Client-server technology as the main area of application of the PHP language.

**System analysis and design of integrated circuits**. Information technology and systems: general characteristics. System analysis Structural and functional analysis of IS. The specification of functional requirements for ICs. Simulation data streams. Object-

oriented analysis. Standard of IS design and execution of project documentation. Tools of IS design. Model of databases. Standard UML: static and dynamic charts.

**Science of risk**. 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. Tools IBM SPSS.

**Mathematical models of 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.

**IBM 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 test. Comparison medium dependent and independent samples and non-parametric tests in SPSS. Univariate and multivariate analysis of variance. Carrying factor and discriminant analysis software package. Reliability analysis of economic data and logistic regression. Lohliniynyy analysis of contingency tables

**Analysis with R.** Introduction to R. Analysis tools. Basics of R programming. Data structures in R. Reading and writing data. Working with R libraries and packages. Descriptive analytics. Statistical Analysis in R: mean, median, mode, range, variance and standard deviation, quantities. Graphical description of the data. Simple Linear Regression. Multiple Linear regression. Logistic regression.

**Applied econometrics.** Basic principle of construction econometric models. Econometric models of agricultural production. Spatial simultaneously models. Elasticity evaluation of production process individual inputs. Dynamic models for a particular farm. Multikoliniarity in agricultural business analyze. The time series analysis (price dynamics of global markets). Econometric models of supply and demand. Panel regression. Forecasting using ARIMA * ARIMAS.

**Simulation.** Simulation model. Simulation model experimental method for the study of complex systems on the computer. The basic steps of building a simulation model - Application of Monte-Carlo method. Computer simulation of random events, and discrete random variables. Planning of experiments in simulation modelling. Multi-factor correlation-regression analysis. Simulation model of reserves control. Simulation model of discrete-production process. Implementation of a simulation model by means of batch simulation of discrete systems GPSS World and AnyLogic. Advances and prospective development of simulation modeling of agricultural production systems.

**Agribusiness Risks.** Analys, 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.

### *Cluster " Business process modeling "*

**Technology of software developing** Basic concepts of modern programming. Linear, structural, procedural and modular programming. Basics of object-oriented modeling, design and programming. Processing complex data structures and files Design of a graphical user interface. The main stages of the life cycle of software.

**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.

**WEB programming.** The basic structure of language, layout techniques and communication with other development tools WEB-pages. Using of Cascade Style Sheets CSS in HTML. Description Syntax CSS, accommodation options describing CSS in the document body and beyond, CSS attributes for block and lowercase markup. Methods for positioning of the markup with CSS. Basics of programming in JavaScript. Logic development JavaScript-code and the basic principles of its use in the pages of World Wide Web programming language PHP. Client-server technology as the main area of application of the PHP language.

**System analysis and design of integrated circuits**. Information technology and systems: general characteristics. System analysis Structural and functional analysis of IS. The specification of functional requirements for ICs. Simulation data streams. Object-oriented analysis. Standard of IS design and execution of project documentation. Tools of IS design. Model of databases. Standard UML: static and dynamic charts.

**Science of risk**. 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. Tools IBM SPSS.

**IBM 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 test. Comparison medium dependent and independent samples and non-parametric tests in SPSS. Univariate and multivariate analysis of variance. Carrying factor and discriminant analysis software package. Reliability analysis of economic data and logistic regression. Lohliniynyy analysis of contingency tables

**Modeling with R.** Introduction to R. Objects, packages, functions and devices. Data types in R. Time series. Organization of computations, functions, branches, loops. Computing in R using apply-functions. The basic graphics capabilities in R. Descriptive statistics and distribution laws. Selection of the law and the distribution parameters in R. Test for normality of distribution. Classical statistical models. Analysis of variance. Generalized regression model. The modeling of structural equations.

**Mathematical Economics.** The partial derivatives economic content. Optimization problems in the presence and absence of restrictions. The Lagrange multipliers method o its economic interpretation. Kuhn-Tucker conditions. The firmn eoclassical theory. Comparative firm statistics. Imperfect competition (monopoly, monopsony). The equilibrium theory. The welfare economy. Social optimum concept.

**Adaptive models in economics.** The concept of adaptation in the economy. The principles of adaptive modeling. Classification of adaptive models. Cybernetic concept of study. Adaptive correlation coefficient. Autoregression methods of analysis the main trends in the time series. Autocorrelation analysis method.

Stages of creating of the adaptive predictive model. Methods of automatic control the short-term forecasting. Method of Chow. Model of Chow. Selection of prognosis criteria. Comparative analysis of Chow models and exponential average models. The principle of Trigg Method adaptation. The method of monitoring the model adequacy (Trigg Method). Trigg-Lich Model. Holt-Winters Model. Tamara Method. Adaptive filtering method.

**Modeling of investment processes.** Innovation concept. Innovation and investment. Innovation and risk. The fundamental relationship between profitability and risk in applications to innovation. Adoption criteria of innovative solutions in risk terms. Risk tolerance and acceptance of innovative solutions. Relative effectiveness of innovation estimates.

# Bachelor
# in specialty "DIGITAL ECONOMY"
# Educational program "Digital Economy"

| | |
|---|---|
| Form of Training: | Licensed number of persons: |
| – Full-time | 25 |
| – Part-time | – |
| Duration of Training | 4 years |
| Credits | 240 ECTS |
| Language of Teaching | Ukrainian |
| Qualification | Bachelor of Economics |

## Concept of training

The educational program "Digital Economy" aims at forming a highly skilled specialist capable of solving complex and non-standard tasks and problems in the field of digital economy.

The program is focused on obtaining advanced theoretical knowledge and practical skills for students for the effective implementation of activities in the field of digital transformation of existing and new economy sectors, digital transformation of life spheres and the construction of an open information society.

## Practical training

Practical training of students of this educational program is aimed at mastering the basic methods and techniques of digital information technology, computer modeling and forecasting of socio-economic processes, that will enable them to apply modern mathematical methods, models and information technologies in the digital transformation of the economy.

## Proposed Topics for Bachelor theses

1. Development of digitization of agrarian production and rural infrastructure.
2. Designing Smart Agricultural Systems.
3. Application of blockchain technology in agriculture.
4. Modeling and forecasting of crop yields using the technologies of remote sensing.
5. Digital modeling of the enterprise production potential.

**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

The development of the digital economy is a priority for Ukraine, and graduates of the Digital Economy Education Program will be able to work in many areas of the national economy, in government and commercial structures in positions related to the digitization of the economy and society. They will also be able to work in the typical positions of manager in the field of providing information, information analyst, system analyst, information technology manager, information manager, communications technology manager, computer communications analyst, consolidated information analyst, computer system analyst.

# Bachelor's Program and Curriculum in Specialty "Digital Economy" Educational program "Digital Economy"

| № | Name of the discipline | Semester | Amount | |
|---|---|---|---|---|
| | | | Hours | Credits ECTS |
| **1. STANDARD ACADEMIC DISCIPLINES** | | | | |
| 1. | Modern economic theory | 1 | 120 | 4 |
| 2. | Macroeconomics | 4 | 120 | 4 |
| 3. | Microeconomics | 3 | 150 | 5 |
| 4. | Higher mathematics | 2 | 240 | 8 |
| 5. | Probability theory | 3 | 150 | 5 |
| 6. | Mathematical and Applied Statistics | 4 | 180 | 6 |
| 7. | Optimization methods and models | 3 | 150 | 5 |
| 8. | Informatics | 2 | 180 | 6 |
| 9. | Econometrics | 4 | 120 | 4 |
| 10. | Management | 5 | 120 | 4 |
| 11. | Marketing | 5 | 120 | 4 |
| 12. | Finances | 7 | 120 | 4 |
| 13. | Accounting | 4 | 120 | 4 |
| 14. | Introduction to the specialty (digital economy) | 3 | 120 | 4 |
| 15. | Digital communications | 1 | 120 | 4 |
| 16. | Modeling the economy | 7 | 180 | 6 |
| 17. | Econometrics 2 | 7 | 150 | 5 |
| 18. | Cloud Computing Technologies | 8 | 120 | 4 |
| 19. | Technology of design and administration of DB and SD | 6 | 180 | 6 |
| 20. | Psychology of success | 2 | 120 | 4 |
| 21. | Information systems | 8 | 180 | 6 |
| 22. | Digital Infrastructure | 2 | 120 | 4 |
| 23. | Processing and analysis of spatial data | 5 | 150 | 5 |
| 24. | Internet of Things | 7 | 150 | 5 |
| 25. | IT project management | 6 | 120 | 4 |
| | | | | |
| **Total of a compulsory component** | | | **4320** | **144** |
| **2. ELECTIVE ACADEMIC DISCIPLINES** | | | | |
| ***2.1. Disciplines offered by University*** | | | | |
| 1 | Philosophy | 3 | 120 | 4 |
| 2 | History of Ukrainian statehood | 1 | 90 | 3 |
| 3 | Ethnocultural studies | 2 | 90 | 3 |
| 4 | Ukrainian language (in professional direction) | 1 | 120 | 4 |
| 5 | Physical education | 1-4 | 240 | 8 |
| 6 | Safety of work and life | 5 | 120 | 4 |
| 7 | Physical education | 1-4 | 240 | 8 |
| 8 | Legal culture of personality | 4 | 90 | 3 |
| | | | | |
| **Total of University's choice** | | | **1110** | **37** |
| ***2.2. Disciplines offered by students*** | | | | |
| 1 | Algorithmization and programming | 3 | 90 | 3 |
| 2 | Technology of creating software products | 4 | 90 | 3 |
| 3 | WEB programming | 7 | 180 | 6 |
| 4 | E-commerce | 7 | 90 | 3 |

| | | | | |
|---|---|---|---|---|
| 5 | System analysis and IS design | 8 | 120 | 4 |
| 6 | Riskology | 5 | 120 | 4 |
| 7 | Economic and financial analysis | 8 | 120 | 4 |
| 8 | Analytics with R | 6 | 120 | 4 |
| 9 | Actuarial mathematics | 8 | 120 | 4 |
| 10 | Operations Research | 4 | 120 | 4 |
| 11 | Decision making systems | 8 | 120 | 4 |
| 2 | Business ethics and negotiation | 6 | 120 | 4 |
| 3 | Informational security | 7 | 120 | 4 |
| 4 | Fundamentals of blockchain technology | 7 | 120 | 4 |
| 5 | Digital technologies of public administration | 8 | 120 | 4 |
| | Total for block | | **1770** | **59** |
| ***Total selective courses*** | | | **2880** | **96** |
| **3. OTHER TYPES OF TRAINING** | | | | |
| 1 | Military training | | 870 | 16 |
| 2 | Practical training | | 540 | 18 |
| Preparation and defense of bachelor's thesis | | | 180 | 6 |
| Total hours of training (excluding military training) | | | **7200** | **240** |

## Annotations of disciplines in the curriculum

### 1. Standard academic disciplines

**Modern economic theory.** 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.

**Macroeconomics.** Theoretical foundations of macroeconomics, macroeconomics as a science. Methodology for calculating the main 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 macroeconomic cycle and economic growth.

**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. Characteristics and analysis of the main types of market structures - perfect competition, pure monopoly, monopolistic competition, oligopoly. Influence of the general market equilibrium on the efficiency of the resources allocation in economy, the reasons for the limited insufficiency of market regulation, the criteria for welfare, the need for intervention in the economy.

**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.

**Probability theory.** 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.

**Mathematical and Applied Statistics**. 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 development of trends and fluctuations; index method; presentation of statistical data: tables, charts, maps.

**Optimization methods and models.** Conceptual aspects of mathematical modeling of economy. Optimization economic and mathematical models. The task of linear programming and methods of its solution. The theory of dualism. Integer programming. Special 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 constructing 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, basics of office programming, expert and training systems, prospects for the development of information technology.

**Econometrics**. Principles of constructing econometric models. Multiple regression models. Generalized econometric models. Econometric models of dynamics. Mathematical apparatus for constructing econometric models. Method of construction of econometric models. Method of calculation of model parameters on personal computers using application packages.

**Management.** Organization as an object of management, the essence and peculiarities of the managers' 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.

**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.

**Finances.** 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.

**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. Accounting for financial investments. Equity accounting. Accounting obligations. Accounting for labor, its payment and social insurance of personnel. Accounting for the expenses of the enterprise. Accounting for income and financial results. Financial statements.

**Introduction to the specialty (digital economy).** The concept of the 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.

**Digital communications**. Concepts of digital communications 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.

**Modeling the economy**. Methodology and methods of modeling. Mathematical models of real economic systems. Conceptual principles of economic modeling. Algorithmic models in the economy. Production functions. Rating estimates in Economics. Models of behavior of producers, consumers. Interbranch balance model. Macroeconomic models.

**Econometrics 2.** 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 * ARIMAS.

**Cloud Computing Technologies.** The essence and definition of cloud computing. Characteristics of cloud computing. Classification of cloud service models. Models of cloud placement. Virtualization systems. Networking Virtualization Systems. Data warehouse in the Cloud. Deploying cloud environments and implementing various types of service and storage High Availability Cloud Services. Cloud management and role distribution for cloud users.

**Technology of design and administration of DB and SD**. The relational data model that contains relational algebra and relational computing. Classic approach to designing databases based on the principles of normalization. Leading features of

approaches to semantic database modeling, planning, developing, implementing and maintaining databases, entering into a structured language of SQL queries, types of data that are used in SQL, tools for defining database objects, data manipulation, data sampling tools. Database development tools and database applications in the integrated development environment of Access. Features of the development of databases for MySQL. The principles of the work of expert systems, neural networks, principles of knowledge base formation are considered.

**Psychology of success.** Success and its components. The meaning of life, happiness and success. Life principles of success. Motivation for success. Resources that contribute to success. Resources to help overcoming the identity crisis. Strategies for success. Building your own strategy of success in life and profession. Successful personality and neurolinguistic programming. Neurolinguistic programming: the psycho-technical approach to success.

**Information systems.** 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. Using technologies of artificial intelligence in the management of organizations.

**Digital Infrastructure**. The essence of digital infrastructure. The current state and trends of digital infrastructure development. Hardware components for building digital infrastructure. Software components of digital infrastructure. Security of digital infrastructure. Blockchain technology in digital infrastructure.

**Processing and analysis of spatial data**. Basic principles for collecting and processing spatial data. The main stages of the preliminary and thematic processing of spatial data. Basic and modern methods of processing time series of spatial data. Application of modern mathematical and statistical methods of data analysis. Creation of analytical materials (reports, presentations, etc. infographic materials) for making managerial decisions.

**Internet of Things.** Overview of the main features of IOT systems. Implementation of small projects based on Arduino and MIPS microcontrollers. Designing smart city systems based on Raspberry PI3.

**IT project management**. Theoretical basis of project management. Classification and environment of projects. Life cycle of the project. Using life cycle standards of information systems. The structure of the project. Managing the process of the project implementation. Organization of project-oriented activities. Planning in UP. Control over project management. Project management. Management of the subject area of projects. Time management in the project. Project cost management. Quality management in the project. Integrated functions of project management. Automation of project management functions.

## 2. Elective academic disciplines

### *2.1. Disciplines offered by University*

Annotations of disciplines "Philosophy", "History of Ukrainian statehood", "Business protocol and communication ethics", "Physical education", see. section 2.1.

**Legal culture of personality**. Fundamentals of the theory of state and law. Fundamentals of constitutional law. Fundamentals of justice and law enforcement in Ukraine. Fundamentals of administrative, financial and criminal law. Fundamentals of civil, family, economic, labor, ecological, agrarian, nature-resource and land law.

### *2.2. Disciplines offered by students*

**Algorithmization and programming**. Mathematical bases of analysis of algorithms. Algorithmic strategies. Fundamentals of the theory of computability. Complexity classes of P and NP. Sort, merge and search algorithms. Combinatorial, recursive, geometric, cryptographic and heuristic algorithms. Fundamental algorithms on graphs and trees.

**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.

**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. Logic of development of JavaScript-code and the basic principles of its usage on World Wide Web pages. PHP programming language. Client-server technology as the main area of the PHP application.

**E-commerce**. The role of e-commerce in the digital economy. The essence of e-commerce and its features. E-Commerce Models. Marketplaces. Security and protection of information in e-commerce. 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.

**System analysis and IS design.** 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.

**Riskology.** 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.

**Economic and financial analysis.** Types of economic analysis. Method and method of economic analysis. Information base of economic analysis. Methods and techniques of economic analysis. Analysis of the organizational and technical level of production. Analysis of the main productive assets, material resources of the enterprise and the use of production capacity. Analysis of costs for the production and sale of products, works, services. Cost analysis of products. Profit and profitability analysis. Analysis of the financial status and financial activity of the enterprise.

**Analytics with 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, quantile, variance and mean square deviation, variation. Graphical representation of data in R. Linear regression. Regression analysis in R. Logistic regression.

**Actuarial mathematics**. Actuarial and financial affairs: current state and prospects of development. History of insurance. Insurance and securities market. Actual

interest rates. Nominal interest rates. Unlimited rents. Annuities. Debt repayment. Internal rate of return. The duration of the future life of an individual of the x age: mathematical model. The power of mortality. Limited life expectancy. Life expectancy tables. Temporal and Life Insurance. Schuette-Nesbitt formula. Asymmetric annuities. Asymmetric insurance. The total amount of payment claims in the portfolio. Normal approximation. Calculation of the distribution of the total amount of claims payments. The complex Poisson distribution. Recurrent computation of complex Poisson distribution. Reinsurance. Reinsurance that blocks damages.

**Operations Research.** The essence of the stages of operations' study, the principles and techniques of mathematical modeling operations, the principles of selecting mathematical provision and software for the practical implementation of tasks. Mass service models. Models of inventory management. Models of human behavior. Risk Management Models.

**Decision making systems**. 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.

**Business ethics and negotiation**. Ethical problems of management and business communication. The moral basis of business communication. Organization of business communication. The theory and practice of business communication technology. Forms of collective discussion of problems. Ethical and psychological requirements for public speaking. Negotiating ethics.

**Informational security**. The discipline deals with the basics of security in computer networks. Deploying network infrastructure at the enterprise and setting up its robot capacity. Fundamentals of cybernetic and digital literacy among employees.

**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.

**Digital technologies of public administration**. Definition of e-government. Levels of e-government implementation. Electronic democracy. Concept of development of electronic democracy in Ukraine. Information services in management and administration. The mechanism for the introduction of petitions to the President, the Cabinet of Ministers of Ukraine and the Verkhovna Rada of Ukraine. Administrative Services Portal. Prozorro Procurement System. Official Public Finance Portal of Ukraine. Open Data Portal. Open Budget Project. Information services of public organizations.

