

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

**MASTER CURRICULA
AND TRAINING PROGRAMS**

2023-2024 academic year

Volume 1

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HISTORICAL BRIEF

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

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

Its origin dates back from the agricultural department of Kiev Polytechnic Institute and the Warsaw forestry school (Poland).

In January 1898, a special Committee was formed in order to organise the educational institution. D. Mendeleev took an active part in opening this institution. He was a member of the Commission on Statute elaboration. The Commission, organized under the Ministry of Finance, developed regulations on organization of Kiev Polytechnic Institute.

According to the regulations published 8 June 1898 and signed by Emperor Nicholas II with the endorsed resolution "Be it so enacted...", "Emperor Alexander II Kiev Polytechnic Institute (KPI) is a higher educational institution that aims to provide students with technical education, it has four departments: chemical, mechanical, engineering and agricultural". 35 departments are established to conduct all subjects at four departments of the institute.

On August 31, 1898, KPI was solemnly opened in Kiev, and on September 1, the first students began their studies.

The agricultural Department of the Kiev Polytechnic Institute was transformed in 1918 into agricultural (agronomy) faculty, and in 1922 into Kiev agricultural Institute, which in 1923 became an independent institution of higher education. Kyiv Veterinary Institute began its work as the Veterinary Faculty of Kyiv Polytechnic Institute (1920). In 1921, the faculty was reorganized into an independent Kyiv Veterinary and Zootechnical Institute (KVZI). In 1930, the Kyiv Veterinary Institute separated from the KVZI, which in 1957 was joined to the Ukrainian Academy of Agricultural Sciences.

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. Mendelejev, 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.

The first educational buildings in Golosiievo were designed in the style of Ukrainian Baroque by the architect D.M. Diachenko in 1926-1929.

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. This happened only in the 1950s. of the XX century.

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.

When the Second World War began these three institutes were evacuated to the rear, namely:

- Kyiv Forestry Institute was evacuated to Bryansk Forestry Institute, which in August 1941 was transferred to Sovietsk town, Kirov region.
- Kyiv Agricultural Institute was evacuated to the Kazakh Agricultural Institute.
- Kyiv Veterinary Institute was evacuated to Sverdlovsk Agricultural Institute.

After the liberation of Kyiv from the German troops in accordance with the order of the Supreme Soviet of the USSR dated March 19, 1944, Kyiv Forestry Institute resumed its activities.

In 1944, Kyiv Veterinary Institute had 12 professors and 14 associate professors. Senior courses were filled with re-evacuated students and partially demobilized students. In August 1944, the institute graduated 16 veterinarians.

Classes at the Kyiv Agricultural Institute resumed on April 1, 1944, in half-ruined premises which were rebuilt during studying by the faculty, students and staff.

There was a slogan at that time "If you want to study – rebuild your institute."

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

Kyiv Forestry Institute began its history from the Warsaw forestry school (organized in 1816), 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" (UAA). The academician P.D. Pshenychnyi became its first rector.

In the 1950s 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). Academician P.A. Vlasyuk headed the UAAS. 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 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 was subordinated to Cabinet of Ministers of Ukraine.

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

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

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

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

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

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 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.

Since 2016, "Rivne College" has been functioning as the separated subdivision of NULES of Ukraine.

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.

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 № 76 from February, 2010 it received the status of self-governing (autonomous) research national university.

The result of the university reform is clearly outlined in the Development Program of NULES of Ukraine for 2021-2025 "Holosiivska Initiative 2020 - 2025". The prospects for its implementation are a combination of educational, research, innovation, information and consulting and training and production activities. Thus, in the field of its achievements, the university is a vivid example of an educational institution of the XXI century and one of the best institutions of higher education in Ukraine.

The National University of Life and Environmental Sciences of Ukraine improved its position in the international ranking of Webometrics. Compared with the rating in 2022, when the university took the eighth place, this year our institution took 4th place in the list of higher education institutions of Ukraine. Also, the Center for International Projects "Euroeducation" in partnership with the international expert group IREG Observatory on Academic Ranking and Excellence published the sixteenth academic ranking of higher education institutions "Top-200 Ukraine 2022", where our university is among the ten leaders of higher education institutions in Ukraine. Our University took 8th place repeating its last year's success.

In 2022 NULES of Ukraine rose in the ranking of higher education institutions of Ukraine by the number of students enrolled for the state order. The information system "Vstup.OSVITA.UA" compiled a ranking of higher education institutions of Ukraine by the number of people enrolled in studies with funds from the state and local budgets. NULES of Ukraine took 6th place in it among more than 300 higher education institutions! And this is despite the fact that in recent years this rating took into account only our entrants from school graduates without young people who come after colleges.

MASTER TRAINING PROGRAMS AT NULES OF UKRAINE

The National University of Life and Environmental Sciences of Ukraine has been providing master training programs since 1996.

The curricula and programs of Master’s Degree training are compiled in accordance with requirements of Law of Ukraine "About higher education". Their adaptation and conformity meet the requirements of U.S. and European systems of higher agricultural education.

The National University of Life and Environmental Sciences of Ukraine provides training for educational level "Master" in 42 specialties covering 66 educational and professional ta 6 educational and research (table 1)

Table 1. Specialties and educational programs in Master training at NULES

Structural subdivision (ERI, faculty)	Specialty	Educational programs
Educational and professional program		
ERI of Energetics, Automatics and Energy Saving	Automation, computer-integrated technologies and robotics	✓ Automation, computer-integrated technologies and robotics
	Power Engineering, Electrical Engineering and Electrical Mechanics	✓ Power Engineering, Electrical Engineering and Electrical Mechanics
	Thermal power engineering	✓ Engineering of renewable energy sources and energy management
ERI of Forestry and Garden-Park Management	Forestry	✓ Forestry
	Woodworking and Furniture Technologies	✓ Woodworking and Furniture Technologies
	Park and Gardening Management	✓ Park and Gardening Management
ERI continuing education and tourism	Management	✓ Extension service
		✓ Management of innovative activity
		✓ Management of tourist and hotel and restaurant business
	Public Management and Administration	✓ Public Management and Administration
	Tourism and recreation	✓ International tourism business
Hotel and restaurant business	✓ Hotel and restaurant business	
Agrobiology	Agronomy	✓ Agronomy
		✓ Agrochemistry and Soil Science
		✓ Selection and genetics of agricultural crops
✓ Agrohimservice in precision agricultural production		
Horticulture, fruit growing and viticulture	✓ Horticulture, fruit growing and viticulture	
Humanitarian Pedagogical	Management	✓ Management of educational institution*
		✓ Human Resources Management
	Education and Educational Science	✓ Pedagogy of higher school
		✓ Information and communication technologies in education
	Social Work	✓ Social Work
✓ Social and psychological rehabilitation		
Philology (german languages and literature) (including translation), the first - English)	✓ English and other foreign language	

MASTER CURRICULA AND TRAINING PROGRAMS

Structural subdivision (ERI, faculty)	Specialty	Educational programs
	Philology (german languages and literature) (including translation), the first - German)	✓ German and other foreign language
	Journalism	✓ Journalism
	Psychology	✓ Psychology
	International relations, public communications and regional studies	✓ International relations, public communications and regional studios
Economic	Economy	✓ Economics of enterprise ✓ Applied Economics (Part-time)
	Accounting and Taxation	✓ Accounting and audit
	Entrepreneurship and trade	✓ Entrepreneurship, Trade and Exchange Activities
	Finance, banking, insurance and stock market	✓ Finance and credit
Mechanics - Technology	Agricultural Engineering	✓ Agricultural Engineering
	Transport Technologies (by Automobile Transport)	✓ Transport Technologies (by Automobile Transport)
	Automobile Transport	✓ Automobile Transport
Agrarian Management	Management	✓ Administrative management
		✓ Management of foreign economic activity
		✓ Management of organization and administration
	Marketing	✓ Management of investment activity and international projects ✓ Marketing
Veterinary Medicine	Veterinary Medicine	✓ Veterinary Medicine
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
Land Management	Geodesy and Land Management	✓ Geodesy and Land Management
Information Technology	Economy	✓ Economic cybernetics
	Software Engineering	✓ The software of information systems
	Computer Science	✓ Information managing systems and technologies
		✓ Computer ecological and economic monitoring
	Computer Engineering	✓ Computer systems and networks
Computer Engineering	✓ Computer information protection systems	
Construction and Design	Construction and Civil Engineering	✓ Construction and civil engineering
	Industrial Mechanical Engineering	✓ Machinery and equipment of agricultural production
		✓ Forest complex equipment
		✓ Technical service of machines and equipment of agricultural production
		✓ Robotic systems and complexes of agricultural production
Livestock Science and Water Bioresources	Water Bioresources and Aquaculture	✓ Water Bioresources and Aquaculture

MASTER CURRICULA AND TRAINING PROGRAMS

Structural subdivision (ERI, faculty)	Specialty	Educational programs
	Technology of Production and Processing of Livestock Products	✓ Technology of Production and Processing of Livestock Products
Alimentary Technologies and Managing of Quality of Productes of ASE	Information and measurement technologies	✓ Quality, Standardization and Certification
	Food Technologies	✓ Technologies of storage, preserving and reprocessing of meat
		✓ Technologies of storage and reprocessing of aquatic bioresources
Law	Law	✓ Nutritionology (Part-time) ✓ Law
Educational and research program		
Construction and Design	Industrial Mechanical Engineering	✓ Machinery and equipment of agricultural production
	Construction and Civil Engineering	✓ Construction and civil engineering
ERI of Energetics, Automatics and Energy Saving	Automation, computer-integrated technologies and robotics	✓ Automation, computer-integrated technologies and robotics
	Power Engineering, Electrical Engineering and Electrical Mechanics	✓ Power Engineering, Electrical Engineering and Electrical Mechanics
Mechanics - Technology	Agricultural Engineering	✓ Agricultural Engineering
Alimentary Technologies and Managing of Quality of Productes of ASE	Food Technologies	✓ Nutritionology

The peculiarities of Master training at NULES of Ukraine are characterized by close relationship of the program contents with the sphere of future employment of graduates.

Master training at NULES of Ukraine is carried out according to:

- programs:
 - educational and professional;
 - educational and research;
- specialties "Public Management and Administration" in educational program "Public Management and Administration".

Individuals who have studied and intend to continue training in the chosen specialty for deeper educational program are enrolled on educational and professional program (навчання 1 рік і 4 місяці (90 ECTS)). These programs are implemented to ensure the science-intensive production sector with highly qualified specialists who possess the innovative knowledge and are able to apply it into modern high technologies.

The training of Masters on the educational and research program (1 рік і 10 місяців (120 ECTS)) is provided only by the departments of the University, which are entitled to train postgraduate students, have sufficient funding and considerable progress in research activities. Applicants are required to have a good command of at least one foreign language. The educational and research program includes an obligatory research (scientific) component, no less than 30 per cent).

Master training on this program includes conducting further research activity according to the chosen specialty to obtain PhD during postgraduate study or at a research institution.

At NULES of Ukraine the **educational program "Public Management and Administration"**, is popular. It focuses on training specialists for public authorities and local governments, able to effectively develop and implement their knowledge in the field of state regulation on the basis of current legislation and information technology.

The structure of the content of educational programs for Master's degree in NULES of Ukraine

Educational (educational-professional or educational-scientific) program is a system of educational components at the appropriate level of higher education within the specialty. It determines the requirements for the level of education of individuals who can apply for this program, the list of academic disciplines and logical sequence of their study, the quantity of ECTS required to complete this program, as well as the expected learning outcomes (competences) to be acquired by an applicant for the relevant higher education degree.

The content of educational programs in NULES of Ukraine is determined by:

- requirements for professional activity of specialists;
- direction and professional specialization of previously acquired education;
- specific features of master's training.

The structure of the content of educational programs for Master's degree in NULES of Ukraine includes three blocks of disciplines (Fig. 1).

The list, scope and forms of certification of compulsory disciplines within the corresponding specialty (educational program) (block 1) are defined by higher education standards, according to the requirements of the Ministry of Education and Science of Ukraine. The study of these disciplines provides the basis of the specialty (educational program), forms a master's degree.

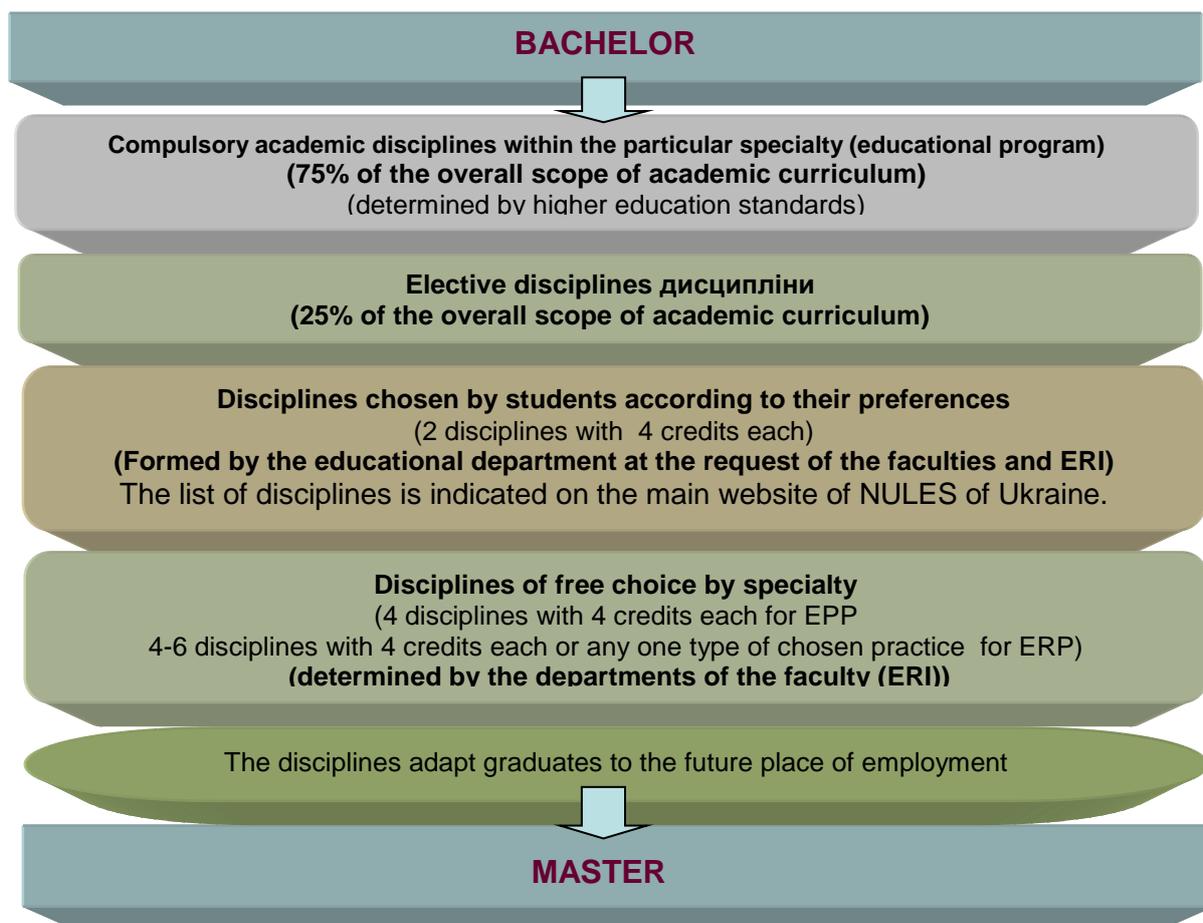


Fig. 1. The structure of the content of educational programs for Master's degree in NULES of Ukraine

The study of the disciplines of the elective part determines the basis of the educational program within the relevant specialty. The list, forms of study and certification of elective courses are determined by working groups formed by order of the rector of the university and recommended by the academic councils of faculties (ERI), then they are approved by the educational and methodological council of the university and after that by the academic council of the university.

The list, forms of study and certification of elective disciplines chosen by students according to their preferences (block 2) are formed by the educational department at the request of the faculties and educational and research institutes. The list of elective disciplines with their annotations is indicated on the main website of NULES of Ukraine. These disciplines are included into the educational programs of the second semester and contribute to the development of soft skills.

The list, forms of study and certification of elective disciplines of free choice in the specialty (block 3) is determined by the departments of the faculty (ERI). They are included in the curriculum depending on the student's choice and are studied mainly during the second year. These disciplines enable graduates to successfully write master's thesis and adapt to the future place of employment.