**Bachelor**
**field of knowledge "Information Technology"**
**in specialty “COMPUTER SCIENCE"**
**Educational Program “Computer Science"**

| | |
|---|---|
| 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 Information Technology |

## Concept of training

Specialty "Computer Science and Information Technologies" 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 themes

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 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 Program "Computer Science"

| № | Name of Academic Discipline | semester | Number | |
|---|---|---|---|---|
| | | | hours | ECTS credits |
| **1. STANDART ACADEMIC DISCIPLINES** | | | | |
| 1. | Higher Mathematics | 1,2 | 300 | 10 |
| 2. | Physics | 1,2 | 180 | 6 |
| 3. | Numerical methods | 3 | 120 | 4 |
| 4. | Discrete Mathematics | 3 | 150 | 5 |
| 5. | Probability theory , probabilistic processes and mathematical statistics | 4 | 150 | 5 |
| 6. | The theory of algorithms | 4 | 120 | 4 |
| 7. | Decision theory | 7 | 120 | 4 |
| 8. | Mathematical Methods of Operations Research | 6 | 180 | 6 |
| 9. | Electrical engineering and electronics | 2 | 120 | 4 |
| 10. | Computer circuitry and architecture of computers | 3 | 150 | 5 |
| 11. | Computer Graphics | 3 | 120 | 4 |
| 12. | Programming | 2 | 180 | 6 |
| 13. | Technology of software | 6 | 150 | 5 |
| 14. | Organization of databases and knowledge | 4 | 180 | 6 |
| 15. | System Analysis | 6 | 120 | 4 |
| 16. | Computer Networks | 6 | 120 | 4 |
| 17. | Intellectual data analysis based on artificial intelligence methods | 8 | 120 | 4 |
| 18. | Modeling systems | 4 | 120 | 4 |
| 19. | Object - oriented programming | 4 | 180 | 6 |
| 20. | Design of Information Systems | 7 | 120 | 4 |
| 21. | IT project management | 7 | 120 | 4 |
| 22. | Operating Systems | 5 | 120 | 4 |
| 23. | Web- technologies and Web- design | 6 | 180 | 6 |
| 24. | Cross- platform programming | 7 | 120 | 4 |
| 25. | Technology Information Protection | 7 | 120 | 4 |
| 26. | Technology distribution systems and parallel computing | 5 | 120 | 4 |
| **Total for standard part** | | | **4320** | **144** |
| **2.ELECTIVE ACADEMIC DISCIPLINES** | | | | |
| ***2.1. Disciplines offered by University*** | | | | |
| 1. | History of Ukrainian statehood | 1 | 120 | 4 |
| 2. | Business protocol and communication ethics | 1 | 120 | 4 |
| 3. | Philosophy | 5 | 120 | 4 |
| 4. | Foreign Language | 4 | 180 | 6 |
| 5. | Economy and Business | 3 | 120 | 4 |
| 6. | Information Technology | 2 | 180 | 6 |
| 7. | Legal culture of personality | 5 | 120 | 4 |
| 8. | Technology of production of crop and livestock production | 4 | 120 | 4 |
| 9. | Physical Education | 1-3 | 120 | 4 |
| **Total (Disciplines offered by University)** | | | **1200** | **36** |
| ***2.2. Disciplines offered by students*** | | | | |
| 1. | Management | 5 | 120 | 4 |
| 2. | Algorithms and Data Structures | 7 | 120 | 4 |
| 3. | Safety and life | 8 | 120 | 4 |
| 4. | Technical communication tools | 5 | 120 | 4 |
| 5. | Computer Design Technologies | 8 | 120 | 4 |
| 6. | Programming Mobile Application | 8 | 120 | 4 |
| 7. | The theory of pattern recognition and | 7 | 120 | 4 |

| | | | | |
|---|---|---|---|---|
| | classification in artificial intelligence systems | | | |
| 8. | Means of multimedia in information technologies | 8 | 120 | 4 |
| 9. | Statistical methods, theory flows of events | 5 | 120 | 4 |
| 10. | Technology development ICS | 8 | 120 | 4 |
| 11. | Intelligent Systems | 8 | 120 | 4 |
| ***Specialization " Information Control Systems and Technologies*** | | | | |
| 1. | Microprocessor control system | 7 | 120 | 4 |
| 2. | Modern management theory | 8 | 120 | 4 |
| | | | | |
| ***2.2.1. Specialization " Computer Ecological and Economic Monitoring»*** | | | | |
| 1. | Computer system ecological and economic monitoring | 7 | 120 | 4 |
| 2. | Industry Environmental Monitoring | 8 | 120 | 4 |
| **Total (Disciplines offered by students)** | | | **1800** | **60** |
| **Total for elective part** | | | **2880** | **99** |
| **3. OTHER TYPES OF TRAINING** | | | | |
| 1 | Military training course | | 870 | 16 |
| 2 | Academic Practice | | 540 | 18 |
| **Bachelor Thesis writing (Graduate thesis or Project)** | | | **120** | **4** |
| **Total for Specialty (without Military training course)** | | | **7200** | **240** |

## Annotation of disciplines in the curriculum

### 1. Standard academic disciplines

**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.

**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.

**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.

**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**.**

**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.

**Electrical engineering and electronics.** Basic concepts and laws of electric and magnetic circuits. DC circuit. Circuit of single-phase sinusoidal current. Transients in RLC-circuits. Operator method for calculating transients. Semiconductor referrals and contacts. Transistors. IC. Rectifiers and converters. Amplifiers and generators. Discrete electronic devices.

**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 combinatorial 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.

**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**.**.

**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..

**Systems and Technology of database Management.** 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.

**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.

**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.

**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.

**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.

**Information systems designing.** 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. Pahhern 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

**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.

**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.

**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.

**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

## 2. Elective academic disciplines

### *2.1. Disciplines offered by University*

Annotations disciplines "Ukrainian for Professional Purposes ", "The history of Ukraine and ethnocultural ", "Foreign Language", "Philosophy", "Physical Training" see . Section 2.1.

**Legal culture of personality** Basic theory of law. Principles of Constitutional Law. Fundamentals of Justice and Law Enforcement in Ukraine. Basics of administrative, financial and criminal law. Fundamentals of civil, family, business, labor, environmental, agricultural, natural-resource and land rights.

**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.

**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.

### *2.2. Disciplines offered by students*

**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.

**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.

**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.

**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.

**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.

**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;

.**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.

**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.

**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

**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

### *2.2.1. Specialization "Information Control Systems and Technologies"*

**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.

**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 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.

### *2.2.2.Specialization "Computer Ecological and Economic Monitoring"*

**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.

**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.

**Bachelor**
**field of knowledge "Information Technology"**
**in specialty "SOFTWARE ENGINEERING"**
**Educational Program "Software 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 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 themes

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 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.

# Bachelor's Program and Curriculum in Specialty "Software Engineering" Educational Program "Software Engineering"

| № | Name of Academic Discipline | semester | Number | |
|---|---|---|---|---|
| | | | hours | ECTS credits |
| **1. STANDART ACADEMIC DISCIPLINES** | | | | |
| 1. | Discrete structures | 4 | 120 | 4 |
| 2. | Linear algebra and analytic geometry | 2 | 120 | 4 |
| 3. | Mathematical analysis | 1,2 | 240 | 8 |
| 4. | Probability theory | 4 | 150 | 5 |
| 5. | Mathematical statistics | 5 | 120 | 4 |
| 6. | Physics | 2 | 180 | 6 |
| 7. | Algorithms and Data Structures | 3 | 120 | 4 |
| 8. | The software requirements analysis software | 5 | 120 | 4 |
| 9. | Computer Architecture | 2 | 120 | 4 |
| 10. | Architecture and design Software | 8 | 180 | 6 |
| 11. | Security applications and data | 7 | 120 | 4 |
| 12. | Group dynamics and communication | 7 | 120 | 4 |
| 13. | Economy software | 8 | 120 | 4 |
| 14. | Empirical Software Engineering Methods | 8 | 120 | 4 |
| 15. | Computer Graphics | 3 | 120 | 4 |
| 16. | Computer discrete mathematics | 3 | 120 | 4 |
| 17. | Organization of computer Networks | 6 | 120 | 4 |
| 18. | Design Software | 6 | 120 | 4 |
| 19. | Human-Computer Interaction | 4 | 120 | 4 |
| 20. | Project Management Software | 7 | 120 | 4 |
| 21. | Modeling and analysis of the subject area | 6 | 120 | 4 |
| 22. | Object-oriented programming | 4 | 210 | 7 |
| 23. | Operating Systems | 5 | 120 | 4 |
| 24. | Databases | 4 | 240 | 8 |
| 25. | Basics of Software Engineering | 1 | 120 | 4 |
| 26. | Programming | 2 | 180 | 6 |
| 27. | Technologies WEB programming | 6 | 180 | 6 |
| 28. | Project practicum | 8 | 120 | 4 |
| 29. | Professional Software Engineering Practice | 8 | 120 | 4 |
| 30. | Software Quality and Testing | 7 | 120 | 4 |
| **Total for standard part** | | | **4380** | **146** |
| **2.ELECTIVE ACADEMIC DISCIPLINES** | | | | |
| ***2.1. Disciplines offered by University*** | | | | |
| 1. | Business protocol and communication ethics | 1 | 120 | 4 |
| 2. | History of Ukrainian statehood | 1 | 120 | 4 |
| 3. | Philosophy | 5 | 120 | 4 |
| 4. | Foreign Language | 4 | 180 | 6 |
| 5. | Economy and Business | 6 | 120 | 4 |
| 6. | Information Technology | 2 | 180 | 6 |
| 7. | Legal culture of personality | 6 | 120 | 4 |
| 8. | Technology of production of crop and livestock production | 4 | 120 | 4 |
| 9. | Physical Education | 1-4 | 120 | 4 |
| **Total (Disciplines offered by University)** | | | **1080** | **36** |
| ***2.2. Disciplines offered by students*** | | | | |
| 1. | Logic | 3 | 120 | 4 |
| 2. | Management | 5 | 120 | 4 |
| ***2.2.1.Specialization "Applied Programming"*** | | | | |
| 1. | Intellectual systems | 5 | 120 | 4 |
| 2. | Cross-platform programming | 5 | 120 | 4 |
| 3. | Methods of object-oriented design of software systems | 7 | 120 | 4 |
| 4. | Software technology dot.net | 7 | 120 | 4 |
| 5. | Programming microprocessors | 7 | 120 | 4 |

| | | | | |
|---|---|---|---|---|
| 6. | Programming of mobile devices | 6 | 120 | 4 |
| 7. | Technologies distributed programming | 8 | 120 | 4 |
| 8. | Technologies database programming | 6 | 120 | 4 |
| ***2.2.1.Specialization "System Programming"*** | | | | |
| 1. | Logical programming | 5 | 120 | 4 |
| 2. | Real time operating system | 7 | 120 | 4 |
| 3. | Operating system of mobile systems | 8 | 120 | 4 |
| 4. | Basics system programming | 5 | 120 | 4 |
| 5. | Parallel programming | 8 | 120 | 4 |
| 6. | Principles of multitasking systems | 6 | 120 | 4 |
| 7. | The semantics of programming | 7 | 120 | 4 |
| 8. | Translators and compilers | 6 | 120 | 4 |
| **Total specialization** | | | **1500** | **50** |
| **Total for elective part** | | | **1740** | **58** |
| **3. OTHER TYPES OF TRAINING** | | | | |
| 1 | **Military training course** | | 870 | 16 |
| 2. | **Academic Practice** | | 1540 | 18 |
| 3. | **Bachelor Thesis writing (Graduate thesis or Project)** | | 120 | 4 |
| **Total for Specialty (without Military training course)** | | | **7200** | **240** |

## Annotation of disciplines in the curriculum

### 1. Standard academic disciplines

**Discrete structures.** The simplest methods of proof. Elementary number theory. Computational complexity.

**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.

**Mathematical analysis.** Functional dependence numeric sequence boundary and continuity functions. Differential calculus. Integral Calculus. Rows.

**Probability theory.** Basic concepts of probability theory. Models retest. Random variables and their numerical characteristics.

**Mathematical statistics.** Basics of mathematical statistics. Statistical estimates of population parameters. Statistical hypothesis testing. Elements of analysis of variance. Elements of the theory of correlation.

**Physics.** Classical mechanics and electrodynamics. Physical basics of computers and telecommunications.

**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.

**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.

**Computer Architecture.** Digital logic. Submission of data. Organization of memory. Functional organization devices, ensuring their interaction. Multiprocessor Architecture. Modern architecture.

**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.

**Security applications and data.** Principles of safety and protection in the software. Fundamentals of information security systems in the software.

**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.

**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.

**Empirical Software Engineering Methods.** Basics of of descriptive statistics. Applying the principles of discrete probability IT.

**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.

**Computer discrete mathematics.** The sets, functions and relations. Boolean algebra. Logic statements. Predicate logic. Graphs and trees. Basics of combinatorics. Recurrent ratio.

**Organization of computer Networks.** Distributing computing. Basics of networking and telecommunications. Network Management. Principles of safety and protection 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.

**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.

**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.

**Modeling and analysis of the subject area.** Design software-based domain model. Pattern design. Software development through testing. Language modeling domains.

**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.

**Operating Systems.** Basics of operating systems. Parallelism (multitasking). Planning and scheduling processes. Organization of virtual memory. Managing devices.

**Databases.** Information models and systems. Relational database. Languages queries to the database. Processing transactions. Distributed database.

**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.

**Technologies WEB programming.** The structure and principles WEB. Creating Web applications. Client and server scenarios.

**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.

**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.

**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.

## 2. Elective academic disciplines

### *2.1. Disciplines offered by University*

Annotations disciplines "Ukrainian language (for professional purposes)", "History of Ukraine", "ethnocultural", "foreign language", "Philosophy", "Physical Education" see. Section 2.1.

**Legal culture of personality.** Basic concepts, terms and definitions. Subject, tasks and principles of law. Principles of Constitutional Law Ukraine. Principles of Civil Law of Ukraine. Basics of labor law in Ukraine.

**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 existingWeb-browsers. Characteristics of the existing search engines to use online resources.

**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.

### *2.2. Disciplines offered by students*

**Logic.** The object, subject and method of the science of logic. Thought and language. Logic and Political Science. Basic forms and laws of thought. The basic logical laws.

**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.

#### *2.2.1. Specialization "Applied Programming"*

**Intellectual systems.** Modeling knowledge in intelligent systems. Cash and logical systems of knowledge bases. Experts, ontological and many agent system.

**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. Brokers object requests. Monitors processing transactions. Features component technologies: COM / DCOM / NET, CORBA, Java Beans.

**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.

**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 #.

**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 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.

**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.

**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.

**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.

### *2.2.2. Specialization "System Programming"*

**Logical programming.** The main aim of the course is to study the basis of logical programming with ProLog and Marcury. During the course students will learn the basis of declarative programming, algebra of predicates and complete the achieved knowledges with practical tasks

**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.

**Operating systems of mobile systems.** The course is devoted to studying the architecture of mobile operating systems, features of the use for different mobile devices, and features of system and applied mobile software development.

**Basics system programming.** This course deal with the classical models, methods and algorithms of system programming, gives a fundamentals of the theory, gives examples of programs. The main focus is on explaining how to use the knowledge gained in practice. The course is divided into lectures, including theoretical material on a low-level programming language and laboratory works on system programming. The theoretical foundations of system programming are studied in detail. The organization of operating systems is studied.

**Parallel programming.** Methods of parallel computation are proposed for solving a number of optimization problems, methods for organizing optimal parallel control and information processing processes, methods of dispatching and synchronization. The application of parallel programming methods in the development of GRID-technologies is discussed. The implementation of the language of the logical conclusion of PROLOG in the SPMD architecture is considered. The problem of optimization of information service by a network database is under investigation when it is turned into a multi-channel queuing system. Rotation of database segments provides multi-channel access and synchronization of access to them.

**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.

**The semantics of programming.** The semantics of programming - discipline that studies the formalization value structures of programming languages by building their formal mathematical models. As tools for building such models can be used by different means, such as mathematical logic, λ-calculus, set theory, category theory, model theory, universal algebra. Formalization of semantics of programming languages can be used to describe the language determining properties of language and for the purposes of formal verification software on this programming language. The course discusses operational, broadcasting and interpretive semantics.

**Translators and compilers.** This course deal with the fundamental principles of translation: the compilation, the interpretation, the dynamic compilation. Deal with the basics of compilation, methods of syntactic and semantic analysis and optimization of object code. Deal with the basis of the interpretation - the process of reading and executing of the code, not in the machine, but in the high-level program.

**Bachelor**
**Field of Knowledge «Informatics and Computers»**
**in specialty «COMPUTER ENGINEERING»**
**Educational 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

The student training in «Computer Engineering» allows to graduates in programming and software to design and use the system and application software as a professional programmer, including the design and use of information systems, databases, computer-aided design, interactive systems, embedded applications for specialized computer systems. In the field of computer hardware technology the ~~student,~~ training in «Computer Engineering» allows to graduates to design and develop specialized computer systems, controllers, adapters, local, global and corporate computer networks at the level of individual units and universal devices.

## Practical training

Practical training of «Computer Engineering» students aimed at mastering the basic methods and techniques for developing of computer systems hardware and software.

## Proposed Topics for Bachelor theses

1. The Development of specialized function-oriented computer system for solving specific problems in a particular subject area.
2. Designing of GIS hardware and software.
3. Development of system software of computer systems.
4. Development of hardware and software of information protection facilities in computer systems.
5. To Develop facilities of computer networks security improving.

**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

The Graduates «Computer engineering» can occupy a position the professionals of information technologies, programming, system administration, administration of computer local and corporate networks.

# Bachelor's program and Curriculum in Specialty «Computer Engineering» Educational Program «Computer Engineering»

| № | Name of Academic Discipline | Semester | Number | |
|---|---|---|---|---|
| | | | hours | credits ECTS |
| **1. STANDARD ACADEMIC DISCIPLINES** | | | | |
| 1 | Higher mathematics | 1,2 | 360 | 12 |
| 2 | Physics | 2 | 180 | 6 |
| 3 | Programming | 1,2 | 330 | 11 |
| 4 | The theory of electric and magnetic circuits | 3 | 150 | 5 |
| 5 | Computer Logic | 2,3 | 300 | 10 |
| 6 | Algorithms and methods of computation | 4 | 120 | 4 |
| 7 | Discrete Mathematics | 1 | 120 | 4 |
| 8 | Computer electronics | 4 | 120 | 4 |
| 9 | The databases organization | 3 | 180 | 6 |
| 10 | Computer circuitry | 3,4 | 300 | 10 |
| 11 | Probability Theory and Mathematical Statistics | 4 | 120 | 4 |
| 12 | Software engineering | 6 | 120 | 4 |
| 13 | Computer Architecture | 4,5 | 240 | 8 |
| 14 | Technology designing of computer systems | 7 | 120 | 4 |
| 15 | Parallel and distributed computing | 6 | 120 | 4 |
| 16 | System programming | 5,6 | 210 | 7 |
| 17 | Computer networks | 6,7 | 240 | 8 |
| 18 | Computer systems | 5,6 | 210 | 7 |
| 19 | Information protecting in computer systems | 8 | 150 | 5 |
| 20 | System software | 6,7 | 240 | 8 |
| 21 | Practical training | 6 | 180 | 6 |
| 22 | Preparation and defence of bachelor thesis | 8 | 210 | 7 |
| **Total for standard part** | | | **4320** | **144** |
| **2.ELECTIVE ACADEMIC DISCIPLINES** | | | | |
| ***2.1.Disciplines offered by University*** | | | | |
| 1 | History of Ukrainian statehood | 1 | 120 | 4 |
| 2 | Business protocol and communication ethics | 1 | 120 | 4 |
| 3 | Economics and business | 7 | 120 | 4 |
| 4 | Foreign Language | 1-4 | 180 | 6 |
| 5 | Philosophy | 4 | 120 | 4 |
| 6 | Plant growing and livestock breeding production technologies | 4 | 120 | 4 |
| 7 | Legal culture of personality | 7 | 120 | 4 |
| 8 | Information Technologies | 1,2 | 180 | 6 |
| 9 | Physical Training | 1-4 | 120 | 4 |
| **Total Disciplines offered by University** | | | **1080** | **36** |
| ***2.2. Disciplines offered by students*** | | | | |
| ***Professional and Practical Training Disciplines*** | | | | |
| **Block 1** | | | | |
| 1 | System analysis | 5 | 120 | 4 |
| 2 | Digital Circuitry of Specialized Devices | 5 | 120 | 4 |
| 3 | Object-oriented programming | 5 | 150 | 5 |

| № | Name of Academic Discipline | Semester | Number | |
|---|---|---|---|---|
| | | | hours | credits ECTS |
| 4 | Specialized computers | 6 | 120 | 4 |
| 5 | Computer Graphics | 3 | 150 | 5 |
| 6 | Web technology and web design | 7 | 120 | 4 |
| 7 | Cross-platform programming | 7 | 120 | 4 |
| 8 | Hardware and software of GIS | 8 | 120 | 4 |
| 9 | Educational programming practical training | 2 | 180 | 6 |
| 10 | Educational practical training in digital devices development | 4 | 180 | 6 |
| **Block 2** | | | | |
| 1 | Decision Support Systems | 5 | 120 | 4 |
| 2 | Specialize Devices of Digital Circuits | 5 | 120 | 4 |
| 3 | Modern Programming Techniques | 5 | 150 | 5 |
| 4 | Microcontroller Systems | 6 | 120 | 4 |
| 5 | Hardware of Computer Graphics Systems | 3 | 150 | 5 |
| 6 | Network Information Technologies | 7 | 120 | 4 |
| 7 | Java Programing | 7 | 120 | 4 |
| 8 | Real Time GIS | 8 | 120 | 4 |
| 9 | Computer technology practical training | 2 | 180 | 6 |
| 10 | Computer electronics practical training | 4 | 180 | 6 |
| | ***Total*** | | **1380** | **46** |
| **Specialization «Computer Systems and Networks»** | | | | |
| 1 | Computer networks administration | 8 | 150 | 5 |
| 2 | Mobile computer systems | 8 | 120 | 4 |
| 3 | Programming in modern operating systems environment | 8 | 150 | 5 |
| **Specialization «Specialized Computer Systems»** | | | | |
| 1 | Computer networks designing in SCS | 8 | 150 | 5 |
| 2 | Programing of Mobile Computer Systems | 8 | 120 | 4 |
| 3 | Development of Applications in modern OS | 8 | 150 | 5 |
| | ***Total*** | | **420** | **14** |
| ***Total Disciplines offered by Students*** | | | 1800 | 60 |
| ***Total for elective part*** | | | **2880** | **96** |
| **3. OTHER TYPES OF TRAINING** | | | | |
| 1 | Military training | | 480 | 16 |
| 2 | Cultural education training | | 120 | 4 |
| **Total hours of lessons (without military training)** | | | **7200** | **240** |

## Annotation of disciplines in the curriculum

### 1. Standard academic disciplines

**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.

**Physics.** Mechanics. Kinematics and Dynamics. Models of classical mechanics. Work and energy. Basic theory of relativity. Electricity and magnetism. The electric field. Direct electric current. Alternating electric current. The magnetic field. Electromagnetic induction. Maxwell's equations. Optics. Wave optics. Interference. Diffraction. Polarization. The dispersion. Quantum physics. Photons. The model of the atom. Schrödinger equation. Elements of solid state physics.

**Programming. P**rogramming 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.

**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.

**Algorithms and methods of computation.** Algorithms analysis. Algorithmic strategies. Construction of algorithms. Problems of linear algebra. Methods of computation. Tasks of nonlinear algebra. The solution of differential equations. Solution of integral equations. Problems in mathematical physics. Methods of approximation functions. Optimization methods.

**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.

**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.

**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.

**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 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.

**Technology designing of computer systems.** The methodology of computer systems designing. General characteristics of computer systems CAD. System design.

Operational design. Functional design. The technical design. Systems of design of computer systems.

**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 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.

## 2. Elective academic disciplines

### *2.1. Disciplines offered by University*

Annotations for disciplines «History of Ukrainian statehood», «Business protocol and communication ethics», «Economics and business», «Foreign Language», «Philosophy», «Physical Training», «Legal culture of personality» «Plant growing and livestock breeding production technologies» see. Section 2.1 «General provisions».

**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.

### *2.2. Disciplines offered by students*

**Block 1 of Professional and Practical Training Disciplines**

**System analysis. S**ystem 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.

**Digital Circuitry of Specialized Devices**. TTL elements equivalent circuits. Delay devices. Devices for pulse formation based on TTL elements. Transient analysis in specialized devices. Integrated circuits of monostable multivibrators. Multivibrators. The different types of multivibrators. Converters of signal levels between the different logic element systems. Level converters between TTL signals and signals of serial interfaces RS232C, RS485, «current loop» interface.

**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 of program developer environment. Development of graphical user interfaces. Basic event-driven programming.

**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.

**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 curves and surfaces. Polygonal representation of three-dimensional objects. Visualization and Computer Animation.

**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.

**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.

**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.

**Block 2 of Professional and Practical Training Disciplines**

**Decision Support Systems.** General aspects of decision support systems. Binary relations and decision-making. Attitude and expert evaluation. Models and methods of decision-making under conditions of 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**.**

**Specialize Devices of Digital Circuits.** Systems of information communication in computer systems. Specialized devices for information communication on the physical level. Monostable devices. Pulse forming devices. Communication channels. Signal digitization. Organization of signal converting. Serial data interfaces. Signal converting for information communication by a serial interface. Information communication by current. Calculation of the dynamic parameters and characteristics of specialized devices.

**Modern Programming Techniques.** The concepts of the programming technologies. The basic technologies of object-oriented programming. CASE-technologies. Applications of CASE-technologies. Software design tools. Object-oriented visual programming. Classes of data.

**Microcontroller Systems.** Microcontroller (MC) aarchitecture. 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.

**Hardware of Computer Graphics Systems.** Architecture of computer graphics (CG) systems. Mathematical foundations of computer graphics. The basic operations of computer graphics systems. Methods of object approximation. Geometrical, topological and power parameters. The task of image synthesis. Software Development for two-dimensional visualization processes. The structure and processing algorithms for visualization of three-dimensional objects. Development and simulation of specialized processors to implementation of CG algorithms. The development of specialized hardware blocks for CG algorithms implementation. Modern graphics cards.

**Network Information Technologies. C**omputer networks standards. Personal, local and global networks standards. Analysis methods of computer networks state. Computer networks software. Operating systems resources for the analysis of computer networks. Network programming.

**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.

**Real Time GIS.** Geoinformational real-time system (RT GIS). RT GIS architecture. System, functional and technical design of GIS. Methods and algorithms of routing in GIS. The concept of real time. Hardware design, analysis and development of the main RT GIS components. Development of input-output subsystems. Information converters in computer systems. Software development of RT computer systems. Information services organization of RT GIS. Processes scheduling. Simulation and optimization of information processes.

**Specialization «Computer Systems and Networks»**

**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.

**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#.

Characteristic properties of UNIX systems. 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 modeli 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.

## Specialization «Specialized Computer Systems»

**Computer networks designing in SCS.** Functions and features of network and transport levels protocols application in specialized computer systems. Basic network services of computer networks. Installation and setup of network services taking into account the requirements of security and information protection in SCS.

**Programing of Mobile Computer Systems.** Technologic platforms for implementation of mobile systems. Modern mobile OS. Fundamentals of mobile applications design and development. Data storage and processing in mobile applications. Information protection in mobile systems. Characteristics of mobile applications. Creating of applications based on Java ME.

**Development of Applications in modern OS.** Operating system Windows. Interaction of OS with the user programs. The structure of the application based on WinAPI. Application window. Processing of major program communications. Child windows of control. Development of user interfaces. Programming of the basic tasks of user applications development. Contexts of devices. Assignment of contexts, types of contexts. Main features and attributes of the contexts. Bitmap images. Keyboard programming. Focus keypad and messages. The use of child windows for application programming of modern user interface Using of multimedia timers. Development of dialogue system. Modal and non-modal dialogs.

## 2.16. FACULTY OF HUMANITIES AND PEAGOGY

**Dean** – Doctor of Philology, Professor **Shynkaruk Vasyl Dmytrovych**
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 Program **"Social Work"**

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 Victorova Lesya Victorivna

### *035 Phylology (German)*

Educational Program **"Phylology (German)"**

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 (English)*

Educational Program **"Phylology (English)"**

Graduating Department:

Romano-Germanic languages and translation
Tel.:(044)527-85-95 E-mail:krgm@ukr.net
Head of department – Doctor of Pedagogy, Professor Malyhin Oleksandr Volodymyrivych

### *291 International relations, social communications and regional studios*

Educational Program **"International relations, social communications and regional studios"**

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 Oleksiiovych

***015 Professional Education (Technology of production and processing of agricultural products)***

Educational Program **“Professional Education (Technology of production and processing of agricultural products**)”

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 Program **“Journalism”**

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

***053 «Psychology»***

Educational Program **«Psychology»**

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

**Bachelor**
**Field of Knowledge «Social work»**
**In specialty «SOCIAL WORK»**
**Educational Program "Social Work"**

| | |
|---|---|
| Mode of training: | Licensed number: |
| – full-time course | 50 people |
| – part-time course | 50 people |
| Duration of training: full-time course | 4 years |
| full-time course | 5 years |
| Credits | 240 EKTS |
| Language of teaching | Ukrainian, English |
| Qualification of graduates | Bachelor of social work |

## Concept of training

Training of social workers is caused by the requirement of the government for specialists able to provide social and educational aid, support, protection and rehabilitation of all categories of children and young population in the country areas. Professional activity of such specialists includes solution of professional functions in the areas of research of social and educational problems of adopted children's and young people's socialization, their public protection, consultation on social and educational issues, organization of their leisure, support to for upbring to people dealing with these issues.

## Practical training

Practical training is provided in accordance with the schedule of the learning process directly at the licensed centers of practical training such as: welfare centers for families, children and youth; children's recreational establishments; departments on abandoned children; territorial welfare centers; kindergartens; secondary schools; centers of social and psychological rehabilitation.

**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.

## Employments of graduates

Social workers can be employed in the system of educational institutions, centers of education and upbringing, cultural centers and arts schools, social services and clubs, children's and public organizations, guardianship services, services for teenagers, special closed children's institutions, government welfare centers and services, places for social welfare and support, centers for employment.

# Bachelor`s Program and Curriculum
# In Specialty «Social work»
# Educational Program «Social work»

| Course code | Course | Semester | Number | |
|---|---|---|---|---|
| | | | hours | ECTS credits |
| **1. STANDARD ACADEMIC DISCIPLINES** | | | | |
| 1 | Valeology and age physiology | 3 | 180 | 6 |
| 2 | Computer technologies in social work | 2 | 120 | 4 |
| 3 | General and social psychology | 1 | 120 | 4 |
| 4 | Basics of general and social pedagogy | 1-2 | 240 | 8 |
| 5 | Human in modern society | 1 | 120 | 4 |
| 6 | Psychology of personality | 4 | 210 | 7 |
| 7 | Basics of providing social services | 1-2 | 180 | 6 |
| 8 | Social work with families, children and youth | 3 | 120 | 4 |
| 9 | Introduction to the specialty | 1-2 | 180 | 6 |
| 10 | Training and organization of volunteers | 5 | 120 | 4 |
| 11 | Social work management | 7 | 180 | 6 |
| 12 | Theory of social work | 3-4 | 180 | 6 |
| 13 | Social work with different groups of clients | 6 | 120 | 4 |
| 14 | Professional documents keeping | 3 | 120 | 4 |
| 15 | Practicum on social work | 5 | 120 | 4 |
| 16 | Social insurance and retirement support | 6 | 180 | 6 |
| 17 | Information and communication technologies in social and educational work | 8 | 120 | 4 |
| 18 | Social and communication technologies | 5 | 120 | 4 |
| 19 | Social work in penitentiary establishments | 7-8 | 180 | 6 |
| 20 | Family social support | 8 | 150 | 5 |
| 21 | Socialization of personality | 6 | 150 | 5 |
| 22 | Basics of consultation | 5 | 120 | 4 |
| 23 | System of organization and management of social services | 6 | 120 | 4 |
| 24 | Basics of scientific research | 1 | 120 | 4 |
| 25 | Technologies of social tutoring | 7 | 120 | 4 |
| 26 | History of social work | 6 | 120 | 4 |
| 27 | Theory and history of social education | 7 | 120 | 4 |
| 28 | Technologies of social work | 6 | 120 | 4 |
| Total for the compulsory component | | | 4050 | 135 |
| ***2. Elective courses*** | | | | |
| **2.1. *University elective courses*** | | | | |
| 1 | Professional Ukrainian language | 1 | 120 | 4 |
| 2 | History of Ukrainian statehood | 1 | 120 | 4 |
| 3 | Ethnic culture studies and family culture | 2 | 120 | 4 |
| 4 | Foreign language | 1-4 | 240 | 8 |
| 5 | Labor and life security | 5 | 120 | 4 |
| 6 | Physical education | 1-4 | 120 | 4 |
| 7 | Philosophy | 3-4 | 180 | 6 |
| 8 | Legal bases of social work | 6 | 120 | 4 |
| Total for the university elective courses | | | 1020 | 34 |
| **2.2. *Дисципліни за вибором студентів*** | | | | |
| 1 | Private and family law<br>Law | 4 | 210 | 7 |
| 2 | Social work in leisure activities<br>Basics of theater acting | 2 | 120 | 4 |
| 3 | Basics of inclusive education<br>Social gerontology | 8 | 150 | 5 |
| 4 | Polish language<br>Comparative pedagogy | 2-3 | 120 | 4 |
| 5 | Latin language | 2 | 120 | 4 |

| | | | | |
|---|---|---|---|---|
| | Statistics and society | | | |
| 6 | Basics of defectology and pathopsychology<br>Basics of special pedagogy and psychology | 7 | 120 | 4 |
| 7 | Seminar on team building<br>Social diagnostics | 4 | 120 | 4 |
| 8 | Methods of social work<br>Leadership studies | 4 | 120 | 4 |
| 9 | Organization of social welfare<br>Preventive pedagogy | 5 | 210 | 7 |
| 10 | Recreational work with the disabled<br>Social therapy of the personality and team problems | 8 | 180 | 6 |
| 11 | Advertising and information technologies<br>Basics of PR in social work | 7-8 | 120 | 4 |
| Total by students elective courses | | | 1590 | 53 |
| Total for the elective component | | | 2610 | 87 |
| 3. OTHER TYPES OF COURSES | | | | |
| 1 | Military training | | 870 | |
| 2 | Cultural and educational training | | 315 | |
| 3 | Training probation (profession familiarization) | | 60 | 2 |
| 4 | Training probation (volunteer familiarization activities) | | 90 | 3 |
| 5 | Training probation | | 60 | 2 |
| 6 | Workplace probation | | 150 | 5 |
| 7 | Workplace probation(pre-graduation) | | 150 | 5 |
| 8 | State Attestation | | 30 | 1 |
| Total for the area of studies (excluding military training) | | | 7200 | 240 |

## Annotations of disciplines in the curriculum

### 1. Standard academic disciplines

**Valeology and age physiology.** Peculiarities of human organism life in various ontogenesis cycles. Human organs and organism in general at different periods of growth and development. Peculiarities of functions at each age period. Development of human recreational awareness and behavior as a basis for active and conscious involvement of each personality in his/her health development.

**Computer technologies in social work.** Information technologies evolution. Characteristics and classification of hardware. Architecture and principles of computer work. Technology of work in graphic operational systems. Technology of making, editing and formatting electronic tables, diagrams, Word documents. Customer's interface and technology of on-line work.

**General and social psychology.** Current understanding of psyche, fundamentals of psychology concerning the rules of psychic processes, psychic activity, will and emotions, individual properties of personality, peculiarities of organization and functioning of small teams and groups, dynamics of interpersonal relations development.

**Basics of general and social pedagogy.** Social formation of personality, social environment as an object and subject of social and educational influence, social and educational problems of some population categories, social pedagogy of sociocultural area, history and prospects of social education.

**Human in modern society.** Genesis of human life in mythology, religion and cosmology. Evolution hypothesis, changeability, heritage

**Psychology of personality.** Human psychological peculiarities as a integral formation, certain system of psychic properties having respective structure, internal links, individual and interrelated with outside natural and social environment.

**Basics of providing social services.** Laws and international agreements of Ukraine concerning providing social services. System of legal, economic, psychological, educational, medical, recreational and other activities aimed at individual social groups or people in hard life conditions and require outside support. Actors providing social services. Basics and principles of providing social services. Types of social services and forms of providing/ Social servicing.