Professional training of students, including research on the topic of master's thesis, begins from the first semester of their master's degree. Much of the training is intended for independent work.

The main forms of implementation of educational process at NULES of Ukraine

The educational process at NULES of Ukraine is realized through various forms including in-class activities, practical training, independent study and control (Fig. 2).

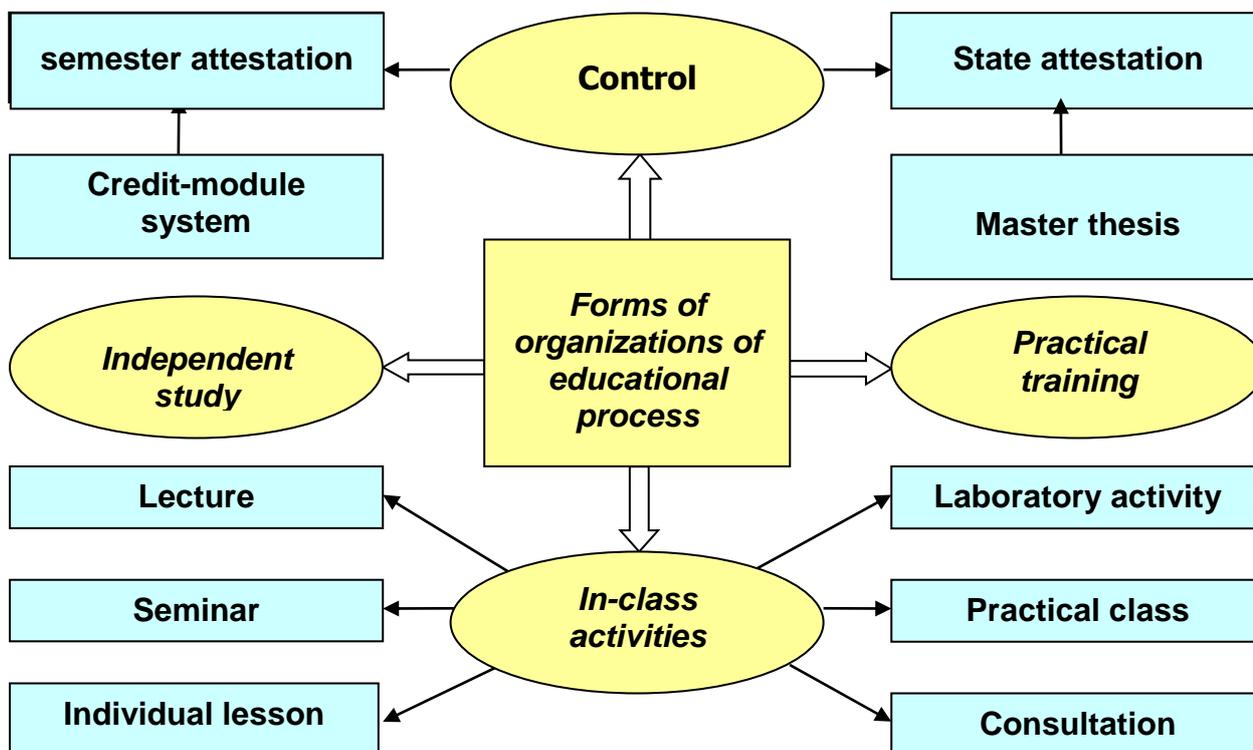


Fig. 2. The main form of implementation of educational process at NULES of Ukraine

The in-class activities are conducted in the form of lectures, practical classes, seminars, laboratory activities and individual lessons, including the use of distance learning methods.

Independent study is the main way to master knowledge and skills apart from regular classes. At NULES of Ukraine it is provided by the system of teaching tools, including textbooks, teaching and methodological aids, course books, abstracts of lectures, practical classes, e-courses of disciplines on educational information portal on Moodle distance learning platform. This work is conducted according to schedules. It guarantees the student's individual access to the necessary didactic materials. At the beginning of the current semester the students are informed about the schedule.

The teaching staff of appropriate departments is always available for consultation when students use complex equipment and information access systems while studying independently.

Special attention is paid to students' practical training system aimed at generalization of the theoretical and practical knowledge and acquisition of professional skills. It is conducted in the form of laboratory and practical classes, training and production practices that can be conducted at university's centers of practical training:

- 2 research stations – "Agronomic Research Station" SD of the NULES of Ukraine and "Boyarka Forestry Research Station" SD of the NULES of Ukraine (Kyiv region);
- 5 training and research farms (TRF) – Velykosnitynka Training and Research Farm named after Muzychenko, SS of the NULES of Ukraine "Vorzel", SS of NULESU "Nemishaievo Agro-Technical College"*(Kyiv region), SS of NULESU "Zalischyky Agricultural College named after Khraplyvyi", SS of NULESU "Nizhyn Agro-Technical Institute" (Chernihiv Region);
- Special facilities for practical training of regional higher educational institutions of NULES of Ukraine I-II accreditation levels;
- Botanical garden of NULES of Ukraine.

The university farms are located in different soil and climatic zones of Ukraine - woodlands, forest-steppe, steppe. The peculiarity of practical training bases of the university is that they have relevant departments and branches as well as over 30 educational, industrial, scientific and research laboratories where students have laboratory and practical classes, training and production practices etc.

Forms of control of students' progress are credits which are done in the form of tests and exams in written form according to the examination cards which include various questions and tests of different types. After conducting the written examination and according to the results of answers to the exam questions, the student is interviewed by two lecturers, who conducted the final attestation. They determine the student's final grade.

Students take regular attestation during the course at department meetings, where they reports on the implementation of the individual plan on the whole and master's thesis in particular (Fig. 3).

Defence of Master's thesis is the final stage of student training and the form of graduates' state attestation. Attestation of applicants for higher education, that is, conformity of the level and amount of applicant's knowledge, skills and other competences to the requirements of higher education, is carried out by the board (EB) which makes the decision on the award of the relevant level higher education and qualification to a graduate.

Training of graduate students at the University is carried out by full-time and part-time (distance) forms. The main form of training masters at NULES of Ukraine – is full-time, for individuals who have already chosen the place of work – part-time form.

Part-time form, as a rule, has a longer duration compared to full-time (not more than by 25 %) and requires students to do a great deal of tasks independently, using appropriate teaching materials and means of distance education.

At NULES of Ukraine, educational and information portal moodle.nubip.edu.ua functions on the basis of the platform Moodle in order to provide information and methodological support of disciplines. It hosts e-learning courses in the respective disciplines and services of on-line communications (Skype, Google Apps, social networks). All this makes it possible to use distance learning technologies in the academic process, which raises the learning process to the international standards.

The process of part-time (distance) education is organized during a calendar year examination sessions. During these sessions as well as in the intersessional period, all forms of the educational activities are carried out: in-class activities, independent study, practical training and control.

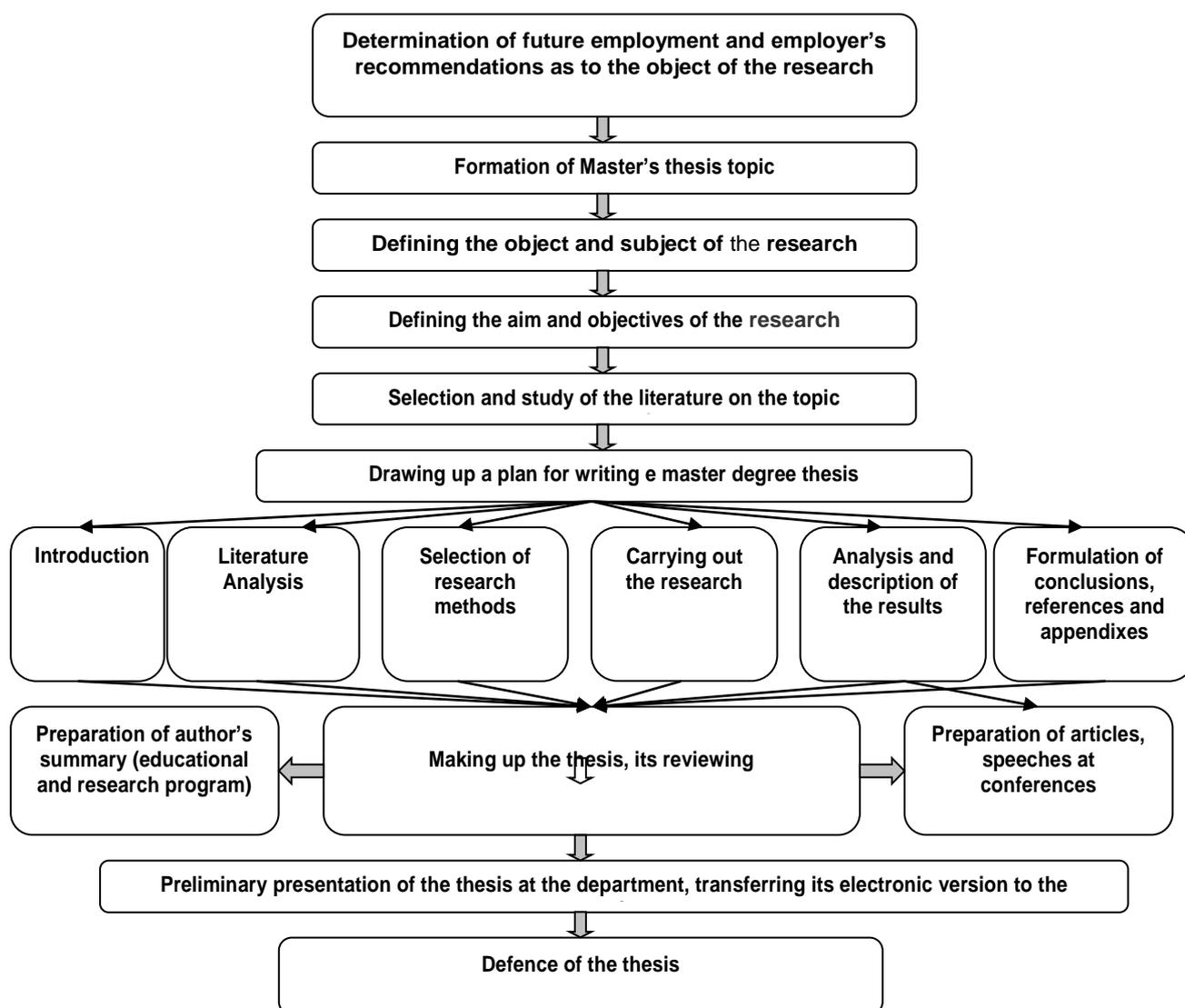


Fig. 3. Stages of writing Master thesis

SCIENTIFIC LIBRARY

Scientific Library is a modern, scientific, cultural, educational, information center that meets the users' needs of getting the latest information,.

The main task of the scientific library of University is to develop library collections to meet the needs of users in various specializations. Diversified Library collection numbers more than one million copies of national and foreign books, including rare books (since 1779), abstracts of theses (since 1950), theses (since 1946), The Library annually subscribes to more than 100 titles of journals and more than 50 different newspapers.

Information and bibliographic desk (electronic, alphabetical, systematic catalogs and card indexes) facilitates wide and overall use of the library collection. The main technological processes have been automated in scientific library. Since 2012 the scientific library has begun to give books to users in automated mode. Workplaces of library employees are equipped with specialized scanners and printers, with make it possible to attach each book to a specific user on the basis of bar-coding.

To familiarize freshmen with the library according to the program "Information culture" the classes how to use library information search facilities (both traditional and electronic catalog) are organized by the library staff. The scientific library organizes information mass events devoted to current university issues.

The information about the scientific library, including its resources can be found on the library site: <https://nubip.edu.ua/structure/library>

Since 2006 the Scientific Library has become a depository library of FAO (FAO - Food and Agricultural Organization) in Ukraine. The Depository fund contains 1100 documents in English, including analytical materials, statistical compilations, reports compiled in the electronic catalog of the scientific library. Some materials come with CD-ROMs. Literature of FAO is stored in the central library.

One of the priority tasks of the library is to provide access to students, postgraduate students and the staff of the University to international electronic resources and data bases such as:

- SCOPUS, which is an abstract and scientific base of peer-reviewed literature and proven web sources. The search engine uses software for tracking, analyzing and visualizing research, SCOPUS indexes about 22,000 titles of various publications (including 55 Ukrainian) of more than 5,000 publishing houses;

- Web of Science (WoS), which is an abstract database of scientific publications, offering an access to bibliographic data of scientific articles of prestigious periodicals, books and materials of scientific conferences, indicating the real citation of these materials. Thus, the user is able to immediately evaluate the relevance of any publication and its impact on the scientific community;

- EBSCO is one of the world's largest suppliers of electronic and printed journals, containing over 6,000 electronic versions of well-known magazines, newspapers, newsletters, about 1300 brochures, encyclopedias, reference books and abstracts, most of which are full-text. EBSCO provides the search of full-text, peer-reviewed, specialized materials from social, economic, medical, technical and other fields at 60 search requests.

At the disposal of users there is also an e-library that contains the full texts of academic and scientific publications of scientists of the University, namely more than 1900 educational textbooks, about 812 monographs, more than 4920 educational materials (guidelines for laboratory, practical and seminar work, lectures course notes etc.) and over 578 dissertation abstracts. The e-Library of NUBiP of Ukraine is available through the local university network.

Users also have the opportunity to use the digital library of NULES of Ukraine (<http://dglib.nubip.edu.ua:8080/jspui/>), which is accessible from the Internet and contains

more than 4,100 publications, in particular: more than 2,443 scientific articles and abstracts of conferences, 185 digitized rare and valuable publications from the library fund, 240 textbooks and manuals and 164 monographs.

The square of the library is 2844 m². Scientific library users are serviced in 8 lending libraries and 8 reading rooms for 580 seats. The structure of the scientific library consists of 5 branches with the funds of more than 180 thousand documents of educational, scientific, reference books and periodicals. These branches of the library provide subscriptions and reading rooms equipped with modern computer techniques. In addition, there are two subscription services to all categories of readers of scientific literature and fiction. Users have free access to the Internet both in the central library and its branches.

If there is no literature a reader needs in the library, it is possible to order it on interlibrary subscription (ILS) and by email (library@nubip.edu.ua). Such an extensive library system makes it possible to serve over 40 000 users per year by all structural divisions. More than one million copies of books a year are given to users.

The research library is equipped with latest computer technology and equipment: 50 PCs, 13 printers, 2 scanners, a powerful database server. The premises of the Central library and its branches have modern interior and comfortable environment for users and staff of the University.

The structure of the scientific library consists of 5 departments and 5 branches.

The department of book acquisition, scientific processing of documents and catalogue organization. The main task of the department is full, theoretically substantiated acquisition of library book collection to support training and educational process and research activity of the University.

The department of book acquisition, scientific processing of documents and catalogues organization provides:

- ordering the purchase of necessary literature for university departments in automated manner;
- control the just-in-time delivery of ordered literature to the scientific library;
- transferring received literature to the library affiliates and departments for proper storage;
- subscription of Ukrainian and Russian periodicals;
- individual and total accounting of documents transferred to the library in traditional and electronic forms (applying bar code technology);
- daily databases filling of electronic library catalog with bibliographic descriptions of new literature acquisitions;
- organization and updating of systematic, alphabetic and electronic catalogs;
- scientific researches collections exchange with 26 higher educational agrarian institutions of Ukraine.

Information and bibliography department. The main task of the department is to quickly and fully meet the information needs of scientific library users. The department provides such services:

- Library dissertations collection (over 5,000 units);
- Master Thesis collection (500 items);
- research papers of 26 higher educational agrarian institutions of Ukraine;
- Ukrainian and Russian periodicals.

Information and Bibliography Department:

- compiles indexes and lists of literature according to the topics of research papers and to support the academic process at the University;
 - encrypts scholars and students' research papers according to the tables of the Universal Decimal Classification (UDC);
-

– daily filling of electronic library catalog with analytic descriptions of articles from periodicals, collections of research papers, and bibliographies prepared by the department staff.