**Social work with families, children and youth.** Basic principles of work with families, children and youth. Effectiveness of implementing the purpose and tasks of social work with families, children and youth. Respective forms and techniques of social work with families, children and youth. Basic areas of social work with families, children and youth.

**Introduction to the specialty.** Social work, object, subject, structure, cognition methods, functions, its role among other social sciences, basic stages of development, concept of society in general, social development, culture as a tool of society control. Human being in the social context.

**Training and organization of volunteers.** Organized and controlled process of people's involvement in activity of governmental agencies in different non-governmental organizations and the third sector establishments. Stages of volunteer training. Volunteer levels of motivation.

**Social work management.** Functions of Social work management, principles and rules. Labor resources, motivation theory of labor. Project supervision. Management styles in certain situations, ways of conflict resolution. Organisation and coordination of social work with different categories of clients.

**Theory of social work.** Historic reconstruction of the social work institutilization as a comprehensive process. Stages of social work development in world history. Approaches to the description of reality in social sciences and social work theory. Basic components of the social knowledge theory structure. Social work as a multi-staged theory, paradigmatic and integrative theory. Social work in the context of contemporary scientific approaches. Basic discourses in social work.

**Social work with different groups of clients.** Development of Social work with different groups of clients. Social work with the youth of pre-conscription and conscription age, military personnel, and their family members, low-income groups of population. Social aid and support for the people with limited abilities. System of providing social support for elderly and lonely people. Social work with people who have problems with alcohol and drugs. Social work with people involved in sex business. Peculiarities of social work with HIV and AIDS positive people. Organization of work with homeless people.

**Professional documents keeping.** Official and business style of the modern Ukrainian language, functional and stylistic norms of its writing form. Current requirements to the documents writing. Classification of business papers. Rules of presenting material and logic text documents layout. Layout, essentials of organizational, regulatory, personnel documents, information and reference documents, administrative, financial documents. Difficulties in handwriting: names of positions, establishments, organizations, structural units, geographic names, surnames etc.

**Practicum on social work.** Professional position of the social worker, peculiarities of social work and its humanistic orientation, experience of overcoming problems in individual work with a client, work with supervisor, basic areas of social work by means of seminars.

**Social insurance and retirement support.** Laws on social insurance. History and development of social insurance in Ukraine. Compulsory state social insurance. Its types. Volunteer social insurance. System of rights, obligations and guarantees envisaging social welfare. Laws on retirement support.

**Information and communication technologies in social and educational work.** Development of information and communication infrastructure. Current status, prospects for development and application of information technologies, peculiarities of using modern

software. Organization of work with Web-technologies; peculiarities of application of the modern software. Problems of using information and communication technologies in professional activity.

**Social and communication technologies.** Social communications: starting line. Concept and types of social and communication technologies for modeling social environment. Cognitive patterns in the social environment of a specialist.

**Social work in penitentiary establishments.** Historic preconditions of establishment and development of the penitentiary establishments. Concept bases of penitentiary establishments in the work of social worker. Psychological and educational activities of the bodies executing punishment. Activity of social workers in penitentiary area. Basic methods and technologies of social work within penitentiary system. Social and psychological methods of influence at the group behavior. Interactive forms of social work as a key idea of penitentiary psychology.

**Family social support.** State policy in social welfare for families, motherhood and childhood. Its legal support, types, kinds, structure, and functions of families. Causes and consequences of the problems of modern family, models of social work with different types of families, methods and forms, basic principles and patterns of family social support.

**Socialization of personality.** Process of socialization. Socialization stages. Origins of the modern concept of socialization. Socialization establishments. Mechanisms of involving personality in social processes.

**Basics of consultation.** Concept of consultation. Aim and goals of consultation. Nature and objectives of consultation. Categories of professionalism and consultation culture. Managerial consultation. Managerial consultation modeling. Methods of consultation. Areas of sociologist's activity as a consultant.

**System of organization and management of social services.** Forms and methods of organization formation, functions of social services, legal bases of their activity, their connections with governmental and public organizations. Nature and aims of managerial consultation, types of consultation organizations. Information support of management; social sphere management personnel.

**Basics of scientific research.** Science and scientific thinking. Ability to identify orientation of the scientific result at the solution of tasks and implementation of the science functions. Basic categories of science. Ability to formulate and substantiate scientific hypothesis. Research. Ability to conduct research. Technologies of literature sources processing. Ability to analyze scientific publications. Systematic approach and system analysis. Ability to perform system analysis of the research subject area.

**Technologies of social tutoring.** Role of the social tutor in the society, social significance of his/her activity in introduction of inclusive education. Basic technologies provided by modern pedagogy and psychology as well as by practice of work with disabled children. Methods of social tutor's work with children having different functional limitations.

**History of social work.** Origination and development of social work from ancient times till the 18th century. Social work in the 19th and early 20th centuries. Peculiarities of social work in the $20^{th}$ century. Organization of social work at the modern stage.

**Theory and history of social education.** Development of theory and practice of social education from ancient times till nowadays.

**Technologies of social work.** Basic social technologies and technologies of social and educational work. Capabilities of introduction of pedagogical and psychological methods in social and educational work with different groups of clients. The core issue of the course is the concept of social and pedagogical approach to social work as a support for personality self development, implementation of his/her creational abilities, aptitude, inclinations, activation of clients actions (personality, group, communities) at the solution of personal problems.

## 2. Elective academic disciplines

### *2.1. Disciplines offered by University*

Descriptors of such courses as “Professional Ukrainian language”, “History of Ukrainian statehood”, “Ethnic culture studies and family culture”, “Foreign language”, “Labor and life security”, “Physical education”, “Philosophy” can be found in Chapter 2.1.

**Legal bases of social work**. Legal bases of social work in Ukraine.

### *2.2. Disciplines offered by students*

**Private and family law.** Concept of private law in Ukraine, its subject and methods of civil control. Origins of civil law in Ukraine. Trends of civil law development in Ukraine. Definition, classification, contents, causes of starting and cessation of civil legal relations. Subjects and objects of civil legal relations, their types. Peculiarities and procedures of permorming and protection of civil rights and obligations. Definition and types of rights.

**Law.** Theory of state and law. General considerations of administrative law as a branch of law. Civil law as a branch of law. General considerations of obligatory law. Complying with the obligations and responsibilities for their violation. Individual types of agreements. Concept, origins and subjects of labor law in Ukraine. Labor payments, working time and time for rest. Labor disputes and procedures for their resolution. Material liability. Family law. Social welfare and insurance according to the laws of Ukraine. Civil cases in court of general jurisdiction procedures.Criminal law of Ukraine as a branch of law.

**Social work in leisure activities.** Structure and functions of spare time, its filling in the leisure sphere. Leisure theory and practice. Organization of work in the leisure sphere.

**Basics of theater acting.** Peculiarities, types, forms, genres of theatre arts, its functions. Technologies of organizing author scenario writing. Organization and management of teams, peculiarities of producer’s and performance work in social and educational activity.

**Basics of inclusive education.** Basic considerations and preconditions for the introduction of inclusive education. International experience of appearance, organization and support of inclusive education. Current laws of Ukraine on inclusive education. Current state and prospects of introduction of inclusive education in Ukraine. Support for the learning process in the conditions of inclusive education. Requirements to educational and infrastructure availability in the inclusive educational establishment. Adaptation and modification of the learning process. Principles, methods and techniques of work with children having visual disturbance in thbe conditions of inclusive education. Correction and development work and inclusive learning of children with visual disturbance. Pedagogical support of children visual disturbance by teacher assistant. Basics of cooperation in the inclusive educational institution.

**Social gerontology.** Concept and contents of social gerontology. History of its development. Social theories of aging. Historic aspect of the place and status of old person in the society. Elderly person as a subject of age changes. Social factors determining person’s status in the society. Elderly people quality of life. Problems of socialization and socio-psychological adaptation of the elderly population.

**Polish language.** Spelling, phonetics, pronunciation, grammar – system of word changes, structure of syntactical constructions, development of monologue and dialogue speech. Peculiarities of Polish customs, traditions and culture.

**Comparative pedagogy.** Basic considerations of comparative pedagogy.

**Latin language.** Basics of Latin, skills of translating Latin texts and use of Latin terminology in training, scientific and workplace activity.

**Statistics and society.** Subject and objectives of statistics and society. Society as a social system. Population as the object of social statistics. Statistics of population levels of life. Statistics of living conditions and public utilities. Statistics of external environment. Statistics of the healthcare system and education. Informatization statistics. Statistics of culture, arts and leisure. Statistics of social welfare.

**Basics of defectology and pathopsychology.** Impaired consciousness and self-consciousness. Principles of pathopsychological testing. Impaired attention, reception, perception. Impaired memory. Impaired thinking. Emotional problems, neurotic disorders Endogenous psychosis. Reactive psychosis. Mental retardedness. Violations of mental development.

**Basics of special pedagogy and psychology.** Systems of special educational services. Special secondary schools for children requiring correction of psychophysical development. Basic concepts of special pedagogy. Peculiarities and rules of development of different categories of people with psychological and physical problems. Staffing personnel for the educational establishments for such people. Legislative basis of modern special education in Ukraine.

**Seminar on team building.** Peculiarities of psychological seminar as a form and technique for providing aid to the personality and team. Classification of training methods. Basic requirements to the organization and conduct of psychological seminar. Ethic aspects of psychological seminar, procedure of course development and certain exercises. Peculiarities of providing feedback in the group. Planning work of seminar group with consideration of target population, real conditions of seminar and level of individual competence.

**Social diagnostics.** Aim and objectives of social diagnostics as a science, course and technologies of social and educational work. Principles of social diagnostics. Requirements to the professional level of social tester. Methods of social diagnostics.

**Methods of social work.** Methodological peculiarities of social and educational activity. Forms, methods, and techniques of social and educational activity in social servicing. Methods of social prognosis and projection. Methods of introducing social innovations in practice. Modeling of social and educational processes. Methods of social statistics in social work.

**Leadership studies.** Problem of leadership in public sphere. Leadership theories Manager's professional qualities, organizational and psychological peculiarities of his/her activity. Power and influence as levers of leadership. Leadership as a group process. Leader's image. Development of personality leadership abilities. Public speaking. Organization and control of execution of managerial decisions, system of responsibility.

**Organization of social welfare.** Legislative support for social welfare. Origination and development of the social welfare system. Principles, forms, methods, and rules of social welfare.

**Preventive pedagogy.** Means, forms, methods of preventive education aimed at the development and organization of certain activity by including them into educational activity and prevention of delinquent behavior among children and youth.

**Recreational work with the disabled.** Legal bases of social welfare of the disabled. System of governmental and non-governmental establishments and institutions. Forms and methods of social work with the disabled. International issues of the legal protection for the disabled.

**Social therapy of the personality and team problems.** Social therapy as an integral technology of social work. Aims and objectives of social therapy, its place in the range of social technologies. Social therapy as "treatment" of social illnesses. Basic psychotherapy models: as a method of treatment, as a means of manipulation, as a method facilitating learning, as a system of phenomena caused by interaction between people.

**Advertising and information technologies.** Basic areas, principles of development, production, placement and functioning of social advertising as means of communication.

**Basics of PR in social work.** Concept, principles, legislative, moral bases of PR as a sphere of professional activity. Organizational and psychological conditions of their effectiveness. Their role in support for the company (organization). Basic countermeasures against “black PR”.

**Bachelor**
**Field of knowledge “Philology"**
**in Specialty "PHILOLOGY"**
**Educational Program “Philology"**

| | |
|---|---|
| Form of study: – full-time | Licensed number of persons: 125 |
| Learning time: full-time | 4 years |
| Credits | 240 ECTS |
| Language of training | Ukrainian , English, German |
| Qualification of qraduates | Bachelor of Linguistics, English teacher (German) language |

## Conception of training

Training in "Philology (Translation)" are stipulated by requirements in the translation of scientific and technical literature and documentation agrobiological, engineering and technology, forestry, ecological, research in product quality and safety, agribusiness, agricultural economics and so on.

## Practical training

Practical training is carried out according to the schedule of the educational process directly to certified practices bases, including: Ukrainian Research Institute of productivity agriculture, commodity exchange "Kiev agroindustrial exchange", Department of Internal Policy administrative-territorial organization and information management executive office Khmelnytsky Regional Council , Ukrainian Institute examination of plant varieties, LLC "Fund Environmental (Green) Investments" Cultural Center "Cambridge University Press" enterprise with foreign capital PIC "Orsi", LLC "Idex-production" Private Enterprise "Antario M".

**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

Specialist of philology is able to translate scientific and technical (agricultural) and business literature, realize counsultations deal with translation, can work as a translater at organizations of industrialists and businessmen, professional and social organizations, agencies print. Also a graduate can work as a teacher of foreign languages at secondary schools.

# Bachelor's Program and Curriculum in Specialty "Philology" Educational Program "Philology"

| № | Name of Academic Discipline | Term | Number | |
|---|---|---|---|---|
| | | | hours | credits ECTS |
| **1. COMPULSORY ACADEMIC DISCIPLINES** | | | | |
| 1 | Psychology | 6 | 120 | 4,0 |
| 2 | Fundamentals of Information Technologies and Applied Linguistics | 1 | 120 | 4,0 |
| 3 | Introduction to Translation Studies | 2-3 | 120 | 4,0 |
| 4 | Latin Language | 1 | 120 | 4,0 |
| 5 | Introduction to Linguistics | 4 | 120 | 4,0 |
| 6 | Practical Course of the Main Foreign Language | 1-8 | 16500 | 55,0 |
| 7 | Introduction to German Linguistics | 5 | 120 | 4,0 |
| 8 | Stylistics of the Main Foreign language | 6-7 | 120 | 4,0 |
| 9 | Comparative Lexicology of the Main Foreign and Ukrainian languages | 6 | 120 | 4,0 |
| 10 | Comparative Grammar of the Main Foreign and Ukrainian languages | 6 | 120 | 4,0 |
| 11 | Practice of Translation and Interpretation | 4-8 | 480 | 16,0 |
| 12 | Literature of Countries whose Language is Studied (the Main Language) | 1-2 | 120 | 4,0 |
| 13 | Practical Grammar of the Main Foreign Language | 1-5 | 360 | 12,0 |
| 14 | History of the Main Foreign Language | 5 | 120 | 4,0 |
| 15 | Scientific and Technical Translation | 7-8 | 120 | 4,0 |
| 16 | Linguistic and Country Studies of Countries of the Main Foreign Language | 4 | 120 | 4,0 |
| 17 | Computer Lexicography and Translation | 3 | 120 | 4,0 |
| 18 | Literature of Countries whose Language is Studied (the Second Language). | 6 | 120 | 4,0 |
| **Total for the standard part** | | | **19140** | **143** |
| - **OPTIONAL ACADEMIC DISCIPLINES** | | | | |
| **2.1. *Offered by the University*** | | | | |
| 1 | History of Ukraine | 1 | 120 | 4,0 |
| 2 | Philosophy and Logic | 2-3 | 120 | 4,0 |
| 3 | Modern Ukrainian language | 1-3 | 120 | 4,0 |
| 4 | Practical Phonetics of the Main Foreign Language | 1 | 120 | 4,0 |
| 5 | Theoretical Phonetics | 5-6 | 120 | 4,0 |
| 6 | Aspect Translation of Agrarian Literature | 4 | 120 | 4,0 |
| 7 | Physical Education | 1-4 | 240 | 8,0 |
| 8 | Pedagogy | 5 | 120 | 4,0 |
| 9 | Translation of Business Language and Correspondence | 3 | 120 | 4,0 |
| 10 | Methodology of Teaching Foreign Languages | 7 | 120 | 4,0 |
| **Total (Disciplines offered by University)** | | | **1320** | **44** |
| **2.2. *Disciplines offered by students*** | | | | |
| 1 | Ethnocultural Studies, Ethics and Aesthetics | 5 | 120 | 4,0 |
| 2 | Information Technology in Translation Projects | 7-8 | 1320 | 4,0 |
| 3 | Practical Course of the Second Foreign Language and Translation | 2-8 | 120 | 44,0 |
| 4 | Semantic and Stylistic Problems of Branch Texts Translation: a Cycle of Natural Sciences; a Cycle of Technical Sciences; a Cycle of Economic | 7-8 | 120 | 4,0 |
| 5 | Polish Language | 2 | 120 | 4,0 |
| **Total for the Specialty** | | | **1800** | **60** |
| **Total (Disciplines offered by students)** | | | **3120** | **104** |

| 3. OTHER TYPES OF TRAINING | | | | |
|---|---|---|---|---|
| 1 | Induction translation practice | 6 | 90 | 3 |
| 2 | Externship pedagogical practice | 8 | 90 | 3 |
| 3 | Externship translation practice | 8 | 60 | 2 |
| State Attestation | | | 30 | 1 |
| **Total for the Specialty** | | | **7200** | **240** |

## Annotations of disciplines in the curriculum

### 1. Standard academic disciplines

**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.

**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.

**Introduction to German Linguistics.** Introduction to German linguistics is an introductory course both to the philological disciplines, and, in general, to all humanitarian disciplines. The course introduces students to Germanic languages and their native speakers, and cultures, helps to master the basic concepts of German studies, and gives an idea of the methods and techniques of scientific research, typical for German studies.

**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.

**Literature of Countries whose Language is Studied (the Main Language).** Introduction to the literary development and the genre-style system of literature of the English-speaking countries, a general characteristic of the works by prominent writers of these countries in different epochs, an analysis of the most significant works.

**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.

**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.

**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.

**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.

**Literature of Countries whose Language is Studied (the Second Language).** Introduction to the literary development and the genre-style system of literature of the German-speaking countries, a general description of the works by prominent writers in these countries in different epochs, an analysis of the most significant works.

## 2. Elective academic disciplines

### *2.1. Disciplines offered by University*

**History of Ukraine.** The discipline envisages deep mastering and understanding the history of origin and formation of Ukrainian people and Ukrainian statehood, consolidation of national originality, interpretation of political activity of classes and social groups in Ukraine at different stages of historical development. The overall aim of the course is to train highly qualified specialists of agro-industrial complex on the principles of higher school humanization, integration of professional, social and humanitarian training, improvement of the content of the course structure, application of the achievements of world and national conceptions, universal values.

**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 synthesising 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.

**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.

**Theoretical Phonetics.** The course of theoretical phonetics of English is intended to study the problems of modern phonetic science and the functioning of phonetic units in the language. The aim of the course is to study the sound system of the language, segmental phonemes, stress and emphasis, component structure, intonation from the theoretical point of view.

**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.

**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.

**Pedagogy.** The discipline deals with the theory and practice of organization of teaching (didactics), education and management of education (school science).

**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.

**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.

### *2.2. Disciplines offered by students*

**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 behaviour 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.

**Practical Course of the Second Foreign Language and Translation.** 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; a Cycle of Economic 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.

**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»**
**in Specialty «INTERNATIONAL RELATIONS, PUBLIC COMMUNICATION AND REGIONAL STUDIOS»**
**Educational Program "International relations, social communications and regional studios"**

| | |
|---|---|
| Form of education:<br>– full-time<br>– external | Licensed amount:<br>50 people |
| Training period: full-time form | 4 years |
| External form | 5 years |
| Credits | 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.

**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 Program «International relations, public communications and regional studios»

| № | Name of discipline | Semester | Amount | |
|---|---|---|---|---|
| | | | hours | ECTS credits |
| **1. STANDARD ACADEMIC DISCIPLINES** | | | | |
| 1 | Economy and Foreign Economic Relations of Ukraine | 8 | 120 | 4,0 |
| 2 | Conflictology and Theory of Negotiation | 7 | 120 | 4,0 |
| 3 | Fundamentals of World Policy | 4 | 120 | 4,0 |
| 4 | Ethnic and Demographic Processes in the World Regions | 6 | 120 | 4,0 |
| 5 | Fundamentals of Geopolitics and Geostrategy | 6 | 120 | 4,0 |
| 6 | Fundamentals of Scientific Research | 4 | 120 | 4,0 |
| 7 | Actual Problems of International Relations in Asia, Africa and Latin America | 7 | 120 | 4,0 |
| 8 | Introduction to Specialty «International Relations» | 1 | 120 | 4,0 |
| 9 | Diplomatic and Consular Service | 5 | 120 | 4,0 |
| 10 | Diplomatic Protocol and Etiquette | 6 | 120 | 4,0 |
| 11 | European Union in International Relations | 7 | 120 | 4,0 |
| 12 | Foreign Policy and Diplomacy of Ukraine | 3 | 120 | 4,0 |
| 13 | Foreign Policy of Western European and North American Countries | 7 | 120 | 4,0 |
| 14 | Foreign Policy of the Former Soviet Union | 5 | 120 | 4,0 |
| 15 | Foreign Policy of CEE and SEE Countries | 8 | 120 | 4,0 |
| 16 | Foreign Language for Specific Purposes | 4-8 | 420 | 14,0 |
| 17 | Informational and Analytical Activities in International Relations | 6 | 120 | 4,0 |
| 18 | History of International Relations | 3-4 | 150 | 5,0 |
| 19 | Country Studies and Fundamentals of International Tourism | 5-6 | 240 | 8,0 |
| 20 | International Information and Modern Political Systems and Technologies | 4 | 180 | 6,0 |
| 21 | Private International Law | 8 | 120 | 4,0 |
| 22 | International Relations and World Policy | 5-6 | 120 | 4,0 |
| 23 | International Economic Relations with Fundamentals of Economic Theory | 7-8 | 120 | 4,0 |
| 24 | International Conflicts | 4 | 120 | 4,0 |
| 25 | International Organizations | 5 | 120 | 4,0 |
| 26 | Comparative Constitutional and Public International Law | 2 | 120 | 4,0 |
| 27 | Practical Course of Domain Translation | 5-8 | 510 | 17,0 |
| 28 | Current Trends in International Relations | 7 | 120 | 4,0 |
| 29 | Theory of Civilizations | 4 | 120 | 4,0 |
| 30 | Theory of International Relations | 1 | 120 | 4,0 |
| **Total for mandatory component** | | | **4500** | **150,0** |
| **2. SELECTABLE TRAINING COURSE** | | | | |
| **2.1. *Courses selected by University*** | | | | |
| 1 | Foreign Language | 1-4 | 510 | 17,0 |
| 2 | History of Ukrainian Statehood | 1 | 120 | 4,0 |
| 3 | Ethnic and Cultural Science | 2 | 120 | 4,0 |
| 4 | Ukrainian Language for Specific Purposes | 2 | 120 | 4,0 |
| 5 | Physical Education | 1-4 | 180 | 6,0 |
| 6 | Philosophy | 4 | 120 | 4,0 |
| 7 | Safety Life Activities | 1 | 120 | 4,0 |
| **Total for selected by University** | | | **1110** | **37,0** |
| **2.2. *Courses selected by students*** | | | | |
| 1 | Humanitarian Challenges of Our Time | 8 | 120 | 4,0 |
| 2 | Cultural, Spiritual and Religious Traditions of the World's Countries | 3 | 120 | 4,0 |
| 3 | Foreign Language II | 1-2 | 180 | 6,0 |
| 4 | Fundamentals of Agricultural Consulting and Marketing | 6 | 120 | 4,0 |
| 5 | Fundamentals of Psychology and Pedagogy | 8 | 120 | 4,0 |
| 6 | Theory and History of the State, Law and Political Studies | 1 | 150 | 5,0 |

| | | | | |
|---|---|---|---|---|
| 7 | Economic Geography of the World's Countries | 4 | 120 | 4,0 |
| 8 | History of Diplomacy | 2 | 120 | 4,0 |
| 9 | Methodology of Countries' Studies | 8 | 150 | 5,0 |
| 10 | The Political Geography of the World's Countries | 2 | 120 | 4,0 |
| 11 | Politology and Sociology | 3 | 120 | 4,0 |
| 12 | Regional Science | 6 | 120 | 4,0 |
| **Total for selected by students** | | | **1560** | **52** |
| **Total for selectable component** | | | **2670** | **89** |
| **State certification (State test)** | | | **30** | **1,0** |
| **Total for direction** | | | **7200** | **240** |

## Annotations of the curriculum courses

### 1. Standard academic disciplines

**Economy and Foreign Economic Relations of Ukraine.** The features of the economic sector are discussed, considering the existing and prospective foreign economic relations of Ukraine and the problems which the state encounters.

**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.

**Ethnic and Demographic Processes in the World 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.

**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.

**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.

**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.

**Foreign Language for Specific Purposes.** The general aim of the program of teaching of foreign language for the professional purpose is formation students' professional linguistic competencies that will contribute to their efficient operating in cultural variety of training and professional environment. The methods of search of new information in another language sources, linguistic methods of analytical study of another language sources are learned. Students study published original literature in another language and increase their lexical and grammatical skills. Methods and linguistic peculiarities of annotation and synopsis of another language sources, the principles of translation of professional oriented another language source are studied.

**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.

**History of International Relations.** International relations, their laws, the major international conflicts, diplomatic events, peace talks, conference documents and materials that characterize international relations.

**Country Studies and Fundamentals of International Tourism.** 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.

Types and forms of international tourism, the main factors affecting the development and territorial organization of international tourism, the main trends of the modern world tourist complexes; specific characteristics of different types of international tourism, analysis of factors and features of the territorial organization of tourism in the world.

**International Information and Modern Political 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.

**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.

**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 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.

**International Conflicts**. 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.

**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.

**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.

**Practical Course of Domain 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.

**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 Civilizations.** 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**.**

**Theory of International Relations.** 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.

## 2. Elective academic disciplines

### *2.1. Disciplines offered by University*

**Foreign Language.** Mastering phonetic, lexica, and practical grammar knowledge, as well as skills dealing with audio, reading, oral and written communication.

**History of Ukrainian Statehood.** Provides deep understanding of the history and formation of the Ukrainian people and Ukrainian state system, strengthening national identity, political activity of classes and social groups in Ukraine at certain stages of historical development. Overall purpose of the course, based on processes of humanization of higher education, professional integration and socio-humanitarian training, the achievements of world and domestic ideas, human values, is to train highly qualified specialists.

**Ethnic and Cultural Science.** Culture, methodological study of cultural phenomena. Typology of cultures, comparative analysis of cultural evolution, development of Ukrainian culture. Traditional Ukrainian culture of family communication, housing maintenance, housekeeping.

**Ukrainian Language for Specific Purposes.** Orthographic, morphological, lexical, stylistic, syntax and punctuation rules of modern Ukrainian literary language; Genres of professional communication and basic communication features; culture of political dialogue and speech; principles of structural and stylistic analysis and correction of the text in accordance with Ukrainian language.

**Physical Education**. Basics of maintaining a healthy lifestyle and the benefits of physical activity. Mastering basic elements of massively popular sports game, help maintain a high level of physical skill and physical health.

**Philosophy.** The course creates a system of knowledge consisting of the following aspects of philosophy: ontology, epistemology (theory of knowledge), social philosophy, philosophy of historical types, revealing the nature of the relation "man - the world" in its most basic forms. The phenomenon of religion, its origin, the basic religious concepts, history and present situation of tribal, early and late religions, the main provisions of faith and worship of the most influential religions in the world. The methods of logic, basic forms and laws of thought, the prerequisites of modern logic, classical logic division, typology and analysis of formal theories of logic.

**Safety Life Activities.** Fundamentals of life safety, key rules for the organization of production environment. Principles and approaches of habitat assessment on personal security, staff, society and the monitoring of dangerous situations.

### *2.2. Disciplines offered by students*

**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.

**Foreign Language II.** The set of concepts and terms that make extensive vocabulary and rules of language, grammar and syntax.

**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.

**Fundamentals of Psychology and Pedagogy.** Basic principles of psychology and pedagogy, especially their application in practice. Basic mental processes and conditions that determine the characteristics of human activity, including of thinking processes, principles and approaches to implement targeted remedial effect.

**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.

**Economic Geography of the World's Countries.** The nature of economic and environmental issues, conditions of economic activity, especially of territorial differentiation. Rules and principles of complex economic and geographic characteristics of certain areas, analysis of economic development around the world.

**History of Diplomacy.** 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.

**Methodology of Countries' Studies.** The main methods and techniques of countries' studies; problems of geography as a complex scientific field. Terms and consistency of geographic research and drafting comprehensive geographic characteristics of individual countries or groups of countries (regions).

**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.** 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.

**Bachelor**
**Field of Knowledge "Education"**
**In Speciality "Professional education (technology of production and processing of agricultural products)"**
**Educational Program "Professional education (technology of production and processing of agricultural products)"**

| | | |
|---|---|---|
| Studies form: | | License volume: |
| – full time course | | 50 persons |
| – correspondence course | | 50 persons |
| Duration: | full time course | 4 years |
| | correspondence course | 5 years |
| Credits | | 240 ECTS |
| Language | | Ukrainian, English |
| Qualification | | Pedagogue of professional education |

## Training concept

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.

## Tentative thematic of bachelor degree thesis

1. Ways of pedagogical mastery forming of future teachers in technical colleges and establishments of higher education.
2. Activation of students' cognitive and studying activity.
3. Methods of controlling progress.
4. Methods individual work organizing
5. Personality forming of future specialist in spheres of environmental protection and agricultural establishments of higher education according national patriotic values.

**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

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 Speciality "Professional education (technology of production and processing of agricultural products)"
# Educational Program "Professional education (technology of production and processing of agricultural products)"

| № | Subject | Term | Volume | |
|---|---|---|---|---|
| | | | Hours | ECTS credits |
| **1. STANDARD ACADEMIC DISCIPLINES** | | | | |
| 1 | Valeology and basic medical knowledge | 4 | 120 | 4 |
| 2 | Personal ecoculture | 2 | 120 | 4 |
| 3 | Leadership and administration | 6 | 120 | 4 |
| 4 | General and professional pedagogics | 1 | 210 | 7 |
| 5 | Educational work organising | 2 | 120 | 4 |
| 6 | Management of educational establishments | 7 | 120 | 4 |
| 7 | Basics of scientific and pedagogic research | 3 | 120 | 4 |
| 8 | Psychology | 1,2,3 | 360 | 12 |
| 9 | Psychology of work | 4 | 120 | 4 |
| 10 | Basics of pedagogic mastery | 5 | 120 | 4 |
| 11 | Pedagogical technologies | 4 | 120 | 4 |
| 12 | Legislation of Management of educational establishments | 5 | 120 | 4 |
| 13 | New information technologies | 2 | 120 | 4 |
| 14 | Introduction to speciality | 2 | 150 | 5 |
| 15 | Pedagogics of family education | 3 | 120 | 4 |
| 16 | History of pedagogics and education in Ukraine | 1 | 120 | 4 |
| 17 | Teaching technologies of professional subjects | 7,8 | 300 | 10 |
| 18 | Basics of career-guidance | 8 | 120 | 4 |
| 19 | Comparative pedagogics | 6,7 | 240 | 8 |
| 20 | Pedagogical ethic | 8 | 120 | 4 |
| 21 | Basics of eloquence | 8 | 120 | 4 |
| 22 | Foreign history of pedagogics and education | 4 | 120 | 4 |
| 23 | Basics of economical knowledge | 6 | 120 | 4 |
| 24 | Social work in entertainment sphere | 7 | 120 | 4 |
| 25 | Age and pedagogical psychology | 4 | 120 | 4 |
| Total with compulsory subjects | | | 3660 | 122 |
| **2. OPTIONAL SUBJECTS** | | | | |
| **2.1. *Subjects (selected by the university)*** | | | | |
| 1 | History of Ukraine | 1 | 120 | 4 |
| 2 | Ethnoculturology | 3 | 120 | 4 |
| 3 | Philosophy | 2,3 | 210 | 7 |
| 4 | Ukrainian language in professional communication | 1 | 120 | 4 |
| 5 | Foreign language | 1,2,3,4 | 240 | 8 |
| 6 | Physical training | 1,2,3,4 | 240 | 8 |
| 7 | Legal culture | 3 | 120 | 4 |
| 8 | Latin language | 3 | 120 | 4 |
| Total *(selected by the university)* | | | 1140 | 38 |
| **2.2. *Subjects (selected by the student)*** | | | | |
| 1 | Higher mathematics | 2 | 120 | 4 |
| 2 | Horticulture | 6,7 | 180 | 6 |
| 3 | Botanic | 2 | 120 | 4 |
| 4 | Selection and seed growing | 5 | 120 | 4 |
| 5 | Farming | 4 | 120 | 4 |
| 6 | Mechanization, electrification and automation of agricultural production | 8 | 120 | 4 |
| 7 | Physiology of plants | 5 | 120 | 4 |
| 8 | Chemistry | 3 | 120 | 4 |
| 9 | Plant cultivation | 6,7 | 240 | 8 |
| 10 | Phytopathology | 6 | 120 | 4 |

| | | | | |
|---|---|---|---|---|
| 11 | Agrochemistry | 5 | 120 | 4 |
| 12 | Soil science and basics of geology | 5 | 120 | 4 |
| 13 | Forage producing and grass-farming | 5 | 120 | 4 |
| 14 | Technology of storing and processing of plant growing products | 8 | 120 | 4 |
| 15 | Biology | 4 | 120 | 4 |
| 16 | Physics | 2 | 120 | 4 |
| 17 | Ecological safety | 5 | 120 | 4 |
| 18 | Environmental protection and sustain environmental management | 6,7 | 300 | 10 |
| 19 | Social ecology | 5 | 120 | 4 |
| 20 | Meteorology and climatology | 2 | 120 | 4 |
| 21 | Management of quality of agricultural products | 8 | 120 | 4 |
| 22 | Ecological protection of agrosytsems | 6,7 | 180 | 6 |
| 23 | Monitoring of environment | 5 | 120 | 4 |
| 24 | Ecological analysis | 6 | 120 | 4 |
| 25 | Chemistry and biogeochemistry | 5 | 120 | 4 |
| 26 | Geology and basics of geomorphology | 3 | 120 | 4 |
| 27 | Ecological legislation | 8 | 120 | 4 |
| 28 | Dendrology | 5 | 120 | 4 |
| 29 | General ecology | 5 | 120 | 4 |
| 30 | Basics of forest exploitation | 8 | 120 | 4 |
| 31 | Forest phytopathology and entomology | 5 | 120 | 4 |
| 32 | Geodesy | 4 | 120 | 4 |
| 33 | Forest zoology | 5 | 120 | 4 |
| 34 | Organising of forestry production | 8 | 120 | 4 |
| 35 | Mechanization of forestry | 5 | 120 | 4 |
| 36 | Forest crops | 6,7 | 240 | 8 |
| 37 | Forestry | 6 | 120 | 4 |
| 38 | Forest melioration | 6,7 | 180 | 6 |
| 39 | Auditing | 8 | 120 | 4 |
| 40 | Microeconomics | 3 | 120 | 4 |
| 41 | Marketing | 5 | 120 | 4 |
| 42 | Macroeconomics | 5 | 120 | 4 |
| 43 | Economics of enterprise | 5 | 120 | 4 |
| 44 | Management | 5 | 120 | 4 |
| 45 | Tax system | 8 | 120 | 4 |
| 46 | Accounting | 4 | 120 | 4 |
| 47 | Informatics | 2 | 120 | 4 |
| 48 | Agricultural management | 6,7 | 180 | 6 |
| 49 | Finances | 6,7 | 300 | 10 |
| 50 | Organizing of production | 6 | 120 | 4 |
| 51 | Money and credits | 5 | 120 | 4 |
| 52 | Ukrainian and foreign culture | 6,7 | 180 | 6 |
| 53 | Floriculture | 2 | 90 | 3 |
| 54 | Folklore | 5 | 120 | 4 |
| 55 | Ethics and etiquette | 3 | 120 | 4 |
| 56 | Composition and colour study | 5 | 120 | 4 |
| 57 | Painting | 4 | 120 | 4 |
| 58 | Decorative floristic | 6,7 | 300 | 10 |
| 59 | Basics of arrangement | 6 | 120 | 4 |
| 60 | Aesthetics | 5 | 120 | 4 |
| 61 | Decorative art | 8 | 120 | 4 |
| 62 | Phytodesign | 5 | 120 | 4 |
| 63 | Theory and methodology of design | 8 | 120 | 4 |
| **Total (specialty)** | | | **2040** | **68** |
| **Total (selection of student)** | | | **2040** | **68** |
| **Total (optional)** | | | **3090** | **103** |

| | | | | |
|---|---|---|---|---|
| **3. OTHER TRAINING** | | | | |
| 1 | Military training | 5-8 | 870 | 29 |
| 2 | Studying practice | 2,4 | 210 | 7 |
| 3 | Industrial practice | 6,8 | 180 | 6 |
| **Bachelor thesis or project** | | | **60** | **2** |
| **Total (without military training)** | | | **7200** | **240** |

## Annotations of disciplines in the curriculum

### 1. Standard academic disciplines

**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.

**Personal eco-culture.** The relationship of man and environment, requirements to ecological culture, formation of ecological culture of the individual.