Information and bibliographic department organizes and conducts:

– "Department days", "Master days", "Information days" for information service of users;

– theme book exhibitions devoted to key issues, as well as jubilee exhibitions of outstanding University scientists;

– "Information culture" classes for first year students, postgraduates and masters to make them familiar with resources (both external and internal), access to which is provided by the library;

The department of information technologies and computers support. The main task of the department is to support functioning of the automated library and information system "IRBIS-64" and maintain electronic information resources of the library. The department provides such services:

– Library electronic catalogue (contains more than 120,000 of bibliographic descriptions of books, periodicals, authors' abstracts, dissertations and other documents available in the library);

– an electronic library which contains the full texts of educational and scientific publications of university scientists;

– collection of electronic library resources (including portal - AGORA, international databases EBSCO, BioOne, etc.);

– Free Internet access and Wi-Fi.

The department of information technologies and computers support provides:

– support Website of scientific library (<https://nubip.edu.ua/structure/library>);

– Filling the university e-library, library users database to provide service in automatic mode;

– digitization of collection of rare and valuable books to place them in the database of electronic catalog;

– computer maintenance service.

Educational and scientific literature service department. The main task of the department is to provide users with educational, scientific and fiction literature. Book collection of the department is more than 500,000 items, including:

– 400000 copies of scientific literature;

– 58000 copies of fiction;

– 62000 copies of educational literature;

– 9500 copies of foreign literature;

The department has academic and scientific literature in:

- Agronomy;
- Plant Protection;
- Plant Biotechnology;
- Ecology;
- Fish farming;
- Feeding and breeding;
- Genetics of plants and animals;
- Technology of production and processing of livestock products;
- Quality management of agricultural products;
- Pedagogy;
- Psychology;
- Culture studies.

Users are provided with:

- a subscription for issuance of educational, scientific and fiction literature, a reading room with 140 seats, free access to the Internet and Wi-Fi. Ordering of an unavailable book in the library collection according to interlibrary subscription (ILS) from the largest library of the country - the National Library of Ukraine named after V.I. Vernadskyi;

- The collection of rare, valuable documents contain more than 3500 units. The real treasures of the fund are rare and unique books such as: "The News of Petrovsk Arable Farming and Forest Academy" (1779), "Russian Chronicle by Nikon list" (p. 3, 6, 7, 1786-1791), "Archive of Veterinary Sciences ", "Forest Journal "(1873), etc.;

- Depository library of FAO (FAO - Food and Agricultural Organization), which stores more than 1100 documents in English and Russian including analytical materials, collected statistic data, reports.

Branch of scientific library in educational building № 11. The total book collection of the branch is 52425 items (books, periodicals, instructions for laboratory and practical works).

Users are provided with academic literature, reading room for 83 seats, free Internet and Wi-Fi access.

The department offers academic and scientific literature in:

- Power engineering;
- Heat engineering;
- Electrification of Agriculture;
- Information science;
- Construction;
- Transport;
- Logistics;
- Mechanization of agriculture;
- Metallurgy & Metalworking;
- Theory of machines and mechanisms;
- Agricultural machinery repairing.

The permanent exhibition of artworks (paintings) of one of the scholars of the University – V. G. Tsapok, professor, doctor of medical sciences, represented in the library, attracts both students and guests of the University.

Branch of scientific in educational building № 1. The total book collection of the library is 25351 items (books, periodicals, instructions for laboratory and practical works).

Users are provided with academic literature, reading room for 40 seats, free Internet and Wi-Fi access.

The department has academic and scientific literature in:

- Forestry;
- Wood processing technology;
- Park-gardening;
- Landscape and design;
- Floriculture;
- Hunting science;
- Green tourism.

The permanent exhibition of the best graduation works of students (landscape tapestries, paintings, flowers compositions), which are placed on the walls of the library reading room, decorates the interior.

Branch of scientific in educational building № 10. The total book collection of the affiliate is 59040 items (books, periodicals, instructions for laboratory and practical works).

Users are provided with academic literature, reading room for 80 seats, free Internet and Wi-Fi access.

The department has academic and scientific literature in:

- Economy of enterprises;
- Accounting and auditing;
- Finance;
- Management of organizations and administration;
- Management of foreign economic activity;
- Marketing;
- Economic cybernetics;
- Agricultural economy and organization of agribusiness;
- Banking, taxation & insurance;
- International trade;
- Intellectual property.

Branch of scientific in educational building № 6.

The total book collection of the library is 18094 items (books, periodicals, instructions for laboratory and practical works).

Users are provided with academic literature, reading room for 47 seats, free Internet and Wi-Fi access.

The department has academic and scientific literature in:

- Land monitoring;
- Monetary estimation of land;
- Land cadastre;
- Land design;
- Geodesic work in land management;
- Distant land probing;
- Automated land information systems;
- Aerospace survey systems;
- Criminalistics and criminology;
- Civil and tax law;
- Family and inheritance law;
- Administrative law and procedure;
- Notary service board in Ukraine.

Branch of scientific in educational building № 12. The total book collection of the library is 49292 items (books, periodicals, instructions for laboratory and practical works).

Users are provided with academic literature, reading room for 100 seats, free Internet and Wi-Fi access.

The department has academic and scientific literature in:

- Anatomy, histology, cytology of animals;
 - Physiology and pathological physiology of animals;
 - Veterinary sanitation and hygiene of animals;
 - Veterinary microbiology, virology and Immunology;
 - Internal non-contagious animal diseases and clinical diagnostics;
 - Epizootology, parasitology of animals;
 - Surgery, ophthalmology and orthopedics of animals;
 - Veterinary obstetrics and gynecology;
 - Feeding, animal breeding;
 - Veterinary-sanitary examination;
 - Foodstuff safety;
 - Standardization, certification, metrology.
-

INFORMATION AND TELECOMMUNICATION SUPPORT OF THE ACADEMIC PROCESS

The educational space for students is based on the use of the Moodle platform as a learning portal, where all subjects have a comprehensive resource in the form of an e-learning course. All students and teachers of the university have access to the platform. Messengers- viber and telegram are used for instant communication and distribution of messages. Video conferencing systems for synchronous communication such as: Microsoft Teams, Cisco Webex, Zoom and Google Meet are used for remote training.

In order to create a personal educational environment for the student, his / her learning trajectory is supplemented with resources for non-formal education - open online courses (MVOK) offered on various technological platforms (Fig. 4).



Fig. 4. Personal educational environment of a student of NULES of Ukraine

It is necessary to work in the corporate segment, having received a corporate account for more systematic use of distance education tools. NULES of Ukraine at the corporate level uses educational services Google, Cisco Webex and Microsoft 365.

The educational portal of NULES of Ukraine is administered by the university specialists, so there is an easy access to analytics of the use of its resources.

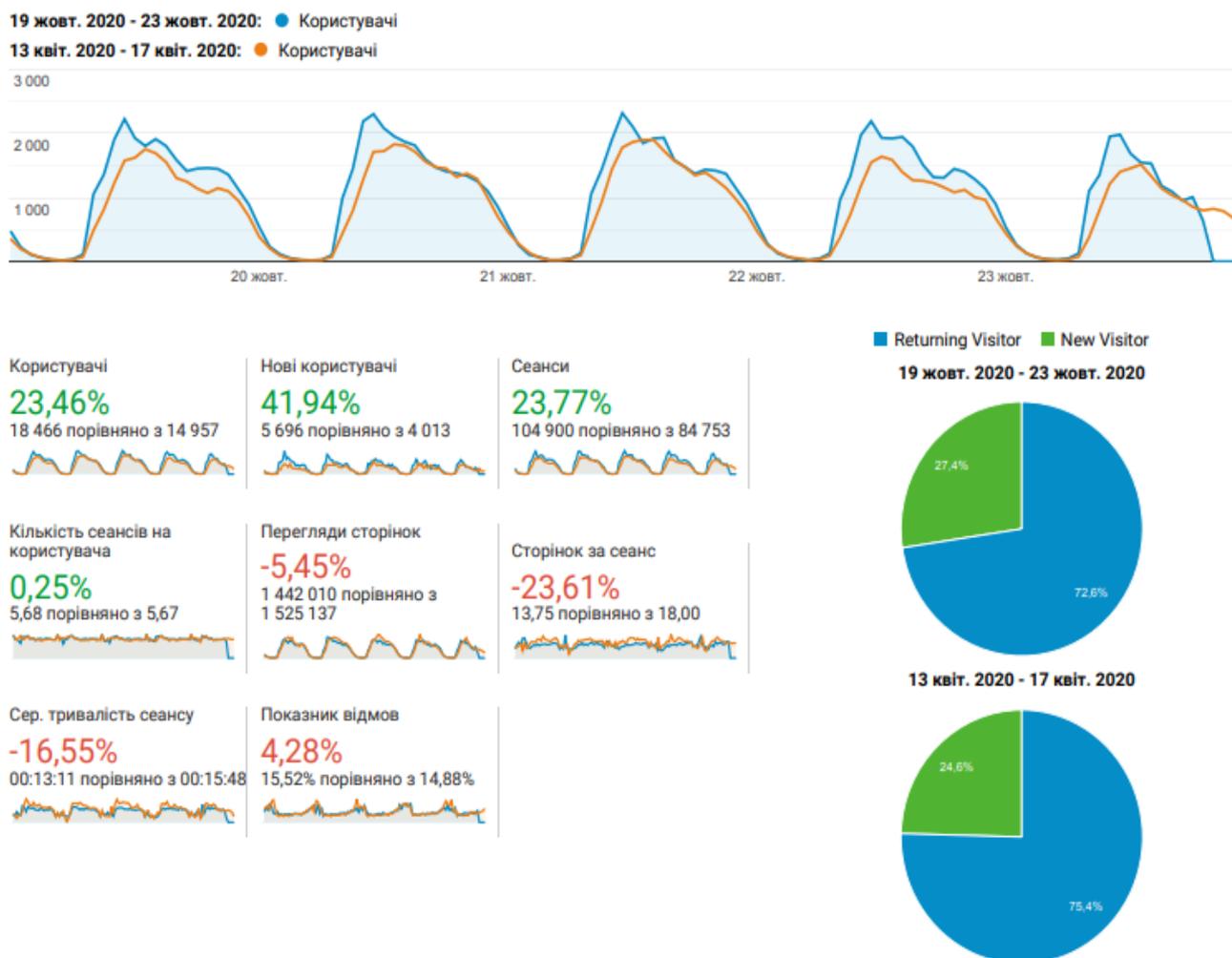


Fig. 5. Analytics of the use of resources of the educational portal of NULES of Ukraine

You can get both generalized data on the duration of sessions, page views per session, number of sessions, etc. using the appropriate Google Analytics module, as well as a more detailed analysis of each course with built-in Moodle tools from given analytics (Fig. 5).

In order to quickly adapt teachers to the conditions of distance and blended learning, NULES of Ukraine has developed a refresher course "Distance Education Tools", the program of which includes all the basic technologies for online learning (Fig. 6).

Програма підвищення кваліфікації : «Інструменти дистанційної освіти»

№ пп	Назва розділу та теми
1.	Планування роботи НПП кафедр, адміністративного персоналу факультетів та університету в умовах дистанційного навчання, моніторинг проведення он-лайн занять, організація дистанційної звітності викладачів та опитування студентів.
2.	Огляд інструментів дистанційного навчання для організації навчального процесу у закладах вищої освіти
3.	Методика використання електронних навчальних курсів на платформі Moodle в умовах дистанційного навчання. Інструменти для організації комунікації зі студентами.
4.	Інтегрування он-лайн платформи Zoom в ЕНК на платформі Moodle . Технічні та організаційні аспекти проведення он-лайн занять з використанням Zoom .
5.	Платформа Webex Meetings для проведення онлайн занять. Використання Webex Teams для групової роботи в межах корпоративного акаунту.
6.	Інструменти GoogleApps для дистанційного навчання. Спільна робота з документами.
7.	Google Classroom – інструменти дистанційного навчання для користувачів корпоративних акаунтів. Розміщення навчальних ресурсів та організація навчання використанням інструментів Google .
8.	Google Meetings – інструменти дистанційного навчання для користувачів корпоративних акаунтів. Організація он-лайн активностей з використанням інструментів Google .
9.	Сервіси платформи Microsoft365 для управління навчальною діяльністю студентів університету.
10.	Використання Microsoft Teams та он-лайн сервісів Microsoft для організації дистанційного навчання. Робота з документами, ресурсами, завданнями. Організація он-лайн занять, інструменти комунікації.
11.	Використання Календаря та спільних документів Google . Використання сервісів управління бізнес-процесами.
12.	Презентація прикладів застосування інструментів дистанційного навчання (ресурси, відеокастри, вебінари)



Готовність науково-педагогічних працівників

Fig. 6. Program of advanced training courses "Distance education tools"

**THE LIST OF MEMORANDA OF MUTUAL RECOGNITION
OF THE EDUCATIONAL SYSTEM, MEMORANDA OF DOUBLE DIPLOMAS,
INTERNATIONAL MOBILITY**

National University of Life and Environmental Sciences of Ukraine has been engaged in international activities since 1950.

Internationalization of the University is one of the main priorities for the development of NULES of Ukraine and an integral part of university life. It is developing within a single process of integration of higher education in Ukraine into the international system of higher education. It is worth noting that for the internationalization of the university the military year 2022 like the previous pandemic years was the most favorable.

Today NULES of Ukraine cooperates with 137 institutions from 42 countries under cooperation agreements. According to the results of the competition 2017-2022, the University has concluded Interinstitutional Agreements of the Erasmus + Program: KA1 for the implementation of academic mobility with 27 European universities.

Fruitful cooperation with world leading universities contributed to the reforming of the NULESU education system adapting it to the requirements of world universities. Two U.S. universities (Iowa – 1996, 2011 and Louisiana – 1998, 2009), the University of Ghent (Belgium, 2002) and Humboldt University (Germany, 2002) recognized educational system of NULES of Ukraine as the one that complies with their requirements.

Within the period from 2005 to 2020, NULESU signed Memoranda of double diploma with universities-partners:

- 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", "Economics and management" at Warsaw University of life Sciences (Poland) ;
- "Ecology", "Social Pedagogy" - Pomeranian university in Slupsk;
- "Economics and management" - Slovakia agrarian university, Nitra;
- "Management of investment activity and international projects" - Foggia University (Italy);
- ISA Lille (France).

These universities and NULES of Ukraine maintain agreements on mutual exchange of scientific and pedagogical staff and students.

The expansion of the geography of international relations, the desire of foreign institutions to cooperate with NULES of Ukraine and the participation of our university in the work of international organizations testify to its recognition and growing authority in the international arena. The growing role of education and science in society, diversification, as well as the internationalization of higher education - these global trends characterize the international component of the university, as a necessary condition for its comprehensive development.

Thanks to active actions in the direction of development of international cooperation, NULES of Ukraine became a leader among agricultural universities of Ukraine in the implementation of the principles of the Bologna Convention, which provides for integration into the European higher education area. This is done to improve employment opportunities and student mobility, as well as to increase international competitiveness in the European higher education area.

Evidence of the new level and prospects of NULES of Ukraine's participation in the world system of international educational and scientific relations is active cooperation with

FAO UN, NATO, ICA, Visegrad University Association (VUA), European University Association, IAEA, International Union of Forest Research Organizations (IURO) etc.

Every year in NULES of Ukraine:

- about 200 students do training and internship at overseas universities;
- about 100 students have practical training at the leading agricultural enterprises in different countries;
- over 300 lecturers do internship in foreign institutions train, establish cooperation and represent the university in international events.

Over the last 5 years (from 2018 to 2022) about 8000 teachers, scientists, postgraduates and students of NULES of Ukraine took part in various international events (including training, internships, practical training), including:

- participation in the meetings of the Executive Committee of the ICA;
- participation in meetings of the European Association of Universities;
- participation in the activities of the Visegrad University Association;
- participation in MAGATE;
- participation in joint research projects Erasmus+, HORIZON EUROPE, COST etc.;
- participation in international scientific conferences, seminars, symposia, etc.

Thus, international mobility provides students of NULES of Ukraine with a number of advantages, among which are the following:

- the opportunity to test oneself in a different system of higher education;
- acquisition of additional knowledge in related fields;
- use of modern technical equipment in the laboratories and research centers to solve problems;
- improving the level of knowledge of a foreign language;
- acquisition of professional work experience during the internship in a foreign company or during the internship in a research laboratory (center), which as a rule is provided in the curriculum;
- learning about foreign culture, history, customs of the country;
- the diploma of a foreign University and diploma of NULES of Ukraine according to the double degree programs.

CULTURAL AND EDUCATIONAL, SPORTS AND SOCIAL WORK

In the conditions of a full-scale war, the image of a young researcher, his conviction and persuasiveness in defending, arguing for a civic position, humanistic values, patriotism, striving to demonstrate their objectivity, meaningfulness, and necessity as factors of an adequate and critical understanding of a society, become extremely important.

In cooperation with the departments of cultural studies and physical education, as well as with the Senate of the student organization of NULES of Ukraine, the Center for Educational Work and Social Development engages in various events in terms of form and content, deputy directors of educational institutions, deans of faculties for educational work, mentors of academic groups of first-year students, as well as teachers-educators of student dormitories with whom there is constant communication. Regular monitoring of visits to university dormitories by teachers is carried out.

In terms of form and content, educational activities are classified according to priority directions:

- 1) Commemoration of dates memorable for the state.
- 2) Participation in International, All-Ukrainian scientific and practical conferences and round tables.
- 3) Volunteer activity.
- 4) Patriotic and educational, psychological-consulting, art-therapeutic events, creative meetings, seminars, intellectual competitions, clubs, awards, etc.
- 5) Sports events of various levels.
- 6) Anti-epidemic measures regarding COVID-19.
- 7) Security measures during the war.

The traditional ones are the "Freshman School" training, the purpose of which is to adapt students to the conditions of the open cultural and educational environment of the university; creative meetings, seminars, intellectual contests on patriotic topics with the student community of NULES of Ukraine dedicated to the Day of the Unity of Ukraine, the Day of Unification, the Day of the Heroes of the Heavenly Hundred, etc.; various educational excursions, university intellectual battles; friendly meetings with a game of chess, table tennis, checkers; student charity events combining leisure time, youth development and assistance to the glorious Armed Forces of Ukraine are developing and expanding the range of stakeholders and new directions and prospects for further educational work.

The Department of Cultural Studies carries out a complex of various educational activities. These are the organization and preparation of thematic evenings with students, the organization of creative evenings-reports, the organization of cultural and educational meetings of students with representatives of the creative intelligentsia, attendance performances in Kyiv theaters, concerts, participation in creative competitions and events organized at the faculties and at the university etc. The teachers of the department also organized the work of a number of groups and sections based on the interests of students - "Decorative floristry", the art studio "Holosivska palette", the press studio "Ideal", the "Art of serving" and "Cinema as a form of art sections, etc.

Physical education and the formation of a healthy lifestyle in accordance with the Decree of the President of Ukraine "On the National strategy for health-related physical activity in Ukraine for the period until 2025 "Physical activity - a healthy lifestyle - a healthy nation" at the university is carried out by the Center for Educational Work and Social Development, the Department of Physical Education, educational and health and sports center, trade union organization of NULES of Ukraine, trade union organization of students and graduate students of NULES of Ukraine by involving students, scientific and

pedagogical staff, scientific workers and employees of the university in physical education and sports.

Traditionally a significant number of physical culture and health and sports mass events are held annually at the university.

- 1) *Participation in official city, all-Ukrainian and international competitions.*
- 2) *World Championships.*
- 3) *European championships and cups.*
- 4) *Ukrainian championships and All-Ukrainian competitions.*
- 5) *City competitions.*
- 6) *Participation in competitions and tournaments of various levels.*
- 7) *Awarding sports titles.*

The university has 13 dormitories, two of which are intended for staff accommodation.

In connection with the full-scale invasion of the Russian Federation the simplest shelters were arranged in the basements of dormitories Nos. 1, 2, 4, 5, 6, 7, 8, 9, 10, 11. They are equipped with ventilation systems, primary means of fire extinguishing, the most necessary medical preparations, entrenching tools, drinking and technical water, etc. Each shelter is provided with a sufficient number of seats for residents. New furniture is regularly manufactured by the university's carpentry workshop to furnish the rooms and shelters of the dormitories.

STUDENT SELF-GOVERNING

Senate of the student organization of the university with the support of the Ukrainian Student League and others regularly holds charity tournaments, festivals, patriotic and will quests, presentation evenings, intellectual debates and works in cooperation with the university rectorate to create a student creative center.

To work effectively the Senate of the student organization NULES of Ukraine is divided into the following sectors:

- Student Council of campus ;
- social;
- project;
- international;
- scientific;
- cultural;
- sports;
- economic;
- TikTok;
- public relations;
- organizational;
- creative;
- e-sports;
- ultras;
- photo;
- copywriting.

ADMISSION TO MASTER DEGREE COURSE AT NULES OF UKRAINE

Admission to the master's program is carried out both at the expense of the state budget (by state order) and under the terms of the contract at the expense of individuals or legal entities. Persons who have obtained a bachelor's and master's degree (educational qualification level of a specialist) are admitted to the training programs for specialists of the Master's degree in accordance with the requirements approved by the Rules of Admission to the Master's Program of NULES of Ukraine.

Admission to study is carried out in specialties (specializations) in accordance with the List of fields of knowledge and specialties for which higher education candidates are trained, approved by the Resolution of the Cabinet of Ministers of Ukraine dated April 29, 2015 No. 266 and for interdisciplinary educational (educational and scientific) programs that correspond to Requirements for interdisciplinary educational (scientific) programs approved by the order of the Ministry of Education and Culture of February 01, 2021 No. 128 "On Approval of Requirements for Interdisciplinary Educational (Scientific) Programs", registered in the Ministry of Justice of Ukraine on April 6, 2021 under No. 454/36076.

The list of specialties (educational programs) according to which students are admitted to obtain the degree of "Master" in 2023 (Table 1)

Applicants for a master's degree are registered with the admissions committee for the CEE/CPEE. Further, applications for admission are submitted in electronic form through the applicant's electronic account created on the website <https://vstup.edbo.gov.ua>. It is possible to submit up to 20 applications for all funding sources and up to five applications for state procurement.

Writing a motivation letter is a mandatory requirement when submitting an electronic application. Points for motivational letters are not awarded, however, in the case of the same competitive score for applicants, the admissions committee checks the content of the written letter for integrity and evaluates it according to the appropriate rating.

Table 2. Deadlines for applications and documents, entrance examinations, competition and enrollment for the Master's degree in the fields of knowledge 05 "Social and Behavioral Sciences", 06 "Journalism", 07 "Management and Administration", 08 "Law", 28 "Public Administration", 29 "International Relations" for all forms of education

Stages of Admission Campaign	Terms
Registration of applicants for common entrance exam (CEE) and the common professional entrance exams (CPEE)	May 08, 2023 – until 18 ⁰⁰ , May 31, 2023
Registration of applicants' electronic cabinets, uploading the necessary documents	from July, 01, 2023
Registration of applications for participation in entrance exams (certain categories of applicants)	July 2023
Conducting entrance exams (certain categories of applicants)	July, 17 – July, 28, 2023
The main session of the common entrance exam (CEE) and the common professional entrance exams (CPEE)	June, 26 – July, 18, 2023
Additional session of the common entrance exam (CEE) and the common professional entrance exam (CPEE)	August, 04 – August, 14, 2023
Acceptance of applications and documents for study from persons who enter on the basis of the results of common entrance exam (CEE) and the common professional entrance exam (CPEE) and/or entrance exams at the educational institution	July, 31 – until 18 ⁰⁰ , August, 21, 2023
Conducting entrance exams for the contract (certain categories of entrants)	July, 31 – until 18 ⁰⁰ , August, 14, 2023
Deadlines for publication of the rating list of entrants	no later than August, 26, 2023

MASTER CURRICULA AND TRAINING PROGRAMS

Stages of Admission Campaign	Terms
recommended for enrollment	
Fulfillment of enrollment requirements by persons recommended for enrollment to enrollment according to the state order	August,29, 2023, until 18 ⁰⁰
Terms of entrants enrollment	by state order - August 31, 2023, at the expense of individuals or legal entities - 1 September and 30 September, 2023

Table 3. Deadlines for applications and documents, entrance examinations, competition and enrollment of candidates for the degree of "Master" in all other fields of knowledge for all forms of education

Stages of the admission campaign	Terms
Registration of applicants for common entrance exam (CEE)	May, 08, 2023 – until 18 ⁰⁰ , May, 31, 2023
Registration of applicants' electronic cabinets, uploading necessary documents	from July, 1, 2023
Registration of applications for participation in entrance exams	July, 2023
Conducting entrance exams	July, 17 –July, 28, 2023
The main session of the common entrance exam (CEE)	June, 26 – July, 18, 2023
Additional session of the common entrance exam (CEE)	August, 04 – August, 14, 2023
Acceptance of applications and documents for study from persons who enter on the basis of the results of common entrance exam (CEE) and entrance exams at the educational institution	July,31 – 18 ⁰⁰ , August, 21, 2023
Conducting entrance exams for the contract	July, 31 – until 18 ⁰⁰ , August, 14, 2023
Fulfillment of enrollment requirements by persons recommended for enrollment according to the state order	until 18 ⁰⁰ , August 29, 2023
Terms of entrants enrollment	by state order - August, 31, 2023, at the expense of individuals or legal entities - September,1 and September,30, 2023

Table 4. Deadlines for receiving applications and documents, entrance tests, competitive selection and enrollment for Master's degree entrants in fields of knowledge 20 "Agricultural sciences", specialties 133 "Industrial mechanical engineering", 141 "Electrical power industry, electrical engineering and electromechanics", 144 "Heat power engineering", 174 "Automation, computer-integrated technologies and robotics", 175 "Information and measurement technologies", 181 "Food technologies", 187 "Woodworking and furniture technologies", 192 "Construction and civil engineering", 274 "Automotive transport", 275.03 "Transport technologies (on road transport)" for all forms of education (at the expense of individuals and/or legal entities)

Stages of the admission campaign	Terms
Registration of applicants ' electronic cabinets, uploading necessary documents	from July,1 2023
Acceptance of applications and documents for study	July, 31 – until 18 ⁰⁰ , August, 21, 2023
The terms of publication of the ranking list of applicants recommended for enrollment	no earlier than August 30, 2023
Enrollment deadlines	at the expense of individuals or legal entities - no later than September 30, 2023

Table 5. Deadlines for receiving applications and documents, entrance exams, competitive selection and enrollment for training of entrants based on the acquired EL "Master" and EQL "Specialist" for obtaining the "Master" degree for all forms of obtaining education (at the expense of physical and/or legal entities)

Stages of the admission campaign	Terms
Registration of applicants' electronic cabinets, uploading necessary documents	from July, 2023
Registration of applications for participation in entrance exams	July, 2023
Conducting entrance exams	July, 17 – August, 14, 2023
Acceptance of applications and documents for study from persons who enter on the basis of the results of entrance exams at the educational institution	July, 31 – 18 ⁰⁰ , August, 21, 2023
The terms of publication of the ranked list of entrants recommended for enrollment	no earlier August, 30, 2023
Enrollment deadlines	at the expense of individuals or legal entities – no later than September, 30, 2023

Entrance tests are conducted:

- in specialties of fields of knowledge 05 «Social and Behavioral Sciences», 06 «Journalism», 07 «Management and Administration», 08 «Law», 28 «Public Administration and Administration», 29 «International Relations» – in the form of common entrance exam in a foreign language, a test of general academic competence and common professional entrance exam;

- in other specialties - in the form of common entrance exam in a foreign language, a test of general educational competence and a professional exam;

- in specialties that benefit from special state support, upon admission at the expense of individuals (legal entities) in the form of consideration of motivation letters.

The competitive score for admission to study to obtain the Master's degree is calculated according to the formula:

$$\text{Competitive score (CS)} = 0.2 * P1 + 0.2 * P2 + 0.6 * P3,$$

where P1 is the assessment of the test of general educational competence of the CEE;

P2 – assessment of the CEE in foreign language;

P3 – grade of CPEE or grade of a professional exam.

In order to overcome the threshold of 100 points (minimum score for applying for admission) from the components of the CEE and CPEE, the applicant must successfully answer at least 10% of the tasks of the corresponding tests.

The competitive score for entrants applying for state-sponsored positions must be at least 130 points.

**EDUCATION AND RESEARCH INSTITUTE
OF ENERGETICS, AUTOMATICS AND ENERGY SAVING**

Director – Doctor of Technical Sciences, Professor, Viktor Kaplun
Tel.: (044) 527-85-80.
E-mail: kaplun.v@nubip.edu.ua
Location: Building № 8, Room 11

ERI organizes and coordinates educational process of master training in educational program within specialties:

Specialty 141 "Power Engineering, Electrical Engineering and Electrical Mechanics"

Educational program "Power Engineering, Electrical Engineering and Electrical Mechanics"

Guarantor of the educational and professional program – Candidate of Technical Sciences, Assistant Professor Vitaliy Savchenko

Guarantor of the educational and research program – Doctor of Technical Sciences, Professor Valeriy Krivonosov

Graduating departments:

Electrical engineering, electromechanics and electrotechnology

Tel.: (044) 527-87-55; (044) 527-87-89.

E-mail: eee_chair@nubip.edu.ua

Head of department – associate professor Oleksandr Okushko

Power Supply named after Prof. V.M. Synkov

Tel.: (044) 527-85-80.

E-mail: elsupply_chair@nubip.edu.ua

Head of department – associate professor Oleksandr Gai.

Specialty 144 "Heat Power Engineering"

Educational program "Engineering of Renewable Energy Sources And Energy Management"

Guarantor of the educational and professional program – Doctor of technical sciences Valeriy Gorobets.

Graduation department:

Heat Power Engineering

Tel.: (044) 527-80-97.

E-mail: term_chair@nubip.edu.ua

Head of department – associate professor levgen Antypov.

Specialty 174 "Automation, computer integrated technologies and robotics"

Educational program "Automation, computer integrated technologies and robotics"

Guarantor of the educational and professional program – Doctor of Technical Sciences, Professor, Igor Bolbot

Guarantor of the educational and research program – Doctor of Technical Sciences, Professor Valeriy Koval

Graduating department:

Automatics and Robototechnical Systems named after acad. I. I. Martynenko

Tel.: (044) 527-82-22, (044) 527-83-82.

E-mail: avto.ea@gmail.com

Head of department – Doctor of Technical Sciences, Professor, Honored Worker of Education Vitaliy Lysenko

**Training of masters of sciences
in branch of knowledge "Electrical Engineering"
in specialty 141 "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 educational and professional program	130
– Full-time educational and research program	20
– Part-time	140
Duration of training:	
– Full-time educational and professional program	1 year 4 months
– Full-time educational and research program	1 year 10 months
– Part-time	1 year 4 months
Credits:	
– educational and professional program	90
– educational and research program	120
Qualification of graduates:	Master of power engineering, electrical engineering and electrical mechanics

Training concept

The educational-professional program is aimed at training professionals capable of designing, operating, ensuring a safety culture, performing installation, commissioning and repair, creating new equipment and implementing the latest technologies, carry out research and teaching.

Areas of employment of graduates

According to the current edition of the National Classification of Ukraine: Classifier of professions (DK 003: 2010) and International Standard Classification of Occupations 2008 (ISCO-08) graduate with professional qualification master's degree in "Electrical Power Engineering, Electrical Engineering and Electromechanics" may be employed in positions with the following professional title of work: 2143.2 "Electrical Engineer in the energy sector", "Energy Engineer".

Practical training

Mastering the program requires a mandatory condition of industrial production practices at the facilities of the power industry, industrial or agricultural enterprises.

Proposed Topics of master's qualification thesis

1. Automated frequency-controlled asynchronous electric drive.
2. Development and research of a feeding system with calf identification on a cattle fattening farm.
3. Development and research of electrical equipment for repairs and post-repair tests of induction motors.
4. Development of a set of measures for maintenance and diagnostics of consumer transformer substations.
5. Improving the technological process of heat treatment of metal workpieces in a continuous induction heater.

6. Improving the efficiency and reliability of power supply systems in the area of the 35/10 kV transformer substation.
7. Modernization of the 10 kV power transmission line with vacuum reclosers.
8. Improving maximum protection against short circuits in the electrical network with wind turbines.
9. Reconstruction of the settlement power supply system with the renewable energy sources.
10. Improving the algorithms of electricity storage for the operation of Smart Grid networks in the modes of the power supply daily cycle.