**The rationale of 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.

**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 at the HEI.** 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.

**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.

**Foundation for scientific and educational 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.

**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.

**Psychology of work.** To familiarize students with the regularities of the labour process, the psychological requirements of the individual employee; to reveal the content and place of labour psychology in the system of scientific knowledge, the history of its formation, laws, principles, approaches, methods, psychological meaning of work; to do psychological problems of work incentives and motivation, problems, progress, performance, and professional potential of the modern worker, self-realization in various types of professional activities, as well as the psychological problems of study of the professions in modern social and cultural conditions.

**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.

**Legislative framework for the management of educational institutions.** 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 information technologies.** The discipline considers the processes of information processing with regard to the role and place of these processes in the development of knowledge and society.

**Introduction to the specialty.** The discipline outlines the main tasks and functions of the professional learning teacher, requirements to his personality and the organization of labour conditions.

**Pedagogy of family upbringing.** 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 pedagogy 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.

**Technology of teaching of professional disciplines.** 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.

**Basics of vocational guidance.** The discipline is aimed at the study of theoretical problems of vocational guidance of youth, the characteristics of the role and place of secondary school in the process of career guidance, learning basic patterns, trends and structures of the organization of vocational guidance work of the vocational training teacher; providing the future organizers of career guidance with modern techniques and practical skills necessary for successful professional activity.

**Comparative pedagogy.** 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.

**Professional and pedagogical ethics.** 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.

**Foundations of eloquence.**The discipline makes students familiar with the basic laws of speech activity, its mechanisms, patterns, methods and techniques, mastery of practical skills of creating a persuasive and effective speech, a multifaceted possibilities of the art of the word, the emotional and intellectual interaction with the listener with the aim of pedagogical influence on him as a person.

**History of pedagogy and education in foreign countries.** 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.

**The principles 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.

**Social work in the sphere of leisure.** 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.

**Developmental and pedagogical psychology.** 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.

## 2. Elective academic disciplines

### *2.1. Disciplines offered by University*

Annotations of courses "History of Ukrainian statehood" "Ethnoculturology", "Philosophy", "Ukrainian language for professional purposes", "Foreign language", "Physical training", " Latin language", " Legal culture of personality" see Section 2.1.

**Latin language.** Mastering the Latin language knowledge, as well as skills needed to translate Latin texts and using Latin terminology in training, scientific and production activity.

### *2.2. Disciplines offered by students*

#### *2.2.1. Specialization "Technology of production and processing of agricultural products"*

**Higher mathematics.** The course provides students with knowledge of the main branches of higher mathematics in correspondence with the direction of their training: definitions, theorems, rules, development of skills to formulate learning objectives and construct their mathematical models, choose methods of research of the constructed models, conduct quantitative analysis by applying precise or approximate methods of calculations, modern computing equipment, process numerical experimental data by applying methods of mathematical statistics, analyze the data and evaluate the results obtained.

**Fruit and vegetable growing.** The course focuses on the importance of fruit and berry plants, their morphological and biological characteristics, methods of reproduction, rootstocks, the structure of a fruit nursery and technology of growing seedlings, installing fruit plants, maintenance and soil cultivation systems in gardens, plant fertilization and irrigation, shaping and pruning fruit trees, crop care and other types of work in gardens, preparing and harvesting technology, biological characteristics and crop cultivation technologies. The lectures cover the biological bases of vegetable crops, peculiarities of soil preparation and fertilization, plant reproduction, cultivation of seedlings for open ground, general measures for plant care, harvesting, and principles of vegetable crop rotations. In laboratory and practical classes students study morphological characteristics of vegetable crops, their classification, the species composition of seeds, their germination, reproduction methods, estimate the requirements for the seedlings of seeds of various crops.

**Botany.** The course focuses on learning the patterns of plant growth and vegetation as the most important bioenergetic component of the biosphere. The students obtain skills of working with a microscope, producing preparations and making their cellular and tissue analysis, as well as the analysis of separate organs and the whole organism.

**Selection and field crop seed production.** 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.

**Arable 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 ownership; theoretical principles of soil tillage and protection from erosion; arable farming systems and their zonal characteristics.

**Mechanization, electrification and automation of agricultural production.** The discipline provides the essential amount of information on functions, structure, design features, working procedures and regulations, operation mode adjustment of agricultural machinery, efficient part kitting and exploitation of tractor units.

**Plant physiology.** The discipline studies the main physiological processes in plants, physiology and biochemistry of plant cells, water exchange of plants, photosynthesis, respiration, mineral nutrition, plant growth and development, plant resistance to adverse conditions.

**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.

**Plant cultivation.** The course provides knowledge about cultivation of grain, potatoes, sugar beet, sunflower seed and other crop products. The knowledge basis is field crops, peculiarities of their growth and development, requirements to environmental factors, up-to-date methods and technologies of obtaining high yields of quality products with the minimum costs of labor and resources. The students obtain the knowledge about the state and prospects of development of plant cultivation, its importance, morphological and biological characteristics of field crops, modern technologies of cultivation, including intensive ways and means of improving the quality of agricultural products, reduction of labor costs and means of crop cultivation.

**Phytopathology.** The course studies the disease processes in plants, their causes and methods of combating them.

**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.

**Soil science with the basics of Geology.** 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.

**Forage production and meadow cultivation.** 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.

**Technology of storage and processing of crop production.** 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.

**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 reservators of viral infections in agrocenoses.

**Physics.** Physical fundamentals of mechanics, fundamentals of molecular physics and thermodynamics, constant electric current, electromagnetism, electromagnetic oscillations and waves.

**Environmental safety.** The course provides knowledge of fundamental and applied aspects of ecological safety of the environment, abilities and skills in using methods and techniques of assessing the impact on the environment, identification of risks of emergencies, processing, analysis, systematization and generalization of information on environmental security.

**Environmental protection and sustainable use of natural resources.** 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.

**Social ecology.** Formation of knowledge in the reasons, scales and consequences of national nature management, finding the ways of overcoming of current crisis under the relations of society and nature, social and ecological consciousness, new ethical treatment of a human-being to the nature; ability and skills to develop the principles of management of anthropogenic and natural ecosystems.

**Meteorology and climatology.** Formation of knowledge about the key meteorological factors, properties and physical processes, meteorological phenomena and mechanisms; gaining skills in assessment of synoptic weather, meteorological factors of influence on agro sphere, the use of meteorological observations for complex ecological analysis of the environment and making of important ecological decisions.

**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 .

**Ecological protection of agricultural ecosystems.** 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.

**Monitoring of the 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, phito sanitary monitoring of pests in agrocoenosis; skills and ability to conduct ecological and land reclamation monitoring of irrigated and dried soils, to determine the extent of diseases prevalence.

**Ecological expertise.** 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.

**Chemistry with the principles of bio geo chemistry.** 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.

**Geology with the principles of geo morphology.** Formation of knowledge about creation of typification and classification of the forms of relief and geo morphological division into districts of the territory, interrelations and correlation between geological structures and morphology of relief; ability to establish interrelations of soil formation factors, identify erosion processes under various soil climatic and geo morphological conditions, evaluate anti erosion measures and their role in improvement of the environment.

**Ecological law.** 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.

**Dendrology.** Plant ecology. Species, interspecific systematic units. Area types. Vital forms and cycles. Philogenetic system. Dendro flora of Ukraine. Plant introduction. Phitocoenology. Forest formation and association.

**Principles of forest use.** 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.

**Forest phitopathology and forest 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.

**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.

**Forest zoology.** Species and peculiarities of expansion of representatives of forest fauna; the consequences of anthropogenic effect on forest; the examples of positive and negative effect of mammals and birds on forest environment; the understanding of the reasons of extinction of animals and the ways of their preservation; the principles of legislation as to animal preservation.

**Organization of forest 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.

**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.

**Forest plants.** 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.

**Silviculture.** Practical silviculture. Systems and ways of forest cutting. Cutting inspection. Increase of forest productivity.

**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.

**Audit.** 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.

**Microeconomics.** The aim of the discipline is formation of market oriented outlook, knowledge and skills as to finding out the mechanisms of establishment and renewal of the balance of micro systems and increase of the efficiency of economic entity activity. In order to achieve the aim there are the following tasks: understanding of reasons, key regularities and methodological principles of behavior of economic entities under the market conditions at micro level; mastering of universal tools for self analysis and substantiation of making optimal economic decisions under the conditions of insufficiency of means and availability of alternative possibilities.

**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 I 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.

**Macroeconomics.** The aim of the discipline is giving deep theoretical knowledge in the issues of functioning of the economy – the important sphere of human vital activity, the effect of objective economic laws, introduction of methods and conditions of efficient economic activity and the whole systematic concept of macroeconomic theory and policy.

**Economy of an enterprise.** Economic mechanism of functioning of an enterprise, formation and use of its resource potential with aim of optimization of economic performance.

**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.

**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.

**Accounting.** The purpose of the discipline is to form knowledge system in theory and practice of accounting in the enterprise. The main objectives of discipline "Accounting" is to study methods, rational organization and accounting in enterprises based on the use of advanced forms and national standards; to master skills of processing and use of accounting information in management.

**Computer science.** The purpose of the course is to develop knowledge in principles of computer construction and operation, organization of computing processes on personal computers and their algorithmization, both PC software, computer networks, and effective use of modern information and communication technologies in professional activity. The main objectives of the course is to study theoretical foundations of computer science and to master skills in applied systems using of economic data processing; PC programming systems; computer networks in the process of social and economic systems studying. It provides the study of four informative modules: the architecture of modern computer, modern text information processing software, operations with MS Excel spreadsheet software and advanced software for processing graphic data.

**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.

**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.

**Organization 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.

**Money and credit.** The purpose of the course "Money and Credit" is to provide students with theoretical and practical knowledge in organization cash flow management, to form students' theoretical basis for the next practice mastering in monetary instruments use in the regulation system of Ukrainian economy. It is important to study economic relations with money turnover, including as a means of circulation and use of credit relations in modern economy.

**Ukrainian and world culture.** Fundamental achievements of the national culture as an integral process of global cultural environmental have been analyzed. Unity and diversity of the Ukrainian and world cultures, the role and importance of culture in life, creativity and self-identity in the humanization of social relations have been revealed. The development of Ukrainian culture covers the period from its sources to new aspirations of integration into the global cultural environment.

**Floriculture.** The discipline "Floriculture" involves studying biological and ecological features of the development, propagation and farming of flower-ornamental crops of unprotected soil, mastering theoretical knowledge of growth and development peculiarities of annual, biennial, perennial flowers and decorative plants, used to make different types of flowerbeds, gaining practical skills in their breeding and planting, flower development projects. The study of cultivation technology in protected ground is provided in the second part of the course.

**Folklore.** The discipline highlights the development of folk art from the origins to the present, text peculiarities under certain historical conditions. A new periodization and classification of folklore genres with current research of history, ethnic psychology, cultural study, and mythology has been suggested. Each folk art phenomenon is seen in its correlation with fiction.

**Ethics and etiquette.** Morality as a social phenomenon, as a cultural phenomenon and as a form of worldview is considered, moral issues of human consciousness, activity and communication have been highlighted. Internal, existential aspects of morality, the issues of good and evil, responsibility, sense of life, happiness, justice and love has been revealed. A number of actual ethical issues including correlation of moral and law, morality and politics, national and universal moral values.

**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, biotsenology (synecology), biogeotsenology (ekosystemology) and biospherelogy (global ecology). The course considers applied environmental issues – natural, social and technological.

**Composition and chromatics.** Composition, painting, anatomy, perspective, drawing and chromatics are studied by future artists.

**Drawing and 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.

**Decorative floristics.** 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.

**Fundamentals 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.

**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 and Russian 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.

**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.

**Floristic design.** 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.

**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.

**Technology of production and processing of crop production.** The main purpose of discipline is to provide knowledge to create optimal process (agro-ecological) conditions of the required number of high-quality crop production based on intensive photosynthesis in crops field crops while maintaining or improving soil fertility. The key task of it is: getting practical skills in production high-quality, environmentally friendly products with minimal energy and labor costs while maximizing its output per unit time per unit area that requires large-scale introduction of high-grade, intensive, energy-saving and environmentally appropriate technologies. The purpose of discipline is giving future marketing specialists professional knowledge of the main characteristics of the product, from a stage production and finishing of pre-sale preparation. The discipline studies technological regulations that determine the quality of products and by its price parameters. Students acquire practical skills with the products, allowing their careers to forecast supply and demand for it.

**Bachelor**
**Field of Knowledge «Journalism»**
**In Specialty «JOURNALISM»**
**Education 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 |

## Training Concept

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).

**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

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»
# Education program «Journalism»

| № | Name of Academic Discipline | Semester | Amount | |
|---|---|---|---|---|
| | | | hours | credits ECTS |
| **1. STANDARD ACADEMIC DISCIPLINES** | | | | |
| 1 | Ukrainian and world culture | 5 | 90 | 3 |
| 2 | Civil law | 3 | 90 | 3 |
| 3 | Agrarian discourse | 6 | 90 | 3 |
| 4 | Practical stylistic | 6 | 120 | 4 |
| 5 | Oral Broadcasting Technique | 1 | 90 | 3 |
| 6 | Culture of broadcasting | 2 | 150 | 5 |
| 7 | Culture of writing speech | 4 | 150 | 5 |
| 8 | Agency journalism | 3 | 120 | 4 |
| 9 | Introduction | 1 | 150 | 5 |
| 10 | Basics of Journalism | 1 | 120 | 4 |
| 11 | Photojournalism | 3 | 120 | 4 |
| 12 | Newspaper production | 4 | 180 | 6 |
| 13 | Radioproduction | 3 | 120 | 4 |
| 14 | Television Production | 2 | 150 | 5 |
| 15 | Cross-Media and Journalism | 7 | 120 | 4 |
| 16 | Professional standard of journalistic activity | 2 | 120 | 4 |
| 17 | The History of Ukrainian Journalism | 3, 4 | 240 | 8 |
| 18 | History of foreign journalism | 3, 4 | 150 | 5 |
| 19 | Literary editing | 5 | 90 | 3 |
| 20 | Media Regulation | 6 | 120 | 4 |
| 21 | The theory of mass communication | 1, 2 | 180 | 6 |
| 22 | Communication technology | 6 | 150 | 5 |
| 23 | The Theory of Journalism | 2 | 150 | 5 |
| 24 | Theory of work and text | 6 | 90 | 3 |
| 25 | Media Criticism | 7 | 90 | 3 |
| 26 | Information genres in print press | 5 | 90 | 3 |
| 27 | Analytical journalism | 4 | 120 | 4 |
| **Total for standard part** | | | **3450** | **115** |
| **2. ELECTIVE ACADEMIC DISCIPLINES** | | | | |
| **2.1. *Disciplines offered by University*** | | | | |
| 1 | History of Ukrainian Statehood | 1 | 90 | 3 |
| 2 | Modern Ukrainian language | 1-4 | 330 | 11 |
| 3 | Foreign language (for professional purposes) | 1-4 | 300 | 10 |
| 4 | Philosophy and logic | 2 | 120 | 4 |
| 5 | Safety of Vital Activity | 5 | 90 | 3 |
| 6 | Basics of the scientific research | 3 | 90 | 3 |
| 7 | Physical education | 1-4 | 240 | 8 |
| **Total (Disciplines offered by University)** | | | **1020** | **34** |
| **2.2. *Disciplines offered by students*** | | | | |
| **2.2.1. *Specialization* Journalism** | | | | |
| 1 | Ukrainian literature | 5 | 120 | 4 |
| 2 | Latin language | 1 | 120 | 4 |
| 3 | Diplomatic protocol | 8 | 150 | 5 |
| 4 | Genres in Internet media | 6 | 120 | 4 |
| 5 | Java Programing | 6 | 120 | 4 |
| 6 | International organizations | 5 | 120 | 4 |
| 7 | Workshop on International Journalism | 7 | 90 | 3 |
| 8 | Special course. Ukraine and the international information space | 4 | 90 | 3 |
| 9 | Special course. Problems of agrarian development in Ukrainian and international mass media | 5 | 90 | 3 |

| | | | | |
|---|---|---|---|---|
| 10 | Special course. International news agencies | 6 | 90 | 3 |
| 11 | Special course. Presentation of international news | 7 | 90 | 3 |
| 12 | Legal discourse in the media | 7 | 90 | 3 |
| 13 | Virtual Newsroom | 5 | 90 | 3 |
| 14 | Special course. Case-law texts in crossover communication | 8 | 120 | 4 |
| 15 | Workshop on the activities of international institutions and organizations of agrarian profile | 8 | 90 | 3 |
| 16 | International Journalism | 8 | 150 | 5 |
| 17 | Journalistic investigation | 7 | 120 | 4 |
| 18 | Multimedia Products | 7 | 90 | 3 |
| 18 | Workshop on the analysis of organizations and authorities international activities | 8 | 90 | 3 |
| 20 | Advertising and PR | 8 | 120 | 4 |
| 21 | Actual Problems in International Journalism | 7 | 120 | 4 |
| **Total (Disciplines offered by students)** | | | **2280** | **76** |
| **Total (Disciplines offered by University)** | | | **1020** | **38** |
| **Total for elective part** | | | **3300** | **110** |
| **3. OTHER TYPES OF TRAINING** | | | | |
| 1 | Academic (orientation) practice | | 60 | 2 |
| 2 | Production practice | | 120 | 4 |
| 3 | Production (journalistic) practice | | 120 | 4 |
| 4 | Production (pre-diploma) practice | | 120 | 4 |
| 5 | Complex state exam | | 30 | 1 |
| | | **Total** | **450** | **15** |
| | | **Total amount of hours** | **7200** | **240** |

## Annotations of disciplines in the curriculum

### 1. Standard academic disciplines

**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.

**Civil law.** The concept of civil law of Ukraine, its subject and methods of legal regulation. Sources of Civil Law of Ukraine. Trends of development of civil legislation of Ukraine. The concept, 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.

**Agrarian discourse.** Theories of text and discourse in linguistics. Generation and understanding of discourse. Discursive analysis as linguistic discipline. Social spheres of discourse. Typology of agrarian discourse. Thematic and conceptual organization of agrarian discourse. Cognitive model of agrarian discourse. Micro- and macrostructures of agrarian discourse. Correlation between traditions and innovations in agrarian discourse. Discursive means. Means of speech influence. Grammar of agrarian discourse. Intertextuality. Problem of authorship.