**Curriculum of Master training
in educational program "Power engineering, electrical engineering
and electrical mechanics"
(educational and professional program of master's training)**

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
GENERAL TRAINING CYCLE			
Compulsory components of EPP			
CC 1	Occupational safety in power plants	5	exam
CC 2	Energy security	5	exam
CC 3	Methodology and organization of scientific research with the basics of intellectual property	4	exam
CC 4	Business foreign language	4	exam
CC 5	Information Technology	4	
Total		22	
Optional components of EPP			
<i>Free choice according to the preferences of students from the list of disciplines</i>			
OCP 1	Choice from the catalog 1	4	test
OCP 2	Choice from the catalog 2	4	test
Total		8	
SPECIAL (PROFESSIONAL) TRAINING CYCLE			
Compulsory components of EPP			
CC 6	Electromagnetic compatibility	5	exam
CC 7	Mathematical methods of modelling in electrical engineering	5	exam
CC 8	Reliability of power systems	5	exam
CC 9	Energy information systems	4	
CC 10	Intelligent control systems for electrical systems	4	exam
CC 11	Project management in the power industry	5	exam
CC 12	Intelligent electromechanical systems	4	exam
CC 13	Production operational practice	8	
CC 14	Preparation and defense of master's qualification thesis	4	
Total		44	
Optional components of EPP			
<i>Free choice according to specialty</i>			
<i>Optional Block 1 "Electrical networks and systems"</i>			
OC 1.1	Fundamentals of digital energy	4	exam
OC 1.2	Technical operation of electrical installations of power supply systems	4	exam
OC 1.3	Management of reliability and energy efficiency of electrical networks	4	exam
OC 1.4	Dispatching management of electric power systems	4	exam
Total		16	
<i>Optional Block 2 "Electrical systems of distributed generation"</i>			

MASTER CURRICULA AND TRAINING PROGRAMS

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
OC 2.1	Smart Grid technology in the power industry	4	exam
OC 2.2	Combined power supply systems	4	exam
OC 2.3	Smart Metering systems	4	exam
OC 2.4	Microprocessor protection systems and automation of distributed generation	4	exam
Total		16	
<i>Optional Block 3 "Electrical technologies in bioenergy systems"</i>			
OC 3.1	Electrical technologies in bioenergy systems of enterprises	4	exam
OC 3.2	Smart - electrical technologies in biotechnical systems	4	exam
OC 3.3	Energy efficiency management of electrical equipment	4	exam
OC 3.4	Lighting installations and systems	4	exam
Total		16	
<i>Optional Block 4 "Energy management and audit»</i>			
OC 4.1	Energy management and energy audit	4	exam
OC 4.2	Automated energy control and accounting systems	4	exam
OC 4.3	Energy management design solutions	4	exam
OC 4.4	Electricity quality management	4	exam
Total		16	
The total amount of compulsory components		66	
The total amount of optional components		24	
THE TOTAL AMOUNT OF EPP			90

Annotations of subjects in the curriculum

GENERAL TRAINING CYCLE Compulsory components of EPP

Occupational safety in power plants. Protective measures in normal and emergency modes of electrical installations. Occupational safety during installation, repair and operation of electrical installations. Lightning protection of industrial and agricultural facilities.

Energy security. The main provisions of energy security of the state. Diversification of energy supply. Planning, organization and management at energy enterprises and in energy enterprises of industrial enterprises. The main directions of tariff formation in market conditions. Systems of planned and preventive repair of equipment. Energy consumption control. Energy balance. Rationing of fuel and energy resources. Energy consumption control systems. Energy saving measures.

Methodology and organization of scientific research with the basics of intellectual property. Formation of a system of knowledge on methodology, theory of method and research process, methodical support of research activity at stages of writing of master's work, formation of ability to organize scientific research of a certain problem with use of all complex of traditional methods of scientific researches, including general and special methods; modern concepts of scientific creativity, with the basics of the methodology of scientific knowledge and methods of scientific research, the development of abilities for self-education, the development of skills in the formation and use of a conscious methodological position of scientific research.

Business Foreign Language. The overall goal of the professional foreign language teaching program is to form students' professional language competencies, which will contribute to their effective functioning in the cultural diversity of the educational and professional environment. The method of searching for new information in foreign language sources, linguistic methods of analytical processing of foreign language sources

are studied. Research of printed foreign language original literature and expansion of lexical and grammatical skills. Methods and linguistic features of annotation and abstracting of foreign language sources, bases of translation of professionally-oriented foreign language sources are studied.

Information Technology. Information and control complexes and systems. Concepts of construction of automated electricity metering systems in the conditions of the energy market of Ukraine. Structures and features of construction and application of existing information and control systems and systems for electricity metering.

SPECIAL (PROFESSIONAL) TRAINING CYCLE

Compulsory components of EPP

Electromagnetic compatibility. Basic concepts of electromagnetic compatibility (EMC) and problems to be solved. Electromagnetic interference, their classification, characteristics. Ways of penetration of disturbances into the electrotechnical device. Sources of powerful periodic and impulse noise. Mechanisms of interference due to conductive (galvanic), capacitive, inductive connections. Influences through power circuits, on grounding circuits and common points. Influence between galvanically separated circuits and between circuits with common reference potential wire. Measures and methods to reduce impacts. Influences of electromagnetic fields on biological objects, normalization of these influences. The main components of protection against electromagnetic interference, characteristics and evaluation of their effectiveness (electromagnetic screens, filters, amplitude limiters). Devices for protection against impulse overvoltages in low voltage networks. Power line as a source of powerful interference. Providing EMC under the action of industrial periodic interference. Thunderstorm electromagnetic environment and internal lightning protection system. Zone concept of EMC support and its implementation.

Mathematical methods of modeling in electrical engineering. Basic definitions and concepts. Mathematical model, modeling, object, subject of research. Requirements to the model from the standpoint of the purpose and objectives of a particular study. Types of mathematical models. Modeling processes, their main stages: formulation and objectives of the study, construction of a mathematical model, development of algorithms and programs for limiting variables, verification of compliance and analysis of the results. Mathematical apparatus used to solve problems of electric power, electrical engineering and electromechanics: special computational methods, methods for solving algebraic and transcendental equations of one variable, methods for solving systems of linear and nonlinear finite equations and systems of differential equations in complete and partial derivatives, elements of similarity theory, set theory and graph theory. Delivery and solution of the problem of designing engineering objects in the field of electrical engineering, electromechanics and electrical technology according to search engine optimization algorithms, as well as providing students with skills in generating primary data for application of optimization methods and forming appropriate algorithms for finding optimal solutions for circuit design elements. objects.

Reliability of power systems. Theoretical bases of reliability and safety of electrotechnical systems, methods of ensuring reliability and safety of electrotechnical systems, methods of increase of reliability, estimation of reliability of electrotechnical systems by results of tests and operation, durability of electrical engineering, maintainability of electrical engineering, safety of electrical engineering, reliability of electrical systems technosphere, the main provisions of risk theory.

Energy information systems. The discipline provides the formation of professional and special competencies for systematic structural and algorithmic analysis of electricity consumption using primary energy from several sources, acquisition of theoretical and

practical skills in forming energy balances of local facilities and forecasting efficiency indicators in real time. Discrete and combinatorial mathematical modeling of power consumption systems with differentiated energy costs. Principles of structuring, decomposition, conveyerization in substantiation of structures and model series (capacities) of energy sources. Methods of synthesis of intelligent energy management systems. Internet of things architecture. Software and hardware complexes for the development of control systems based on the Internet of things.

Intelligent control systems for electrical systems. Concepts of construction of automated electricity metering systems in the conditions of the energy market of Ukraine. Structures and features of construction and application of existing information and control systems and systems for electricity metering.

Project management in the power industry. The discipline forms the necessary professional level of theoretical knowledge and practical skills of methodological bases and planning, management and making optimal design decisions in the power industry. As a result of studying the material, the future specialist will master the principles of project management at all stages of the life cycle.

Intelligent electromechanical systems. Microprocessors and micro-computers in electromechanical systems. Fundamentals of digital control of electromechanical systems. Z-transformation. Methods of analysis and synthesis. Electrical equipment and means of automation of intelligent electromechanical systems. Intelligent electromechanical systems of direct and alternating current. Modeling of intelligent electromechanical systems.

Optional components of EPP

Free choice according to specialty

Optional Block 1 "Electrical networks and systems"

Fundamentals of digital energy. The discipline forms stable knowledge and skills of students in the application of hardware components of intelligent Digital Substation systems and intelligent Smart Grid energy systems. Mastering the course program helps students to perform tasks from other disciplines, which involve scientific and practical (engineering) research, regarding the application of design results and the use of intelligent energy-saving systems.

Technical operation of electrical installations of power supply systems. The main purpose of the discipline is to form in future professionals sustainable knowledge and skills in conducting and organizing the technical operation of electrical installations of power supply systems, maintaining the required level of their reliability and efficiency. Study of methods of control of a technical condition of electric installations, reception of experience of use of the control and measuring equipment for diagnostics of malfunctions, and also acquisition of skills of work with technical documentation.

Management of reliability and energy efficiency of electrical networks. The course studies two classes of problems to be solved based on reliability: analysis (evaluation) and synthesis (optimization) tasks. The tasks of the analysis include a quantitative assessment of the reliability of elements and systems, the reliability of electrical networks and consumer systems with known parameters, modes, configurations of electrical networks and systems. The tasks of the synthesis of reliability are the choice of rational solutions in the planning, design, construction and operation of power systems, as well as in the manufacture of equipment that provides the required level of reliability.

Dispatching management of electric power systems. The discipline studies electric power industry as an object of automated control, normative support of switching in electrical installations, technology of operative switching in electric networks, operative-dispatching management in electric power, planning of power modes and mode

management, dispatching services of electric power enterprises, automated system electricity metering.

Optional Block 2 "Electrical systems of distributed generation"

Smart Grid technology in the power industry. Consumer - an active participant in the electricity market, distributed generation, intelligent metering, new automation and control systems, demand management, digital substations. Within the study of the discipline, the current trends in world energy development, the main provisions and components of the modern concept of Smart Grid and the state of implementation of this concept in the leading countries of the world. Peculiarities of evolution of intelligent electric networks, perspective forms and directions of development of Smart Grid systems and technologies, their realization in Ukraine are presented.

Combined power consumption systems. The main purpose of the discipline is the development of knowledge and skills of application of heterogeneous power sources, the establishment of relationships between the complex of autonomous and centralized power supply. Particular attention is paid to the study of the justification of the use of combined circuits with renewable power sources, the use of automatic redundancy schemes, methods of selection and coordination of parameters of power sources with power, the study of design features of power systems. All this makes it possible to prepare students for activities in the power services of enterprises in the formation and development of the energy market of Ukraine.

Smart Metering Systems. Intelligent electricity metering systems (Smart Metering). Technologies and equipment used to create intelligent electricity metering systems. Principles of organization and functional content of systems. Data transmission channels in accounting systems. Software for the operation of accounting systems. Cybersecurity of accounting systems.

Microprocessor protection systems and automation of distributed generation. Automatic control devices, emergency control and relay protection of scattered generation elements. Principles of operation, algorithms of operation, technical implementation, design and research of microprocessor automation and relay protection of distributed generation systems.

Optional Block 3 "Electrical technologies in bioenergy systems"

Electrical technologies in bioenergy systems of enterprises. Bioenergy as an alternative energy industry, the primary nature of biomass energy, energy potential of biomass, environmental friendliness and efficiency of the bioenergy industry, prospects for the development of the bioenergy industry in the world and in Ukraine, types of biofuels and production technologies, biogas, biodiesel, bioalcohol.

Smart - electrical technologies in biotechnical systems. Influence of electric field and corona discharge field on bioenergy systems; application of direct current and industrial frequency current for influence on bioenergy systems, application of electrozonation, application of electromagnetic radiation (infrared and ultraviolet radiation, acoustic processing, application of microwave and HF energy), main directions of application of magnetic field in bioenergy systems.

Energy efficiency management of electrical equipment. General provisions of reliability and energy efficiency in electrotechnological complexes. The relevance of energy efficiency in Ukraine and the world. Methods for determining the reliability and energy efficiency in the production and provision of services in electrical systems. Fundamentals of energy audit of electrotechnological complexes, systems and objects of agro-industrial complex. Reliability and energy efficiency of water heaters and steam boilers. Reliability and energy efficiency of electrical installations to create an optimal

microclimate of the premises. Reliability and energy efficiency of electrical equipment of protected soil structures. Reliability and energy efficiency of electrical equipment for drying, heat treatment and storage of agricultural products.

Lighting installations and systems. Acquaintance, study and use of modern achievements, innovative tendencies and directions of development in the field of lighting engineering. Study of modern lighting and irradiation systems based on energy efficient sources of optical radiation. Use of specialized computer programs for modeling and design of lighting, irradiation installations of external and internal lighting, and computer technologies with distributed systems of software and digital control of light sources for light-dynamic design of any objects. Introduction and study of modern computerized equipment for research of lighting installations and systems for various purposes. Design of modern automated lighting systems for various purposes.

Optional Block 4 "Energy management and audit"

Energy management and energy audit. The main regulations governing the activities of auditors. Principles of energy auditing. Energy audit technologies. Audit requirements. Financial, energy and environmental audit. Audit tasks. Energy audit market participants. Typical object and energy audit. Classification of types of energy audit. Preliminary energy audit. Purposeful energy audit. Comprehensive energy audit. Basic principles of energy management. Classification of energy consumption norms. Specific energy costs. Methodological bases of planning and forecasting of energy resources costs. Strategic energy plan. Energy passport of the enterprise. Energy service companies.

Automated energy control and accounting systems. Basic principles of creating an automated energy metering system. Primary sensors and technical means of information transmission. The main software products for LOSOD maintenance. Software environment "Energy Center". ADAH software environment. Software environment "NovaSys. Advanced Metering Infrastructure". Creating a system configuration. Survey of meters. Workstation energy. Formation of reporting channels. Creation, backup and transfer of databases to third parties. Report generation. Creating mnemonics for control points.

Energy management design solutions. Prospects and main directions of energy management in Ukraine and the world. The main problems and ways of energy management development in modern energy. Formation of energy supply strategies. Power supply and load management. Normalization of energy consumption. Methods for determining the norms of unit costs. Economic efficiency of energy saving management at the enterprise. The essence of the project, its conceptual level and tasks. Principled decisions, feasibility study. Composition and content of the project and working documentation. Determining the cost of construction. Regulatory framework and procedure for determining the cost of construction in Ukraine. Project examination.

Electricity quality management. Electricity quality indicators. Basic terms and definitions. State and international standards of electricity quality. Certification of electric energy. The impact of electricity quality on the work of consumers. Devices and means of measuring the quality of electricity. Energy management and control of electricity quality. Technical and organizational measures to ensure the quality of electricity. Compensation of higher harmonics. Reactive energy compensation. Technical means of voltage stabilization.

**Curriculum of Master training
in educational program "Power engineering, electrical engineering
and electrical mechanics"
(educational and research program of master's training)**

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
GENERAL TRAINING CYCLE			
Compulsory components of ERP			
CC 1.	Occupational safety in power plants	5	exam
CC 2.	Energy security	5	exam
CC 3.	Methodology and organization of scientific research with the basics of intellectual property	5	exam
CC 4.	Business foreign language	4	exam
CC 5.	Інформаційні технології	4	
Total		23	
Optional components of ERP			
Free choice according to the preferences of students from the list of disciplines			
OCP 1	Choice from the catalog 1	4	test
OCP 2	Choice from the catalog 2	4	test
Total		8	
SPECIAL (PROFESSIONAL) TRAINING CYCLE			
Compulsory components of ERP			
CC 6.	Electromagnetic compatibility	5	exam
CC7	Mathematical methods of modelling in electrical engineering	5	exam
CC8	Reliability of power systems	5	exam
CC9	Energy information systems	4	
CC10	Intelligent control systems for electrical systems	4	exam
CC11	Project management in the power industry	4	exam
CC12	Intelligent electromechanical systems	4	exam
CC13	Production operational practice	8	
CC14	Research practice	8	
CC15	Preparation and defense of master's qualification thesis	6	
Total		53	
Optional components of ERP			
Free choice in the specialty			
<i>Optional Block 1 "Electrical networks and systems"</i>			
OC 1.1	Functional intermetallics in power plants	4	exam
OC 1.2	Technical operation of electrical installations of power supply systems	4	exam
OC 1.3	Management of reliability and energy efficiency of electrical networks	4	exam
OC 1.4	Dispatching management of electric power systems	4	exam
OC 1.5	Methods for optimizing the modes of power systems	5	exam
OC 1.6	Artificial intelligence in power systems	5	exam
OC 1.7	Monitoring and control of electrical systems	5	exam
OC 1.8	Stability of power systems	5	exam
Total		36	
<i>Optional Block 2 "Electromechanical devices and systems"</i>			
OC 2.1	Software for research of electromechanical devices	4	exam
OC 2.2	Energy and environmental aspects of the creation of modern electromagnetic and electromechanical devices	4	exam
OC 2.3	Polyfunctional electromechanical converters for technological purposes	4	exam
OC 2.4	Energy efficiency management of electromechanical energy converters	4	exam

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
OC 2.5	Modern accounting systems and energy consumption regulation	5	exam
OC 2.6	Optimization methods of electromechanical devices and systems	5	exam
OC 2.7	Modern electrotechnological installations in processing processes	5	exam
OC 2.8	Visualization and processing of experimental studies	5	exam
Total		36	
The total amount of compulsory components		76	
The total amount of optional components		44	
THE TOTAL AMOUNT OF ERP			120

Annotations of subjects in the curriculum

GENERAL TRAINING CYCLE Compulsory components of ERP

Occupational safety in power plants. Protective measures in normal and emergency modes of electrical installations. Occupational safety during installation, repair and operation of electrical installations. Lightning protection of industrial and agricultural facilities.

Energy security. The main provisions of energy security of the state. Diversification of energy supply. Planning, organization and management at energy enterprises and in energy enterprises of industrial enterprises. The main directions of tariff formation in market conditions. Systems of planned and preventive repair of equipment. Energy consumption control. Energy balance. Rationing of fuel and energy resources. Energy consumption control systems. Energy saving measures.

Methodology and organization of scientific research with the basics of intellectual property. Formation of a system of knowledge on methodology, theory of method and research process, methodical support of research activity at stages of writing of master's work, formation of ability to organize scientific research of a certain problem with use of all complex of traditional methods of scientific researches, including general and special methods; modern concepts of scientific creativity, with the basics of the methodology of scientific knowledge and methods of scientific research, the development of abilities for self-education, the development of skills in the formation and use of a conscious methodological position of scientific research.

Business Foreign Language. The overall goal of the professional foreign language teaching program is to form students' professional language competencies, which will contribute to their effective functioning in the cultural diversity of the educational and professional environment. The method of searching for new information in foreign language sources, linguistic methods of analytical processing of foreign language sources are studied. Research of printed foreign language original literature and expansion of lexical and grammatical skills. Methods and linguistic features of annotation and abstracting of foreign language sources, bases of translation of professionally-oriented foreign language sources are studied.

Information Technology. Information and control complexes and systems. Concepts of construction of automated electricity metering systems in the conditions of the energy market of Ukraine. Structures and features of construction and application of existing information and control systems and systems for electricity metering.

SPECIAL (PROFESSIONAL) TRAINING CYCLE**Compulsory components of ERP**

Electromagnetic compatibility. Basic concepts of electromagnetic compatibility (EMC) and problems to be solved. Electromagnetic interference, their classification, characteristics. Ways of penetration of disturbances into the electrotechnical device. Sources of powerful periodic and impulse noise. Mechanisms of interference due to conductive (galvanic), capacitive, inductive connections. Influences through power circuits, on grounding circuits and common points. Influence between galvanically separated circuits and between circuits with common reference potential wire. Measures and methods to reduce impacts. Influences of electromagnetic fields on biological objects, normalization of these influences. The main components of protection against electromagnetic interference, characteristics and evaluation of their effectiveness (electromagnetic screens, filters, amplitude limiters). Devices for protection against impulse overvoltages in low voltage networks. Power line as a source of powerful interference. Providing EMC under the action of industrial periodic interference. Thunderstorm electromagnetic environment and internal lightning protection system. Zone concept of EMC support and its implementation.

Mathematical methods of modeling and optimization in electrical engineering. Basic definitions and concepts. Mathematical model, modeling, object, subject of research. Requirements to the model from the standpoint of the purpose and objectives of a particular study. Types of mathematical models. Modeling processes, their main stages: formulation and objectives of the study, construction of a mathematical model, development of algorithms and programs for limiting variables, verification of compliance and analysis of the results. Mathematical apparatus used to solve problems of electric power, electrical engineering and electromechanics: special computational methods, methods for solving algebraic and transcendental equations of one variable, methods for solving systems of linear and nonlinear finite equations and systems of differential equations in complete and partial derivatives, elements of similarity theory, set theory and graph theory. Delivery and solution of the problem of designing engineering objects in the field of electrical engineering, electromechanics and electrical technology according to search engine optimization algorithms, as well as providing students with skills in generating primary data for application of optimization methods and forming appropriate algorithms for finding optimal solutions for circuit design elements. objects.

Reliability of power systems. Theoretical bases of reliability and safety of electrotechnical systems, methods of ensuring reliability and safety of electrotechnical systems, methods of increase of reliability, estimation of reliability of electrotechnical systems by results of tests and operation, durability of electrical engineering, maintainability of electrical engineering, safety of electrical engineering, reliability of electrical systems technosphere, the main provisions of risk theory.

Energy information systems. The discipline provides the formation of professional and special competencies for systematic structural and algorithmic analysis of electricity consumption using primary energy from several sources, acquisition of theoretical and practical skills in forming energy balances of local facilities and forecasting efficiency indicators in real time. Discrete and combinatorial mathematical modeling of power consumption systems with differentiated energy costs. Principles of structuring, decomposition, conveyerization in substantiation of structures and model series (capacities) of energy sources. Methods of synthesis of intelligent energy management systems. Internet of things architecture. Software and hardware complexes for the development of control systems based on the Internet of things.

Intelligent control systems for electrical systems. Concepts of construction of automated electricity metering systems in the conditions of the energy market of Ukraine.

Structures and features of construction and application of existing information and control systems and systems for electricity metering.

Project management in the power industry. The discipline forms the necessary professional level of theoretical knowledge and practical skills of methodological bases and planning, management and making optimal design decisions in the power industry. As a result of studying the material, the future specialist will master the principles of project management at all stages of the life cycle.

Intelligent electromechanical systems. Microprocessors and micro-computers in electromechanical systems. Fundamentals of digital control of electromechanical systems. Z-transformation. Methods of analysis and synthesis. Electrical equipment and means of automation of intelligent electromechanical systems. Intelligent electromechanical systems of direct and alternating current. Modeling of intelligent electromechanical systems.

Optional components of ERP

Free choice according to specialty

Optional Block 1 "Electrical networks and systems"

Functional intermetallics in power plants. The discipline refers to the innovative direction of using alloys with the effect of shape memory (functional intermetallics) to increase the reliability and efficiency of power plants. Phenomenology and features of physical properties of functional intermetallics. Areas of use of the effects of shape memory and elasticity in the power industry. Reliability management of contact systems using functional intermetallics. Control of temperature modes of electrical installations. Thermoelectromechanical drives based on functional intermetallics. Modeling of parameters and characteristics of elements from functional intermetallics.

Technical operation of electrical installations of power supply systems. The main purpose of the discipline is to form in future professionals sustainable knowledge and skills in conducting and organizing the technical operation of electrical installations of power supply systems, maintaining the required level of their reliability and efficiency. Study of methods of control of a technical condition of electric installations, reception of experience of use of the control and measuring equipment for diagnostics of malfunctions, and also acquisition of skills of work with technical documentation.

Management of reliability and energy efficiency of electrical networks. The course examines two classes of problems to be solved based on reliability: analysis (evaluation) and synthesis (optimization). The tasks of the analysis include a quantitative assessment of the reliability of elements and systems, the reliability of electrical networks and consumer systems with known parameters, modes, configurations of electrical networks and systems. The tasks of reliability synthesis are the choice of rational solutions in the planning, design, construction and operation of power systems, as well as in the manufacture of equipment that provides the required level of reliability.

Dispatching management of electric power systems. The discipline studies electric power industry as an object of automated control, normative support of switching in electrical installations, technology of operative switching in electric networks, operative-dispatching management in electric power, planning of power modes and mode management, dispatching services of electric power enterprises, automated system electricity metering.

Methods for optimizing the modes of power systems. General information about power systems and their modes, optimal modes of power systems, optimization of long-term modes of power systems, optimization methods (classical optimization methods without restrictions, Lagrange method, functions of one variable, functions of many variables, gradient methods, optimization methods in the presence of restrictions, basics of

penalty method functions), basics of multicriteria optimization of modes, multi-purpose complex optimization of modes of power systems, optimization of modes of power supply (problems of optimization of quality of the electric power, problems of optimum compensation of reactive power, problems of optimization of power consumption in the conditions of power deficit).

Artificial intelligence in power systems. The concept of artificial intelligence in the problems of energy management. Possibilities of different types of artificial intelligence (neural networks, phase logic, structural information method). Implementation of concepts of electric power development on the basis of artificial intelligence. Study of artificial intelligence modeling packages in matlab (streetflow, fuzzy logic, neural networks, signal information processing, communication systems and others). Methods of pattern recognition in static and dynamic electric power objects. Methods of teaching artificial intelligence algorithms. Built-in expert systems. Algorithms for automatic signal processing of alarm files of registrars in networks. Hierarchical levels of information processing in the power system. Methods of signal and semantic filtering of transient signals in the network.

Monitoring and control of electrical systems. Monitoring systems and determination of vector parameters of electrical systems. Method of functional modeling and hierarchical models for calculations of steady modes. Estimation of dynamics of electric power systems. Fundamentals of control of electrical systems.

Stability of power systems. Ensuring normal stable operation of the power supply system in case of any violations of its modes; mastering the processes occurring in synchronous generators of stations and in networks of electrical systems; study of electromechanical transients in electrical systems, both for large and small perturbations; ensuring static stability of the electrical system; ensuring the dynamic stability of the electrical system; analysis and ensuring the stability of load nodes in both small and large disturbances; study of the causes of asynchronous modes in electrical systems and methods of their elimination; analysis of measures to improve the sustainability and quality of transition processes.

Optional Block 2 "Electromechanical devices and systems"

Software for research of electromechanical devices. The discipline covers issues related to the study of modern software tools and tools for calculation, modeling, analysis and optimization of various electromechanical systems.

Energy and environmental aspects of the creation of modern electromagnetic and electromechanical devices. The discipline course covers: general information about energy and its place in the life of mankind, about the state and prospects for the development of the fuel and energy complex, about traditional and alternative sources of energy. The main aspects of the interaction of the creation of modern electromagnetic and electromechanical devices in energy, basic power plants and their interaction with the environment, as well as directions for reducing the negative impact of energy on the environment are considered.

Polyfunctional electromechanical converters of technological purpose. Analysis of scientific and technical problems of creation of polyfunctional electromechanical converters (PEMP); basic principles of PEMP creation; generalized field-field mathematical model of interconnected electromagnetic, thermal and mechanical processes of PEMP; mathematical model of PEMP for optimization of energy conversion processes; energy analysis of the processes of interaction of PEMP and the working load-cooling medium with different rheological properties for a reasonable choice of mechanical and thermal loads of PEMP; methodology, development of algorithms and mathematical support of object-oriented design and optimization of PEMP; method of experimental determination of electromagnetic moment and PEMP parameters; methods and means of

increasing the stability of PEMP in dynamic modes; theoretical substantiation of the process of formation and development of methods for experimental determination of the spectrum of higher harmonics of PEMP taking into account the temperature asymmetry of the hollow ferromagnetic rotor.

Energy efficiency management of electromechanical energy converters.

Methods and structures of asynchronous electric drive, which increase the energy efficiency of machines and mechanisms that use electric drives, rational choice of electrical equipment of electric drives; reduction of losses in driving electric motors; reduction of losses in supply networks; transition from unregulated electric drive to regulated, choice of type and control structure of asynchronous electric drive, providing increase of energy efficiency and operational characteristics, methods and technical means of increase of energy efficiency of asynchronous electric drives due to choice of motors with high energy characteristics. active rectifiers.

Modern accounting systems and energy consumption regulation. The course of the discipline describes the structure and causes of losses of energy carriers in energy consumption systems. Methods of calculating losses in energy consumption systems, as well as methods of analysis and selection of measures to reduce them are considered. Organizational and technical measures to reduce losses in energy consumption systems are substantiated. Methods and means of optimal management of power system regimes to reduce losses during transportation, distribution and consumption are considered. Various software products that implement the described methods of calculating losses and allow developing measures to reduce them are considered.

Optimization methods of electromechanical devices and systems. The course of the discipline describes the scientific and technical aspects of the use of the latest electrotechnological installations and devices in production processes, the development of engineering methods for solving problems related to the rational use of electrical technologies.

Modern electrotechnological installations in processing processes. Technical and economic bases of electrotechnological processes. Electric water heaters and steam boilers. Electrotechnological installations for creation of an optimum microclimate of rooms. Electrical equipment of protected soil structures. Electrotechnological equipment for drying, heat treatment and storage of agricultural products. Electrotechnological equipment of repair enterprises. Household electric heating devices.

Visualization and processing of experimental studies. Statistical processing of experimental results, calculation of errors, visualization of experimental results, 2D and 3D graphics, computer programs for processing and presentation of experimental data.

**Training of masters of sciences
in branch of knowledge "Electrical Engineering"
in specialty 144 "HEAT POWER ENGINEERING"
educational program "ENGINEERING OF RENEWABLE ENERGY SOURCES
AND ENERGY MANAGEMENT"**

Form of Training	Licensed number of persons:
– Full-time educational and professional program	20
Duration of training:	
– Full-time educational and professional program	1 year 4 months
Credits:	
– educational and professional program	90
Qualification of graduates:	Master of Heat and power engineer

Training concept

The concept of training heat energy engineers consists in training specialists who are specialists in the field of heat energy, who are able to work in various branches of the heat energy direction, namely in renewable heat energy, enterprises whose technological processes are related to the production of new heat energy equipment, heat energy engineers for agro-industrial of the complex - greenhouse plants, farms, poultry farms, specialists in the field of heat supply systems using renewable energy sources

Practical training

Practical training of students takes place at experimental stations and educational and experimental farms of the National Institute of Science and Technology of Ukraine, at thermal energy enterprises, thermal communal energy organizations, in agricultural holdings, at companies engaged in the production and implementation of modern thermal energy equipment, including renewable energy sources in industrial, household and agro-industrial sectors.

Proposed Topics of master's qualification thesis

1. Development of modern energy supply systems for buildings using RES.
2. Energy supply of farming using renewable energy sources
3. Development of an energy supply system for a cattle farm using cogeneration and heat pump technologies
4. Power supply of a poultry farm using a biogas plant
5. Energy supply of the agricultural holding based on solid fuel boilers operating on agricultural waste.

**Curriculum of Master training
in educational program "Engineering of renewable energy sources
and energy management "
(educational and professional program of master's training)**

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
GENERAL TRAINING CYCLE			
Compulsory components of EPP			
CC 1	Labor safety in power plants	4	Exam
CC 2	Biofuel	4	Exam
CC 3	Business Foreign Language	4	Exam
Total		16	

MASTER CURRICULA AND TRAINING PROGRAMS

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
Optional components of EPP			
<i>Free choice according to the preferences of students from the list of disciplines</i>			
OCP 1	Choice from the catalog 1	4	test
OCP 2	Choice from the catalog 2	4	test
Total		8	
SPECIAL (PROFESSIONAL) TRAINING CYCLE			
Compulsory components of EPP			
CC 4	Heat power plants and systems with RES	4	Exam
CC 5	Applied problems of energy saving	4	Exam
CC 6	Modeling of thermal and hydrodynamic processes	4	Exam
CC 7	Eco-biotechnologies in heat supply systems	4	Exam
CC 8	Innovative technologies of renewable energy	4	Exam
CC 9	Designing thermal power plants and RES systems	4	Exam
CC 10	Basics of energy management and audit.	4	Exam
CC 11	Microclimate creation systems in buildings using secondary energy sources	4	Exam
CC 12	Project analysis and expertise.	4	Exam
CC 13	Basics of the scientific research.	4	Exam
CC 14	Manufacturing operational practice	6	Exam
CC 15	Research practice	4	Test
CC 16	Preparation and defense of a master's qualification thesis	4	
Total		54	
Optional components of EPP			
<i>Free choice according to specialty</i>			
<i>Optional Block 1 "Engineering of power supply systems"</i>			
OC 1.1.	Energy efficiency certification of buildings and engineering systems	4	Exam
OC 1.2.	Integrated heating, water and gas supply systems	4	Exam
OC 1.3.	Software for heat engineering calculations	4	Exam
OC 1.4.	Environmental engineering	4	Exam
Total		16	
<i>Optional Block 2 "Design and management of RES systems"</i>			
OC 2.1.	Smart management of the use of energy resources	4	Exam
OC 2.2.	Management of projects in thermal energy	4	Exam
OC 2.3.	VR technologies	4	Exam
OC 2.4.	Designing thermal power plants and RES systems	4	Exam
Total		16	
The total amount of compulsory components		66	
The total amount of optional components		24	
THE TOTAL AMOUNT OF EPP		90	

Annotations of disciplines in the curriculum

**GENERAL TRAINING CYCLE
Compulsory components of EPP**

Labor safety in power plants. The discipline examines legal and organizational issues of labor protection, dangerous and harmful factors of the industrial environment and methods of reducing them to normative values, the basics of fire safety and electrical safety in order to prevent accidents and occupational diseases at work. The goal of studying the discipline is the theoretical and practical training of specialists who, on the basis of the acquired knowledge, would be able to develop and implement safe working conditions at workplaces, design technical safety equipment. The task of the discipline is to train future specialists capable of implementing occupational health and safety solutions

aimed at improving working conditions, reducing injuries and occupational diseases of workers in the agricultural sector and the energy sector, and increasing their work capacity.