**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 orphoetic, 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 phantom respiration, articulation, speech accent, diction.

**Culture of writing speech.** Standards for writing. Stylistic differentiation of modern Ukrainian literary language. Structure and requirements for written communications. Requirements for different types of documents. Selection of linguistic means. Analysis and editing of texts.

**Agency journalism.** The specifics of the activities of news agencies. The role of news agencies in the media space. Principles and criteria for selecting information for messages. Information for writing materials. Creating information products. Work with different sources of information.

**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.

**Basics of Journalism.** Theoretical foundations of the journalistic specialty. The difference from the art work, the features of different types of journalism. History of journalism development in Ukraine. The кole of the Media in a Democratic Society. The ethics of the media, the journalist's code of professional behavior, his social responsibility. Organization of editorial and publishing work in journalism.

**Photojournalism**. The photo and its variants: history of origin; basic camera settings; basic concepts of photo analysis; types of genres of photojournalism; photojournalism in the system of mass media: newspaper, magazine, Internet publications, advertising; camera angle; composition in photo; illumination (high and low key photos); colors (photos in warm and cold colors); genres of photography; reportage shooting; Bild-editing Photojournalism The photo and its variants: history of origin; basic camera settings; basic concepts of photo analysis; types of genres of photojournalism; photojournalism in the system of mass media: newspaper, magazine, Internet publications, advertising; choice of shooting angle; composition in photography; lighting (high and low key photos); colors (photos in warm and cold colors); genres of photography; reportage shooting; Bild-editing.

**Newspaper production.** Consideration of the main stages of the print media preparation, process review of the publication registration, analysis of the process of organizing work at newspaper and magazine editorial offices.

**Radioproduction.** 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.

**Cross-Media and Journalism.** Study of peculiarities of cross-media communication. Determining the role of functional information systems in the global media stream. Analysis of the structures of modern international crosstalk systems.

**Professional standard of journalistic activity**. 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 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 form.

**History of foreign journalism.** The phenomena of prajournalism. 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 joiningo the international information space.

**Communication technology.** 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 lournalism 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 print press.** 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.

## 2. Elective academic disciplines

### *2.1. Disciplines offered by University*

**History of Ukrainian Statehood.** The content of theeducational 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 comprehendon their own laws of the state building process, orientate in political life and feel their involvementin the state-thousand-year tradition of the Ukrainian people.

**Modern Ukrainian language.** 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.

**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.

**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.

### *2.2. Disciplines offered by students*

**Ukrainian literature.** History of the development of Ukrainian literature. The main artistic methods, directions, schools. The works of leading Ukrainian writers, the interconnection of Ukrainian and other national literatures. Analysis of works of art. Activities and creativity of the writer in the historical and social context. Methods of literary-critical analysis.

**Latin language.** Mastering the Latin language knowledge, as well as skills needed to translate Latin texts and using Latin terminology in training, scientific and production activity.

**Diplomatic protocol.** The history of diplomatic protocol, specifics of diplomatic negotiations protocol; major diplomatic documents, their analysis.

**Genres in Internet media.** Tendencies of the development of the system of genres of modern journalism. Internet journalism as a new kind of journalism. Offline and online media: general and excellent. Content Types. The genre field of online journalism. The phenomenon of public journalism on the Internet.

**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.

**International organizations.** The nature of the international organizations functioning, historical background and classification; the role of international organizations in organizing the world political and economic space, as well as in the life of Ukraine.

**Workshop on International Journalism.** The main milestones of media development in the countries of the West, East, America, Asia and Africa from ancient times to the present. The main types of editions and individual genres of foreign journalism. Specificity, history and contemporary world schools of journalism. Specificity of methods and techniques of international journalist activity.

**Special course. Ukraine and the international information space.** The essence of the information space, the features of its functioning and the impact on the functioning of various spheres of socio-cultural life of the community. Worldwide information flows and their impact on the state of affairs in Ukraine and around Ukraine. Mechanisms and means of operating information flows and protection against information attacks.

**Special course. Problems of agrarian development in Ukrainian and international mass media.** The course is aimed at studying the problems of agrarian development in Ukrainian and international media, learning its methodology and coverage,

understanding the influence of the author's personality on the content and the form of journalistic work within the framework of agrarian subjects; understanding of the features of the modern information space in Ukrainian and international media, learning the mechanisms of searching for information sources.

**Special course. International news agencies.** Formation history of international information institutions, periodization of the process and its features. Professional and moral ethical principles of professional activity. The place of international news agencies in the modern system of world media and the life of a global society.

**Special course. Presentation of international news.** The course is necessitated by the need for preparing an international journalist and involves studying the experience of presenting international news in the modern information context, its role and place in the editorial structure, in particular television, as well as the need to analyze the specifics, functional features and prospects in the process of integrating the national information space into European and world one.

**Legal discourse in the media.** Ensuring freedom of speech in the state. The formation of a national information space. Study of legal discourse in terms of persuasion and motivation to legal action.

**Virtual Newsroom.** Principles of the virtual newsroom work of the media, its structure and tasks. The range of journalists' duties, methods, forms and methods of activity on the Internet. Legal basis of journalistic activity in Ukraine.

**Special course. Case-law texts in crossover communication.** The professional training of a journalist implies a diligent work with the word as the main object of study and as the main means of information transmission. The course focuses on assimilating the methodological principles of constructing and analyzing mass-media texts, taking into account the specifics of cross-media communication, as well as developing skills and practical skills of editorial work with the text while conducting radio and television programs.

**Workshop on the activities of international institutions and organizations of agrarian profile.** Classification, normative legal principles of activity, main determinants of institutional influence on the development of the agrarian sector, key problems of the theory and practice of international organizations, potential, patterns of development, role and place in the system of international agricultural relations.

**International Journalism.** Journalistic functions. 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.

**Journalistic investigation.** The place and role of the journalistic investigation in modern journalism. Genre specificity of investigative journalism. Varieties of journalistic investigations. Technology of Journalistic Investigation. Ethical principles of journalistic investigations.

**Multimedia Products.** 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. Basics of working with multimedia equipment.

**Workshop on the analysis of organizations and authorities international activities.** International organizations and movements, collegial advisory and administrative bodies, their types and functioning features. Procedure of issues consideration and decision-making. Mechanisms and ways of decisions implementation of international organizations and institutions in the legal field of a sovereign state and political activity of its authorities and civil organizations.

**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.

**Actual Problems in International Journalism.** The problem of world media periodization. The main tendencies of modern world media development. The place and significance of international journalism in the world and the media system. Legal regulation of journalistic activities abroad.

**Bachelor**
**Field of Knowledge «Social and Behavioral Science»**
**In Specialty «PSYCHOLOGY»**
**Educational Program «Psychology»**

| | |
|---|---|
| Form of study: | Licensed size, persons: |
| – regular | 50 |
| – virtual | 50 |
| Time of study: | |
| – regular educational-professional program | 4 years |
| – virtual educational-professional program | 5 years |
| Credits ECTS | |
| – educational-professional program | 240 |
| Language | Ukrainian |
| Qualification of graduates | psychologist |

## The conception of training

The training of a psychologist is conditioned by the need of our state in specialists providing psychological assistance to an individual, a group. Professional activity of this specialist includes 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.

## 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 institutions, legal services for providing expert services in positions (according to the classification of professions in Ukraine): 2445.2 - psychologist, 2445.2 - practical psychologist, 1232 - chief psychologist, 2412.2 - professional development personnel, 5131 - tutor.

# Bachelor`s Program and Curriculum in Specialty "Psychology" Educational Program "Psychology" (educational and professional training program)

| № п/п | Title of educational discipline | Semestr | Size | |
|---|---|---|---|---|
| | | | hours | Credits ECTS |
| **1. STANDARD ACADEMIC DISCIPLINES** | | | | |
| 1. | General psychology | | 120 | 4,0 |
| 2. | History of psychology | | 120 | 4,0 |
| 3. | Developmental psychology | | 180 | 6,0 |
| 4. | Educational psychology | | 180 | 6,0 |
| 5. | Social psychology | | 180 | 6,0 |
| 6. | Pathopsychology | | 150 | 5,0 |
| 7. | Training on general psychology | | 180 | 6,0 |
| 8. | Psychodiagnostic | | 120 | 4,0 |
| 9. | Mathematical methods in psychology | | 120 | 4,0 |
| 10. | Experimental psychology and bases of research | | 240 | 8,0 |
| 11. | Psychological correction | | 120 | 4,0 |
| 12. | Psychology of communication | | 120 | 4,0 |
| 13. | Psychology of personality | | 150 | 5,0 |
| 14. | Clinical psychology | | 120 | 4,0 |
| 15. | Psychology of conflicts | | 120 | 4,0 |
| 16. | Gender psychology | | 120 | 4,0 |
| 17. | Ethic and psychology of family relations | | 120 | 4,0 |
| 18. | Psychology of creativeness | | 120 | 4,0 |
| 19. | Bases of psychological consultation | | 150 | 5,0 |
| 20. | Socio-psychological training | | 120 | 4,0 |
| 21. | Psychological services in the system of education | | 120 | 4,0 |
| 22. | Psychological support in crisis and extremal situiations | | 150 | 5,0 |
| 23. | Organizational psychology | | 120 | 4,0 |
| 24. | Bases of psychotherapy | | 150 | 5,0 |
| 25. | Methodics for psychological expertizing | | 120 | 4,0 |
| 26. | Physical education | | 240 | 8,0 |
| **Totally** | | | **3750** | **125** |
| **2. SELECTIVE ACADEMIC DISCIPLINES** | | | | |
| **2.1. Disciplines offered by University** | | | | |
| 27. | Ukrainian for Professional Studies and Documentation | | 120 | 4,0 |
| 28. | History of Ukrainian statehood | | 120 | 4,0 |
| 29. | Philosophy | | 120 | 4,0 |
| 30. | Logic | | 120 | 4,0 |
| 31. | Ethics and aesthetics | | 120 | 4,0 |
| 32. | Foreign language for professional orientation | | 180 | 6,0 |
| 33. | Ethnocultural studies | | 120 | 4,0 |
| 34. | Legal culture of personality | | 120 | 4,0 |
| 35. | Safety of work and life | | 120 | 4,0 |
| **Totally** | | | **1140** | **38** |
| **2.2. Disciplines offered by students** | | | | |
| 36 | Fundamentals of Human Biology and Genetics<br>The basics of demography<br>Anthropology | | 120 | 4,0 |
| 37 | Latin | | 120 | 4,0 |
| 38 | Second foreign language (polish) | | 120 | 4,0 |
| 39 | Sociology<br>Media literacy<br>Modern information technologies | | 120 | 4,0 |
| 40 | Ukraine in the context of European history<br>Ukrainian Studies | | 120 | 4,0 |

| | | | | |
|---|---|---|---|---|
| 41 | Philosophy of psychology | | 120 | 4,0 |
| 42 | Anatomy and evolution of the nervous system<br>Zoopsychology<br>Comparative psychology | | 120 | 4,0 |
| 43 | Psychophysiology<br>Anatomy and physiology of higher nervous activity | | 120 | 4,0 |
| 44 | Religious studies<br>Psychology of Religion | | 120 | 4,0 |
| 45 | Ecology<br>Ecological psychology | | 120 | 4,0 |
| 46 | Politology<br>Political psychology | | 120 | 4,0 |
| 47 | Psychology of Sport<br>Legal psychology<br>Engineering Psychology | | 120 | 4,0 |
| 48 | Economy<br>Fundamentals of Management<br>Basics of entrepreneurial activity<br>Management of the psychologist's work | | 120 | 4,0 |
| 49 | Pedagogy<br>Methodology of teaching psychology<br>Methodological and theoretical problems of psychology | | 120 | 4,0 |
| 50 | Non-governmental sector and volunteering<br>Psychology of volunteer activity<br>Social Guidance<br>Psychology of inclusive education | | 120 | 4,0 |
| **Totally** | | | **1800** | **60** |
| **Totally** | | | **2940** | **98** |
| **3. OTHER TYPES OF TRAINING** | | | | |
| 1 | Military training | | 870 | |
| 2 | Cultural and educational training | | 315 | |
| 3 | Educational (specializing in specialty) practice | | 60 | 2,0 |
| 4 | Educational (diagnostic-correction) practice | | 90 | 3,0 |
| 5 | Training (rehabilitation) practice | | 60 | 2,0 |
| 6 | Professional (advisory) practice | | 150 | 5,0 |
| 7 | Professional (pre-diploma) practice | | 120 | 4,0 |
| 8 | state attestation | | 30 | 1,0 |
| **Totally** | | | **7200** | **240** |

## Annotations of disciplines in the curriculum

### 1. Standard academic disciplines

**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.

**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.

**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.

**Methods of conducting psychological examination in various fields of psychology.** Psychological examination as a professional activity. Technology of conducting psychological examination. Psychological examination in education. Psychological examination of professional activity. Psychological examination in social management. Forensic psychological examination. Medical and psychological examination. Psychological examination of advertising products.

**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. 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.

**Basics of psychological counseling.** Organization of advisory interaction. The concept of advisory contact. Technology of consulting interviews and conversations. Basic procedures for psychological counseling. Family and marriage counseling. Psychological counseling in education. Providing advisory assistance. Group counseling.

**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. The procedure of client psychological support. The concept of psychotherapeutic intervention. Therapeutic possibilities of psychoanalysis. Psychological counseling and therapy: existential and humanistic model. Cognitive-behavioral approach in psychotherapy, problems of world outlook. Principles of constructing eclectic psychotherapy: systemic eclecticism.

**Contents of the discipline.** Subject and tasks of the anatomy of the nervous system The laws of growth and development of the human body. General characteristics of the nervous system. The value of the central nervous system. Concepts about nerve centers and their properties. Spinal cord. Brain. The trunk of the brain. Longitudinal and posterior brain. Medium and intermediate brain. Ultimate brain Vegetative nervous system: sympathetic and parasympathetic, its evolution Peripheral nervous system. General concept of physiology of higher nervous activity.

**Zoopsychology.** To study the patterns of development and evolution of mental reflection at the animal level, the origin and development of mental processes in ontophyllosis and phylogeny in a comparative aspect with man. Objective: to provide an idea of the origin and evolution of the psyche; characterize the mental activity of animals; to familiarize students with the principles and methods of zoopsychology with the factors of development of psyche in phylogeny and ontogenesis; carry out a comparative analysis of the psyche and behavior of animals and humans. Contents of the discipline. Subject and tasks of zoopsychology. Principles and methods of zoopsychology. Development of psyche in phylogeny. The emergence and development of consciousness. Congenital and acquired behavior. Development of mental activity in ontogenesis. Social behavior of higher primates and man. Dependence of the psyche on the environment and structure of organs.

**Comparative Psychology.** Contents of the discipline. History of the development of comparative psychology as a science. Subject, tasks and methods of comparative psychology. Subject, tasks and methods of ethology. Ethology and physiology of GNI and psychophysiology. Instinct and learning. Imprinting as learning. Conditional reflexes (classical and instrumental) and learning. Cognitive aspects of learning. Insight as teaching. Development of the mental activity of animals in ontogenesis. Features of the psyche and behavior of individual classes of animals. Specificity of mammalian behavior. The problem of thinking, intelligence and consciousness in animals. Artistic ability of animals. Problems of sociobiology. The nature of altruism, selfishness and aggressiveness.

**Psychophysiology.** Familiarization with the methods of psychophysiological research as means of objective study of the psyche; understanding of the physiological provision of psychic phenomena on the systemic, anatomical, cellular and molecular levels; mastering applied knowledge in psychophysiology, in particular the principles of detecting lies and psycho-correction and rehabilitation with the help of biological feedback; preparation of students for a better understanding of other psychological disciplines in which psychophysiological concepts and terms are applied, in particular, to the study of general psychology, psychophysics, experimental psychology, neuropsychology, pathopsychology, psychology of work, sports psychology, etc.

**Contents of the discipline.** The subject of psychophysiology. Methods of psychophysiological research. Biological feedback. Psychophysiology of motivation and emotions. Psychophysiology of attention. Information psychophysiological systems: Psychophysiology of sensors and perception; psychophysiology of memory; psychophysiology of consciousness; psychophysiology of the subconscious; psychophysiology of thinking and language.

**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.

**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.

**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

**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.

**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 creativity and giftedness.** Psychological foundations of creativity. Basic psychological theories of creativity, giftedness and genius. The nature and peculiarities of the course of the creative process. Creativity, intuition and insight. Psychology of creative personality. Giftedness, talent, genius. Methods of psychodiagnostics and development of creative abilities. Models of psychological support and learning gifted children. Training programs for the development of creative abilities of the individual.

**Experimental psychology.** Theory and methodology of experimental psychology. Principles, structure and main stages of experimental research. Psychological measurement in experiment. Experimental hypothesis and formation of the sample of the subjects. Experimental variables, necessity and methods of their control. Validity of experimental study. Experimental plans. Statistical significance of the results of experimental research.

**Methodological and theoretical problems of psychology.** The concept of the methodology of psychology and the ratio of empirical, theoretical and methodological knowledge; peculiarities of the development and structure of the categorical apparatus of psychology; main explanatory principles of psychology; content of the main methodological problems of psychology; principles, ways and means of production of scientific and practical psychological knowledge; a non-classical vector in modern psychology; the main methodologists of modern psychology.

**Psychology of Sport.** Features of the psychology of sport as a science, its development and interconnection with pedagogical science and sports practice; psychological features of sports activity: the basis of the training and competitive process; psychological basis of an athlete's personality; features and mechanisms of development of the motivation of sports activities; specificity of self-esteem and system of claims of

athletes; features of the emotional and volitional sphere of athletes; the influence of sports activity on the psychological characteristics of the individual and the team (team).

**Legal psychology.** Socio-psychological peculiarities of the activity of a lawyer. Psychology of solving mental problems in the process of investigation and judicial review of cases. Psychological peculiarities of decision making in the branches of legal activity. Professional deformation and ways to overcome it. Psychology of criminal behavior. Interaction of objective and subjective factors of committing a crime. Structural-psychological analysis of criminal action. Psychological aspects of crime stages.

**Family 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.

**Mathematical methods in the Psychology.** The purpose of mathematical processing of the results of psychological research: synthesis, description, explanation, prediction and control. Methods of data collection; measurement; data sources (self-observation, expert assessment, instrumental measurement, objective testing); fixing quantity, intensity and duration. Measurement scales. Unit of measurement. Signs and variables. Accuracy and sensitivity of the measuring instrument. Table and graphic representation of psychological data. Concept of statistical hypotheses; Mathematical planning of the experiment. Testing of the hypothesis of the experiment..