Biofuel. The discipline studies the basic principles and technologies of using biomaterials to obtain thermal and electrical energy for the power supply of objects of various purposes. Considered technologies for obtaining liquid biofuels. The basics of using biogas technologies in heat and electric energy generation systems of farms, agricultural holdings and other objects of the agricultural sector and the energy sector are studied. Mastering the system of knowledge on the theoretical and practical bases of the study of biotechnological processes, which have an ecological orientation and are related to the solution of environmental problems of disposal (bioprocessing) of waste and garbage, degradation of various types of pollution, ensure the production of environmentally friendly products based on cheap and affordable raw materials.

Business Foreign Language. Studying the discipline develops students' communicative competence, namely the use of skills, abilities and knowledge of a foreign language in the process of business communication with representatives of other countries on various issues related to business and the labor market of the agricultural sector and the energy sector, preparation for participation in international conferences, projects and discussions, as well as conducting presentations, written exchange of business information (official and unofficial letters, summaries of various types of research articles and reports), thereby contributing to the versatile development of the student's personality and his socialization in a foreign-speaking society..

SPECIAL (PROFESSIONAL) TRAINING CYCLE

Compulsory components of EPP

Heat power plants and systems with RES. The purpose of the discipline is to form students' knowledge of the basics of operation and principles of construction of thermal power plants and systems in which RES are used. Tasks that are considered in the studied discipline: familiarization with basic concepts, terminology and definitions used in thermal power plants with RES; studying the principles of operation of heat pumps, cogeneration plants with heat pumps, mastering the methods of calculating heat energy plants from RES, studying their designs and the basics of operation. Acquaintance with modern methods and installations for the production of thermal and electrical energy at agricultural facilities. As a result of studying the academic discipline, the student should know: the basics of the operation of thermal power plants and RES systems, power facility management systems, their calculation methods and the basics of operation.

Applied problems of energy saving. Energy saving as an activity aimed at rational use of energy and natural energy resources, so that, at increasing the energy efficiency of the economy, is gaining more and more importance in Ukraine seeing the need for economical use of fuel-energy resources (FER). The task of reducing the primary FER's applying can be solved due to the effective implementation of alternative energy sources.

The main objective of the discipline is to deepen students' theoretical knowledge in the field of thermophysical foundations of energy transformation from secondary (waste heat of individual technological processes) and renewable sources (energy of the Sun, wind, biomass, geothermal sources, etc.) into other types of energy.

The task of the discipline is the formation of understanding by students on the purpose, principle of operation, composition and technical characteristics of installations that use alternative energy sources and also practical skills in the use of such systems.

Modeling of thermal and hydrodynamic processes. The discipline examines the basic principles of mathematical modeling of heat and mass transfer processes occurring

in thermal power equipment, agricultural and industrial facilities. The main equations that describe the processes of heat and mass transfer and methods of their solution are considered. The basics of numerical calculation of integro-differential equations and their computer calculation are outlined. Information on the main packages of ANSYS FLUENT application programs for the calculation of hydrodynamics, thermophysical processes occurring in objects and thermal power plants of various purposes is given. The practical skills of working with such packages are being mastered.

Eco-biotechnologies in heat supply systems. The discipline studies concepts and terms related to eco- and bioenergy systems that are used in the agricultural sector and the field of energy, the structure and basic principles of their operation, the theoretical basis for calculating their structural and energy parameters, technical and economic indicators of their application. Considered: basic principles of resource conservation and their economical use in the production, transformation and consumption of various types of energy and modern energy-saving technologies in heat supply systems; methods of saving energy resources and energy; the current state and prospects for the use of renewable energy sources; ecological problems and methods of environmental protection in the process of extraction, transportation and use of various types of energy resources.

Innovative technologies of renewable energy. Prospects for sustainable development of the global economy are closely related to the possibilities of effective use of renewable energy sources (RES), which are gradually replacing traditional sources and gaining more and more importance. The application of innovative principles of renewable energy production, which contribute to its effective applying, will give an additional boost to environmental protection, ensure reliable energy supply and increase the competitiveness of the economy;

The purpose of the discipline is to study the principles of development of innovations in the field of RES, in particular the principles of systematicity, knowledge-intensiveness, practical usefulness of developments, etc.

The task of the discipline is the formation of students' theoretical knowledge and practical skills on the development and implementation of concepts for the development of renewable energy, taking into account current changes in fuel and energy balances and assessing the impact of this segment of energy on related sectors of the economy of Ukraine.

Designing thermal power plants and RES systems. The main goal of the discipline is to form future specialists permanent knowledge and skills in the design of heat energy facilities and systems based on VDE, development of design documentation for network objects of heat energy and power stations, study and calculation of parameters of heat supply schemes for consumers using VDE, study calculation methods for the design of energy facilities, study of the state regulatory framework necessary for the implementation and approval of project documentation.

Terms. Review of regulatory documents for construction. Approval of project documentation. Study of regulatory documents and standards. Quality and safety of thermal power plants. General provisions for the construction of heat supply systems.

Basics of energy management and audit. The discipline forms an understanding of the purpose and basic principles of the functioning of energy management systems at enterprises, in housing and communal services, and in individual buildings. In the course of studying the discipline, the applicant: becomes familiar with the basic standards and methodology and procedure for conducting an energy audit of heat and electricity consumption facilities; studies the technologies and equipment used in conducting an energy audit; acquires skills in performing basic calculations and providing advisory services on energy saving issues. Studying the discipline contributes to the formation of competences in performing energy inspections of public, administrative and residential

buildings, as well as industrial facilities; determining the methods of monitoring and controlling the consumption of energy resources, evaluating the effectiveness of their use and managing energy consumption at facilities; familiarization with the principles of building an energy management system at the facility.

Microclimate creation systems in buildings using secondary energy sources.

The transition into the new millennium became a historical milestone in the development of microclimate creation systems in Ukraine. Currently, Ukraine is undergoing a new stage of development of microclimate systems, which consists in the widespread use of modern systems and the latest developments, and energy saving measures.

The main feature of this period is the automation of thermal and hydraulic modes at the consumer level, which enables individual automatic maintenance of the desired thermal comfort. When designing engineering systems of buildings, automatic equipment is used, which is designed to ensure thermal comfort in the premises with minimal operating costs. In the training course, future masters in heat and power engineering will receive theoretical knowledge and practical skills regarding science-based energy-saving technologies to ensure comfortable microclimate conditions in rooms equipped with modern heating devices, as well as using secondary energy sources. The task of the discipline is to prepare students for independent work, making qualified engineering decisions regarding the design of microclimate support systems using secondary energy sources.

Project analysis and expertise. The discipline is dedicated to the study of the basic principles, methods and tools of modern project analysis, decision-making procedures in project analysis, as well as marketing justification, technical feasibility of project implementation, project evaluation from the point of view of environmental, social and institutional viability, as well as its financial and economic attractiveness. The subject of the study of the discipline is the processes that take place at the stage of the examination of projects as a form of risk entrepreneurship, which is connected with the creation of thermal energy facilities and systems, including RES. When studying the discipline, the theoretical and methodological principles of forming a holistic understanding of the organization and management of the project examination process are determined.

Basics of the scientific research. Content and principles of scientific research. Research program and methodology. Methodology of experimental research. Mathematical modeling of objects of scientific research. Scientific report. Implementation of research results in production..

Optional components of EPP

Free choice according to specialty

Optional Block 1 "Engineering of energy supply systems"

Energy efficiency certification of buildings and engineering systems. The study of the discipline provides theoretical knowledge and practical abilities and skills for solving complex problems of assessing the existing condition and increasing the level of energy efficiency of buildings and engineering systems. The discipline focuses on obtaining in-depth knowledge of: analysis of information on the actual or design characteristics of enclosing structures and engineering systems; assessment of compliance of the calculated level of energy efficiency with the established minimum requirements for the energy efficiency of buildings; providing recommendations for increasing the level of energy efficiency of buildings, taking into account local climatic conditions, are technically and economically justified. Mastering the discipline allows you to acquire the necessary skills for conducting energy efficiency certification of buildings and engineering systems.

Integrated heating, water and gas supply systems. The main task in the development of systems of engineering equipment that meets the requirements of comfort in various natural and climatic conditions is the identification of reserves for saving water and fuel and energy resources, taking into account the requirements of rational nature management. Thanks to the efficient operation of heating, gas and water supply systems, the population's needs for comfortable living, work and recreation are met. In this regard, the choice of equipment for these engineering systems is a very important task.

In the training course, future masters of heat and power engineering will receive theoretical knowledge and practical skills regarding the engineering, geological and climatic conditions of the construction area, as a result, they will be able to make the right choice of life support systems, which include heating, gas and water supply systems, determine the means of modern technology, choose rational methods of routing, laying engineering networks and placing engineering communication facilities that ensure the normal operation of all networks.

The task of the discipline is to prepare students for independent work, making qualified engineering decisions regarding the design of integrated heat, water and gas supply systems.

Software for heat engineering calculations. The purpose of the discipline is to form students' knowledge of the basics of operation and principles of building computer networks, a personal computer and its software for researching models of technological processes and thermal energy objects of agro-industrial production based on the use of computer technologies.

As a result of studying the academic discipline, the student must master the hardware and software tools of personal computers and computer networks; modern computer technologies for data processing; environments for the development of laboratory virtual instruments of the Sapro packages LabVIEW, MathCad; a package of Microsoft Office programs for creating presentations, processing texts, tables, statistical data processing using Microsoft Excel spreadsheet tools and creating and formatting an electronic version of the reporting documentation of research results; software-informational and organizational-methodical support for research and design.

Environmental engineering. Systems and devices for cleaning harmful emissions during the operation of thermal power plants are studied. Installations and equipment for capturing solid components, as well as sulfurous, nitrogenous and other gaseous components were considered in order to improve the environmental indicators of the environment. The main directions of scientific research are studied, which are aimed at cleaning the environment and replacing traditional thermal power plants with environmentally friendly ones.

Optional Block 2 "Design and management of RES systems"

Smart management of the use of energy resources. The discipline studies modern methods and algorithms for the distribution of energy resources using optimization methods, automatic control systems for the distribution of energy resources for consumers with the aim of the most rational use of them.

Management of projects in thermal energy. Studying the discipline contributes to the acquisition of theoretical knowledge about project management and the acquisition of practical project management skills. Students will acquire knowledge of securing financing, performing economic and technical-technological calculations in project management, determining the need and implementing management of resources and the project team, using project management functions and mechanisms for implementing managerial decisions in project management. Mastering the material will contribute to the formation of modern system thinking and a complex of special skills and abilities in the future

specialists in the application of a universal toolkit for the development and implementation of projects in order to achieve the effective existence and development of thermal energy systems from renewable energy sources of organizations and enterprises of the agricultural sector and the energy sector.

VR technologies. The study of the discipline is aimed at teaching students to use virtual reality technologies to analyze the features of the operation of thermal power plants and systems, thermal energy transfer technologies, autonomous, reserve and emergency power supply systems, including those using renewable energy sources. VR technologies allow students to gain experiences that students would not normally have access to. The skills obtained as a result of the course can be used when using software products that use elements of virtual reality.

Designing thermal power plants and RES systems. The main goal of the discipline is to form future specialists permanent knowledge and skills in the design of heat energy facilities and systems based on VDE, development of design documentation for network objects of heat energy and power stations, study and calculation of parameters of heat supply schemes for consumers using VDE, study calculation methods for the design of energy facilities, study of the state regulatory framework necessary for the implementation and approval of project documentation.

Terms. Review of regulatory documents for construction. Approval of project documentation. Study of regulatory documents and standards. Quality and safety of thermal power plants. General provisions for the construction of heat supply systems.

**Training of masters of sciences
in branch of knowledge "Electronics, automation and electronic communications"
in specialty 174 "AUTOMATION, COMPUTER INTEGRATED
TECHNOLOGIES AND ROBOTICS"
educational program "AUTOMATION, COMPUTER INTEGRATED
TECHNOLOGIES AND ROBOTICS"**

Form of Training:	Licensed number of persons:
– Full-time	35
Duration of training:	
– Full-time educational and professional program	1 year 4 months
– Full-time educational and research program	1 year 10 months
– Part-time	1 year 4 months
Credits ECTS:	
– educational and professional program	90
– educational and research program	120
Language	Ukrainian, English
Qualification of graduates:	research engineer of computer systems and automatics

The concept of training

Educational activities while ensuring fulfillment of state orders and other agreements with legal entities and individuals for training specialists with higher education is carried out in accordance with state standards of higher education. Courses in the Institute of Energy, automation and energy saving based on a systems approach between the objective and principles of learning to educate students broadmindedness non-standard thinking, overhead and ability to solve social and economic problems in their relationship and to meet the needs of modern production and con 'situation on the labor market.

An integral part of the educational activity is an educational process that involves the education of future professionals in the best traditions of national and world culture taking into account the human priorities, Recovery and development of the national economy, culture, science, spiritual unity of the nation and the people of Ukraine.

Educational and professional program of master's training

***Optional Block "Computer-Integrated Process Control Systems
and production"***

Research, development and implementation of computer integrated control systems in animal husbandry and crop production. Technology and mathematical modeling of processes in livestock, automated process control systems in animal husbandry and crop production.

Areas of employment for graduates

Engineer CEA poultry, engineer of APCS livestock complex, engineer maintenance of automation systems in the enterprise, engineer Department APCS greenhouses, Engineer CEA greenhouses.

Optional Block "Internet of Things"

Research, development of software and hardware systems and computer intelligent systems of the Internet of Things. The software of the Internet of Things, features of programming of the Internet of things, features of development of the software for a network exchange, protocols of wireless network exchange of management of devices of the "Internet of Things" are considered, operating systems for Internet of Things, low-level and high-level software development languages, cloud services, information security of the Internet of Things.

Areas of employment for graduates

Engineer ACS in the IT department of companies in various fields, where it is necessary to combine information systems and control system to obtain operational results.

Optional Block "Robotics"

Research and development of robotic complexes and systems. Theoretical and practical aspects of robotics, including design, programming, manufacturing, and operation of robots in the agricultural sector. Theory and practical application of robot control systems. Exploration of various aspects of robotics, including the development of operating systems and software that control robots. Methods and technologies for image recognition and signal processing in the context of robotics. Topics covered include image analysis, object detection, motion tracking, object orientation and geometry determination, as well as processing signals obtained from robot sensors. Issues related to algorithmic optimization and processing of large amounts of data in robotics.

Areas of employment for graduates

Engineer of automated farm management systems, research engineer at a research institute, engineer for technical maintenance of automation systems in the enterprise, engineer for development and programming of robots, engineers for production of robots.

Practical training

Practical training is carried out in educational and research facilities of the university: Separated subdivision of NULES of Ukraine "Velykosnytynske Education and Research Farm named after O. Muzychenka", Separated subdivision of NULES of Ukraine "Agronomic Research Station", Separated subdivision of NULES of Ukraine "Education and Research Farm "Vorzel", Separated subdivision of NULES of Ukraine "Boyarka Forestry Research Station", LTD "Kyiv Poultry", PC "Kombinat "Teplychniy", State Enterprise "Puscha Vodytsia", PC "Terezyne", Company Group "Veres".