**Psychological aid in crisis and emergency situations.** Disability issues; Suicide (Select a specific age cohort such as adolescent, college aged, mid-life, elderly). Enactment of the Advanced Declaration (Living Will). Post-trauma symptomatology. Current treatment of PTSD. Multicultural concerns in crisis intervention. The role of spirituality/religion in adaptation to trauma; 8. Bereavement – normal vs. complicated. Caregiver fatigue. Trends in victimology. 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. Emergency medical and public safety intervention models. DSM-IVTR diagnosis categories and related issues. Disaster response (agencies and models). Assessment of trauma history and impact of events. Intervention and treatment outcome studies. Impact of trauma on early childhood. Public/private school intervention models. Role and efficacy of community/national hot line services. Certification of crisis/trauma intervention specialists. The neuropsychological response to trauma/current trends in research. Post-trauma growth.

**Engineering Psychology.** Characteristics of the system "man-machine". Basic criteria for classification of systems "man-machine". Psychological foundations of human activity in systems "man-machine" Psychological peculiarities of human-operator activity. Decision making and cognitive processes. Information model and its characteristics. Conceptual model. Sensory mechanisms of human-operator activity and the preconditions for their activation. Psychomotor processes and work movements. Professionally important qualities. Principles of optimal interaction between man and technology. Mental states and performance of the human operator. Affective sphere of the human operator. Reliability of the operator in the system "man-machine".

**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.

**Pedagogical psychology.** Patterns of assimilation of social experience. 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.

**Psychology of inclusive education.** Formation of systematized representations about theoretical, normative-legal principles of introduction of inclusive form of education, peculiarities of organization, problems and perspectives of designing an inclusive educational environment for children with disorders of psychophysical development; formation of general cultural and professional competences of future educators, necessary for effective activity as organizers and executors of programs of inclusive education of children with disorders of psychophysical development.

**Psychology of volunteer activity.** To facilitate the acquisition of students with the basic knowledge of the psychology of volunteering and the skills necessary for the organization of volunteer groups in the future professional activities, as well as the development of social activity in the student's youth, the skills of conscious and active building of their own lives.

## 2. Elective academic disciplines

### *2.1. Disciplines offered by University*

**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.

**Anatomy and evolution of the nervous system.** Subject and tasks of the anatomy of the nervous system The laws of growth and development of the human body. General characteristics of the nervous system. The value of the central nervous system. Concepts about nerve centers and their properties. Spinal cord. Brain. The trunk of the brain. Longitudinal and posterior brain. Medium and intermediate brain. Ultimate brain Vegetative nervous system: sympathetic and parasympathetic, its evolution Peripheral nervous system. General concept of physiology of higher nervous activity.

**Ecological psychology.** Subject, tasks and problems of ecological psychology. Concept of environment and socioecological systems in ecological psychology. Environmental factors and their interaction with the human factor. Problems of ecological consciousness. Ecopsychological education and upbringing. Radioecology psychology.

## 2.17. EDUCATIONAL AND RESEARCH INSTITUTE OF CONTINUING EDUCATION

**Director** – PhD in Economics, Professor **Maria M. Kulayets**

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 specialty:

***242 Tourism***

Educational Program **"Tourism"**

Graduating Department:

Extension and Tourism Department Tel.: (044) 527-80-61
E-mail: tatiankd@yahoo.com
Head of Department – Doctor of Economics, Professor Tetyana P. Kalna-Dubinyuk

**Bachelor**
**field of knowledge "Service sector"**
**in specialty "TOURISM"**
**Educational Program "Tourism"**

| | |
|---|---|
| Form of Training: | Licensed number of persons: |
| – Full-time | 25 |
| – Part-time | 25 |
| Duration of Training | 4 years |
| Credits ECTS | 240 |
| Language of Teaching | Ukrainian, English |
| Qualification | Bachelor of Tourism |

## Concept of Training

Providing training highly qualified specialists in tourism, particularly in the field of green tourism in order to preserve the ecology of the environment, social development of rural areas, better use of human resources in the tourism and recreation sector, enhance their professional and social mobility, forming a creative, socially active, spiritually rich personality according to its interests, needs and demands of society and the state. The program involves the use of advanced interactive computer technology studies at leading universities in Europe, America, attracting foreign professors to give lectures.

## Practical Training

Professional practice of students is an important part of the educational process for the preparation of qualified specialists in tourism. During the study of natural science and professionally oriented, and practical trainings students are introduced to most developed recreation and tourism regions of Ukraine and abroad. In practical training students perform professional duties of managers, marketers, managers of hotels, instructors, animators, guides and interpreters, analysts and others, including health and spa facilities, tourist and hotel complexes, travel agencies and tours, advertising and information centers, resorts and tourism associations, dining and objects of green tourism.

## Proposed Topics for Bachelor Theses

1. The development of the tourist market.
2. Planning and organization of the travel company.
3. Innovative development of green tourism in Ukraine.
4. The resource potential of the country for the prospects of green tourism development.
5. Methods and techniques in Public Relations for the tourism enterprises development.
6. Development of green tourism abroad.
7. Using of information technology in the enterprise tourism industry.

**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

Specialists are trained for organizational, administrative, economic, commercial, investment and research activities in the field of tourism. Graduates work in enterprises and organizations in the tourism of various forms of ownership and types of entities including a green tourism as heads of travel companies and facilities, travel agencies, etc., experts and heads of administrative work, logistics, marketing, commercial and international departments, HR managers, owners of green estates and so on.

# Bachelor`s Program and Curriculum in Specialty «Tourism» Educational Program "Tourism"

| № | Name of Academic Discipline | Semester | Number | |
|---|---|---|---|---|
| | | | hours | credits ECTS |
| **1. STANDARD ACADEMIC DISCIPLINES** | | | | |
| 1 | Economic Theory: Foundations of Economic Theory: | 1 | 1 | 150 |
| 2 | Higher Mathematics | 1 | 1 | 120 |
| 3 | Information Systems and Technology | 1,2 | 1,2 | 210 |
| 4 | History of Ukrainian Culture | 2 | 2 | 120 |
| 5 | Tourism Geography. (Module I. Tourist Resources of Ukraine) | 2 | 2 | 120 |
| 6 | Geography of Tourism. (Module II. Tourist region studies) | 3 | 3 | 120 |
| 7 | Museology | 5 | 5 | 150 |
| 8 | Tourist Regional Studies | 4 | 4 | 150 |
| 9 | Basics of Tourism Studies | 2 | 2 | 150 |
| 10 | Accounting and Auditing in Tourism | 7 | 7 | 150 |
| 11 | Statistics in Tourism | 3 | 3 | 150 |
| 12 | The Second Foreign Language | 5,6,7 | 5,6,7 | 270 |
| 13 | Ecology | 1 | 1 | 150 |
| 14 | Active Tourism | 1 | 1 | 120 |
| 15 | Touring | 5,6 | 5,6 | 180 |
| 16 | Economy of a Travel Company | 6 | 6 | 150 |
| 17 | Rhetoric and Psychology of Communication | 5 | 5 | 150 |
| 18 | Legal Regulation of Tourism Activity | 4 | 4 | 150 |
| 19 | Organization of Excursion Activities | 6 | 6 | 150 |
| 20 | Analysis of Activity of Enterprises of Tourism | 7 | 7 | 150 |
| 21 | Organization of Animation Activities | 5 | 5 | 120 |
| 22 | Marketing in Tourism | 6,7 | 6,7 | 150 |
| 23 | Tourism Management | 7 | 7 | 180 |
| 24 | Information Systems and Technologies in the Tourism Industry | 3 | 3 | 150 |
| 25 | Marketing | 6 | 6 | 120 |
| **Total for standard part** | | | **3780** | **126** |
| **2. ELECTIVE ACADEMIC DISCIPLINES** | | | | |
| **2.1. *Disciplines offered by University*** | | | | |
| 1 | History of Ukrainian Statehood | 2 | 120 | 4 |
| 2 | Introduction to the Specialty | 1 | 120 | 4 |
| 3 | Philosophy | 4 | 120 | 4 |
| 4 | Ukrainian for Professional Purposes | 1 | 120 | 4 |
| 5 | Foreign Language | 1,2,3,4,5,6,7,8 | 390 | 13 |
| 6 | Labour and Life Safety | 4 | 90 | 3 |
| 7 | Physical Education | 1,2,3,4 | 120 | 4 |
| **Total (Disciplines offered by University)** | | | **1080** | **36** |
| **2.2. *Disciplines offered by students*** | | | | |
| 1 | Specialized Tourism (Green Tourism) | 5 | 150 | 5 |
| 2 | Organization of the Hotel Economy | 3, 4 | 240 | 8 |
| 3 | Organization of Restaurant Economy | 4 | 210 | 7 |
| 4 | Business Planning in Tourism | 8 | 150 | 5 |
| 5 | Recreology and Resort Affairs | 8 | 150 | 5 |
| 6 | Contractual and labor law | 8 | 150 | 5 |
| 7 | Standardization and Certification in Tourism | 8 | 150 | 5 |
| 8 | Logistics in Tourism | 8 | 150 | 5 |
| 9 | Insurance in Tourism | 7 | 150 | 5 |
| 10 | International Tourism Business | 8 | 150 | 5 |
| 11 | Business Ethics | 3 | 150 | 5 |
| **Total for Specialization** | | | **1800** | **60** |

| | | | | |
|---|---|---|---|---|
| **Together** | | | **6660** | **222** |
| **3. OTHER TYPES OF TRAINING** | | | | |
| 1 | Military Training Course | | 690 | 23 |
| 2 | Academic Practice | | 180 | 6 |
| 3 | Production Practice | | 240 | 8 |
| **Bachelor Thesis writing** | | | **90** | **3** |
| **State Attestation** | | | **30** | **1** |
| **Total for Specialty (without Military Training Course)** | | | **7200** | **240** |

## Annotations of disciplines in the curriculum

### 1. Standard academic disciplines

**Economic Theory.** The purpose of discipline is getting future specialists fundamental economic knowledge, forming their logic of economic thinking and economic culture, teaching them basic knowledge and methods of analysis of economic processes, the ability to make informed decisions about economic problems related to their future practitioners.

**Higher Mathematics.** The purpose of discipline is to develop in students the basic mathematical knowledge to solve problems in professional work, analytical thinking skills and mathematical formulation of the economic problems arising from the management. The tasks to be solved in the study subjects, students are acquiring knowledge of the main sections of higher mathematics, proving basic theorems, forming initial skills, perform operations: on vectors, matrices, determinants calculation; solving systems of linear equations; study of forms and properties of direct and planes, curves and surfaces of the second order; border of stepped-exponential functions.

**Information Systems and Technology.** The purpose of teaching is to form 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.

**History of Ukrainian Culture.** Academic discipline is complex and interdisciplinary nature, logic and methodology of science communication ethnography, archeology, history of Ukraine, philosophy, ethics, linguistics, art, religion and so on. The purpose of discipline is to familiarize students with the main trends and forms of ethnic and cultural development of the Ukrainian people from ancient times to the present, the analysis and understanding of various phenomena and processes of cultural life of Ukraine.

**Tourism Geography. (Module I. Tourist Resources of Ukraine).** Discipline involves the formation of knowledge, skills and competencies to identify the main tourist areas of the world by type of tourism.

**Geography of Tourism. (Module II. Tourist region studies). .** The purpose of discipline is to familiarize students with the methods and features comprehensive study of the tourism industry of countries and regions in the world, according to the main types of tourism and recreational resources, the main tourist centers and regions.

**Museology.** Discipline creates professional theoretical knowledge in museology, practical skills and competence of the museum and exhibition activities

**Travel Nandigram.** Academic discipline involves the formation of students from mastering theoretical and practical knowledge about the peculiarities of the regions ability to independently assess the state tourism opportunities some areas, the degree of character development and use in the development of the tourism industry.

**Fundamentals of Tourist Knowledge.** The course is to study scientific bases of tourist knowledge, to create the necessary knowledge for organizing tourist trips for specialists in the field of tourism.

**Accounting and Auditing in Tourism.** The main purpose of the discipline is to build theoretical knowledge and practical skills in organization and accounting and auditing financial statements and the use of their results as information base effective decision-making in tourism. The main objective of discipline is thorough general economic and accounting and audit training and mastering their principles, means, methods and techniques of accounting activities of travel agencies and audit their financial statements.

**Statistics in Tourism.** The course equips students with knowledge, skills and competencies in the use of statistical techniques to quantify the effects of tourism. The main tasks to be solved in the process of teaching include: the collection, verification and evaluation of statistical information, development of statistical forms; construction materials and grouping of statistical monitoring, identifying relationships between different phenomena and processes, establishing its structure; calculating machines generalizing statistical parameters (absolute, relative, middle) and their economic interpretation.

**The Second Foreign Language.** Study subjects deepens the students' communicative competence in another foreign language, such as the use of skills, abilities and knowledge of a foreign language in the course of business relations with other countries on various professional matters related to professional activities in tourism, preparation for participation in international conferences, projects and discussions.

**Ecology.** Generates knowledge of the causes, extent and consequences of a national nature, to find ways of overcoming the current crisis in relations between society and nature, sotsioekolohichnoyi consciousness, a new ethical relationship between man and nature; skills and abilities to develop management principles.

**Active Tourism.** Theoretical and practical bases of traveling on different routes with active methods of travel; acquisition of specific knowledge and skills from various types of active tourism.

**Turopereytynh.** Acquiring knowledge and systematic thinking on the organization of the tour operator business, charts its progress and implementation of the formation program of tourist services, documentary ensure the creation, acquisition, implementation planning tours and tour packages, tourist service organization.

**Economy Travel Company.** The task of the course is to provide theoretical knowledge and practical skills in economy travel company and formation of students' capacity for independent creative thinking and solving practical economic problems.

**Rhetoric and Psychology of Communication.** The discipline involves the development of thinking, language and skills, mastering effective forms of persuasive communication for unusual situations of life and professional communication, formation and skills of public speaking, developing skills to create and deliver public speeches.

**Legal Regulation of Tourism Activities.** Generates the students a theoretical basis and practical skills necessary to use modern legal instruments of tourism activities.

**Organization of Excursion Activities.** Provides formation of students' theoretical, professional knowledge and practical skills in planning and organizing excursions, carrying out of excursions.

**Analysis of Tourism Enterprises Activity**. The purpose of discipline is mastering theoretical positions from the analysis and evaluation of tourism enterprises and domain practical skills to use this knowledge for management decisions to improve enterprise efficiency.

**Organization of Animation Activities.** Generates the students: a theoretical basis and practical skills of animation tourist services in today's global and national tourism business; understanding of the need to use different national traditions, festivals, customs, rituals and other forms of Ukrainian folk art to improve the organization of leisure travelers;

apply various animation service programs to enhance the attractiveness of the national tourism product, building motivation to implement them in various stages of service of domestic and foreign tourists.

**Marketing in Tourism.** Mastering the latest theoretical knowledge on the management of tourism organizations and acquire practical skills for building management and marketing system such organizations, which would ensure their effective functioning in a competitive and changing environment management; develop skills and abilities in applying marketing tools in tourism.

**Tourism Management.** to form future specialists in modern system economical thinking in the field of management of the organization, taking into account sector specifics and peculiarities of managerial work in the field of tourism industry, training of a highly skilled manager who will be able to provide a high level of efficiency of the management system and competitiveness of the organization in a market economy.

**Information Systems and Technology in the Tourism Industry.** Involves the formation of the necessary theoretical knowledge and practical skills to build modern information systems, their management and the introduction of modern information technologies into practical tourist activities.

**Marketing.** To form skills and skills of using marketing tools.The concept and philosophy of marketing. Content and main areas of marketing research and marketing information system.

## 2. Elective academic disciplines

### *2.1. Disciplines offered by University*

Annotations of disciplines “History of Ukrainian Statehood”, “Philosophy”, “Ukrainian for Professional Purposes”, Physical Training”, “Foreign Language for Professional Purposes”, “Labour and Life Safety”, see Section 2.1.

**Introduction to the Specialty.** Objective: to prepare students for university studies in accordance with modern integration processes in international education in the context of the Bologna Declaration, to familiarize students of the first year with the content of the future profession, with the nature and scope of professional activity, with the peculiarities of practical activity of enterprises of the tourism sector

### *2.2. Disciplines offered by students*

**Specialized Tourism (Green Tourism).** Organization of Rural Tourism. The purpose of discipline is to familiarize students with theoretical achievements in the sphere of green tourism, analyze the experience of its organization in the European Union, to outline the current state and tendencies of rural tourism in Ukraine to teach students to identify the preconditions and stages of development of green tourism in the regions of Ukraine.

**Organization of the Hotel Economy.** Understanding of the essence of the hotel economy, as a component of the service sector, to master students the theoretical foundations for organizing the functioning of the hotel industry in the market.

**Organization of Restaurant Economy.** Develop knowledge on the rational organization of nutrition services, acquisition of practical skills in relation to the internal content, interaction and coherence of technological operations and processes in restaurants Organization of Extension Service**.** Academic discipline provides knowledge on the organization of the consultation process, licensing and certification consulting activities, creation of consulting agencies.

**Business Planning in Tourism.** System of theoretical knowledge and practical skills in business planning as an element of management of the tourist industry.

**Recreology and Resort Affairs.** Aim: to develop knowledge about the role and significance of recreational tourism and resorts, the use of resort and recreational potential of Ukraine, the use of their healing natural factors, vale logical technologies in their personal life and professional activities, forming motivation for a healthy lifestyle.

**Contractual and labor law. Договірне і трудове право.** Formation of a system of knowledge of legal services of economic activity, legal regulation of menage at the market of tourist services; formation of knowledge about the system of law of Ukraine, since it regulates one of the most important spheres of social relations - the labor relations of workers and employers.

**Standardization and Certification in Tourism.** To form knowledge about the theory and practice of standardization, tourist services certification and licensing of tourism activities.

**Logistics in Tourism.** Formation of skills and skills concerning the mechanism of reproduction of logistic systems for efficient management of material flows.

**Insurance in Tourism.** Formation of knowledge of the theory and practice of insurance in tourism in domestic and foreign practice.

**International Tourist Business.** The course aims to provide future specialists in tourism-depth knowledge of current trends in international tourism.

**Business Ethics**. Academic discipline aims to provide knowledge about the moral requirements for business relationships of modern technological requirements for the basic forms of business communication - conversations and negotiations, official meetings, etc., on moral principles, norms and rules of etiquette.