Proposed Topics of master's qualification thesis

1. The use of fuzzy logic in automated control system of temperature regime in the poultry house with keeping laying hens in the winter.
2. Neural networks in SAR bound control temperature and humidity in the greenhouse.
3. Intelligent control system of microclimate in a growth chamber mushrooms and its temperature compost research.
4. Intelligent control system of microclimate in the vegetable store and its humidity research.
5. The use of fuzzy logic in automated control system of greenhouse temperature.
6. Neural networks in ACS bound control temperature in the poultry house considering CO₂ concentrations.

7. Intelligent thermal control system in the poultry house using the optimal control algorithm.

8. The use of fuzzy logic in automated control system of temperature regime in winter greenhouses considering external influences.

9. Control system for a mobile robot collecting phytometric information in an industrial greenhouse.

10. Research and improvement of a robotic complex for monitoring microclimate parameters in a greenhouse.

**Curriculum of Master training
in educational program "Automation, computer integrated
technologies and robotics"
(educational and professional program of master's training)**

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
GENERAL TRAINING CYCLE			
Compulsory components of EPP			
CC 1.	Applied statistics for economic justification of engineering decisions.	4	exam
CC 2.	Business Foreign Language	4	exam
CC 3.	Special Sections of High Mathematics	4	exam
CC 4.	Calculations of economic efficiency of scientific developments	4	exam
CC 5.	Safety in the Area	4	exam
Optional components of EPP			
<i>Free choice according to the preferences of students from the list of disciplines</i>			
OCP 1	Choice from the catalog 1	4	test
OCP 2	Choice from the catalog 2	4	test
SPECIAL (PROFESSIONAL) TRAINING CYCLE			
Compulsory components of EPP			
CC 6.	Automated Accounting of Energy and Material Resources	5	exam
CC 7.	Features of computer modeling of systems of automation of biotechnical objects	5	exam
CC 8.	Artificial intelligence in automation systems of biotechnical objects	4	exam
CC 9.	Robotic Complex and Systems	4	exam
CC 10.	Automation of biotechnical objects: automated process control systems	6	exam
CC 11.	Computer aided design systems for automation of biotechnical objects	5	exam
CC 12.	Installation, adjustment and operation of automation systems of biotechnical objects	5	exam
CC 13.	Practical Training	8	exam
CC 14.	Preparation and defense of master's qualification thesis	4	Protection of qualification work
Optional components of EPP			
<i>Free choice according to specialty</i>			
<i>Optional Block 1 "Computer-Integrated Process Control Systems and production"</i>			
OC 1	World experience of methods and means of modern automated process control	4	exam
OC 2	Features of modeling of computer-integrated systems of automation of biotechnical objects	4	exam

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
OC 3	Modeling and Identification of Biotechnical Objects in Agriculture	4	exam
OC 4	Protection of information in automation systems	4	exam
<i>Optional Block 2 "Internet of Things"</i>			
OC 2.1	Design of Internet systems of Things	4	exam
OC 2.2	Cloudy Technology	4	exam
OC 2.3	Maintenance of the Internet of Things	4	exam
OC 2.4	Internet of Things programming	4	exam
<i>Optional Block 3 "Robotics"</i>			
OC 3.1	Control and programming systems for robots.	4	exam
OC 3.2	Robot operating system	4	exam
OC 3.3	Image recognition and signal processing in robotics	4	exam
OC 3.4	Robotics development and production	4	exam
Total		16	
The total amount of compulsory components		66	
The total amount of optional components		24	
THE TOTAL AMOUNT OF EPP		90	

Annotations of subjects in the curriculum

GENERAL TRAINING CYCLE Compulsory components of EPP

Applied statistics for economic justification of engineering decisions. Modern methods of statistical analysis of data represented by time series or time slices are considered. The methodology of data collection and statistical analysis is presented in four stages, including calculating descriptive statistics, describing the position of an individual observation in the distribution series, and grouping data. The normal distribution of data, its statistical characteristics, the use of normal distribution tables, and the distribution of sample means are discussed. The analysis of the process of making statistical decisions, the concept of risk and its modeling, the formulation and application of hypothesis testing procedures are also covered. The basics of regression modeling of processes of any nature using a step-by-step approach are presented. Diagnostic techniques for constructed regression models are discussed, along with examples of their construction using real statistical data.

Agrarian policy. The discipline introduces the principles of formation of policy in agrarian sphere, gives the possibility to gain proficiency in methodical and methodological principles of the development and realization of the complex of actions concerning support and provision of the development of agriculture in the system of inter-branch links in national economy as well as estimate from the theoretic position practical actions of state structures concerning regulation of the agricultural production of the country.

Both national and foreign experience is studied. In case of mastering the material students get the possibility to form their own view on professional base about processes and phenomena happening in agrarian sector of the state economy.

Special Sections of High Mathematics. The main sections of high mathematics needed for research and development of electro-technologies in agriculture. Mathematical methods for solving linear and nonlinear differential equations. Matrix, operating methods. Functional series. Basic theory of random functions.

Calculations of economic efficiency of scientific developments. The feasibility of implementing scientific developments needs the calculation of economic efficiency, which should be evaluated from different perspectives. Varieties of techniques in different

conditions are offered. The basis of the discipline is estimation calculations, the risks and feasibility of projects. Statistical methods, methods of expert analysis and calculations of investments are proposed.

Safety in the Area. Safety measures in normal and emergency modes of electrical installations. Safety during installation, repair and maintenance of electrical installations. Lightning agricultural facilities.

SPECIAL (PROFESSIONAL) TRAINING CYCLE

Compulsory components of EPP

Automated Accounting of Energy and Material Resources. Concepts and Models: object, class, data, methods, access inheritance properties. Systems of objects and classes. Designing object-oriented programs: methods and algorithms. Object-oriented languages, classification, architecture, expressive means, technology application. Interface: The rules of the organization, methods and programming tools. Object-oriented systems, methods, language and methods of programming

Features of computer modeling of systems of automation of biotechnical objects. Methods of computer-modeling systems (KMS). Structure and function of KMS. Gathering and processing information. Mathematical modeling. Algorithms of optimal and adaptive management. Implementation of control functions. Examples KMS in agriculture.

Automation of biotechnical objects: automation of technological processes. Specifications processes as facilities management and their disturbances. Principles of automated process control systems. Automation of technological processes in crop and livestock production. Information channels and their characteristics. Identification of control objects. Algorithms management. Technical means of automation. Reliability and economic efficiency of automation.

Computer aided design systems for automation of biotechnical objects. Basic concepts and definitions. Basic concepts of electrification systems and process automation. General information about agricultural processes. Technical support of CAD. Software of CAD. Databases of CAD. Statistics and dynamics of technological objects control. Regulatory impact and organs. Automation of technological devices.

Installation, adjustment and operation of automation systems of biotechnical objects. Installation of automation circuits. Operation of equipment automation systems. Adjustment of sensors, controllers, actuators of automated control systems. The procedure for putting into operation mounted systems. Formation and organization of instrumentation and automation means in agricultural enterprise.

Artificial intelligence in automation systems of biotechnical objects. Basic concepts of neural networks. The properties of the neural network training. Hopfield neural networks. Basic concepts of fuzzy logic. uzzu sets and fuzzy neural networks.

Robotic Complex and Systems. Design and simulation tasks, principles, algorithms control robotic systems and systems. Appointment, classification and objectives robotic control systems. Structure, key components of robotic control systems. Intelligent robotic systems. The system of perception and recognition information. Keeping system knowledge, problem solving and forming control actions. The system of environmental impact. Principles of robots and robotic systems. System design, manufacturing, robotics control systems. Possibilities of robots and robotic systems in the agro-industrial complex.

Optional components of EPP

Free choice according to specialty

Optional Block 1 "Computer-Integrated Process Control Systems and production"

World experience of methods and means of modern automated process control. Modeling of technical and biological objects under uncertainty: Kharkiv random

processes. Statistical modeling of random processes. Decision making under uncertainty using gaming techniques. Creating and working databases. Software. Technical support of intelligent systems.

Features of modeling of computer-integrated systems of automation of biotechnical objects. Principles of construction of control system. Information channels and their characteristics. Identification of facilities management. Algorithms management. Technical means of control system. Reliability and economic efficiency of control system.

Modeling and Identification of Biotechnical Objects in Agriculture. A classification of technological processes and objects of automatic control. Methods of constructing static and dynamic objects agricultural processes and industries.

Protection of information in automation systems. The basic concepts of information protection in automation systems, principles of construction of complex information protection systems are considered, typical vulnerabilities of systems are noted, the analysis of systems for security is carried out and normative documents of information protection in automation systems are defined. Legal, organizational and technical methods of information protection are determined. This provides an opportunity to gain practical skills in the application of modern technologies for information security in automation systems.

Optional Block 2 "Internet of Things"

Design of Internet systems of Things. Regulatory documents for the design of the Internet of Things are considered, the structure of the Internet of Things is analyzed, an algorithm for the operation and programming of devices is developed, an algorithm for information exchange, protocols for the implementation of connections between devices and their programming environment are described. The choice of Internet of things according to the technical characteristics is made taking into account the operating conditions. Technical is implemented on the basis of simulation software and using a set of technical means Arduino, Raspberry, Schneider, ARIES.

Cloudy Technology. Basic information on the emergence, development and use of cloud technologies, typologies of cloud resource deployment (private, public, hybrid, public, etc.) is considered. Methods and features of designing cloud services, advantages and disadvantages of cloud computing models and solutions based on them are studied. You get the skills to develop applications for major platforms. The expediency of transferring existing applications to the cloud environment is determined, the efficiency of application and long-term prospects are assessed. Issues of security, deployment, backup in the context of cloud infrastructure are considered. An overview of current solutions of cloud computing market leaders (Amazon, Microsoft and Google, etc.).

Maintenance of the Internet of Things. The architecture of the Internet of Things is analyzed, the technical means used for its implementation, their structure, the principle of operation and software for debugging are given. Particular attention is paid to network devices, their configuration to provide communication with the global network.

Internet of Things programming. Development of software and hardware systems and computer intelligent systems of the Internet of Things. The software of the Internet of Things, features of programming of the Internet of things, features of development of the software for a network exchange, protocols of wireless network exchange of management of devices of the "Internet of Things" are considered; operating systems for Internet of Things; low-level and high-level software development languages (C ++, C #, Java and others); cloud services, information security of the Internet of Things; software documentation requirements.

Optional Block 3 "Robotics"

Control and programming systems for robots. The study of theory and practical application of robot control systems. Issues of designing, programming, and developing robot control systems are considered. Various approaches to robot programming are investigated, including programming in languages such as C++, Python, Matlab, and others. Different types of robots, such as industrial, medical, household, etc., are also considered, as well as their applications in various fields. Attention is also given to sensor technologies used to ensure effective robot control, as well as safety and ethical issues related to robotics.

Robot operating system. The basic principles and functions of operating systems for robots are studied. Various aspects of robotics are investigated, including the development of operating systems and software that control robots and their interaction with external environments. The architecture of operating systems, resource planning and management, interaction with peripheral devices, device drivers and application programming interfaces are considered. Special attention is paid to issues of robot operating system security, including protection against intrusion and failures.

Image recognition and signal processing in robotics. Study of the basics of image recognition and signal processing in the context of robotics. Methods and technologies of image recognition and signal processing used in robotics to solve various tasks. Issues related to image analysis, object detection, motion tracking, determination of object orientation and geometry, as well as processing signals obtained from robot sensors are investigated. The course covers topics related to algorithmic optimization and processing of large amounts of data in robotics.

Robotics development and production. The main stages of robot design are discussed, including conceptual design, mechanism and control system design, component integration, testing, and debugging. Issues related to the use of different materials and manufacturing technologies for robots are discussed, including 3D printing, laser cutting, milling, and bonding. Quality control methodology and standardization in robot manufacturing are addressed. The development of custom robots and the solution of complex technical challenges in robot design are also covered.

**Curriculum of Master training
in educational program "Automation, computer integrated
technologies and robotics"
(educational and research program of master's training)**

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
GENERAL TRAINING CYCLE			
Compulsory components of ERP			
CC1.	Applied statistics for economic justification of engineering solutions	4	exam
CC 2.	Business foreign language	4	exam
CC 3.	Special sections of higher mathematics	4	exam
CC 4.	Economic justification of innovative solutions in automation	4	exam
CC 5.	Labor protection in the industry	4	exam
CC 6.	Methodology and Organization of Scientific Research on the Basics of Intellectual Property	4	exam
Всего		24	
Optional components of ERP			
Free choice according to the preferences of students from the list of disciplines			
OCP 1	Choice from the catalog 1	4	test

MASTER CURRICULA AND TRAINING PROGRAMS

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
OCP 2	Choice from the catalog 2	4	test
Total		8	
SPECIAL (PROFESSIONAL) TRAINING CYCLE			
Compulsory components of ERP			
CC7	Automated accounting of energy and material resources	4	exam
CC8	Features of computer modeling of automation systems for biotechnical facilities	4	exam
CC9	Automation of biotechnical facilities: automated process control systems	8	exam
CC10	Computer-aided design systems for automation of biotechnical facilities	4	exam
CC11	Installation, commissioning and operation of automation systems for biotechnical facilities	4	exam
CC12	Artificial intelligence in automation systems of biotechnical facilities	6	exam
CC13	Robotic complexes and systems	4	exam
CC14	Intelligent automation systems for biotechnical facilities	6	exam
CC15	Information protection in automation systems	4	exam
CC16	Cloud technologies	6	exam
CC17	Research practice	3	test
CC18	Industrial practice in the operation of computer systems	7	test
CC19	Preparation and defense of master's qualification work	4	Defense of qualification work
Total		64	
Optional components of ERP			
Free choice in the specialty			
<i>Optional Block 1. "Energy efficient control systems for biotechnical facilities"</i>			
OC 1.1	Optimal and adaptive control systems for biotechnical facilities	7	exam
OC 1.2	World experience of methods and means of modern automation of technological processes	6	exam
OC 1.3	Features of modeling and identification of biotechnical objects	6	exam
OC 1.4	Features of computer-integrated automation systems for biotechnical facilities	5	exam
Total		24	
<i>Optional Block 2. "Automation of digital infocommunication and electric power computer integrated systems"</i>			
OC 2.1	Special systems	7	exam
OC 2.2	Methods and means of modern automation of digital electronic communications	6	exam
OC 2.3	Computer integrated control systems	6	exam
OC 2.4	Programming of the Internet of things	5	exam
Total		24	
The total amount of compulsory components		88	
The total amount of optional components		32	
THE TOTAL AMOUNT OF ERP		120	

Annotations of subjects in the curriculum

**GENERAL TRAINING CYCLE
Compulsory components of ERP**

Applied Statistics for Economic Justification of Engineering Decisions. Modern methods of statistical analysis of data represented by time sections or time series are considered. Methods of data collection and statistical analysis in the form of four

stages. The tasks of calculating descriptive statistics, describing the position of an individual observation in a distribution series, and methods of data grouping. The normal distribution of data, its statistical characteristics, the possibility of using normal distribution tables, and the distribution of sample means. Analysis of the statistical decision-making process, the concept of risk and its modeling, formulation and application of hypothesis testing procedures. Fundamentals of regression modeling of arbitrary processes using a multi-step methodology. Methods of diagnosing the built regression models with examples of their construction using real statistical data.

Business foreign language. The overall goal of the ESP program is to develop students' professional language competencies that will facilitate their effective functioning in a culturally diverse educational and professional environment. The students study methods of searching for new information in foreign language sources, linguistic methods of analytical processing of foreign language sources. Research of printed foreign language original literature and expansion of lexical and grammatical skills. The methods and linguistic features of annotating and abstracting foreign language sources, the basics of translating professionally oriented foreign language sources are studied.

Special sections of higher mathematics. The main sections of higher mathematics necessary for research and development of electrical technologies in agriculture. Mathematical methods for solving linear and nonlinear differential equations. Matrix, operational methods. Functional series. Fundamentals of the theory of random functions.

Economic justification of innovative solutions in automation. Methods of drawing up estimates for the construction of rural energy facilities. Methods of calculating the cost of technical products. Methods for assessing the economic efficiency of engineering solutions.

Labor protection in the industry. Protective measures in normal and emergency modes of operation of electrical installations. Labor safety during installation, repair and operation of electrical installations. Lightning protection of agricultural facilities.

Methodology and organization of scientific research with the basics of intellectual property. Objective of the discipline: formation of a system of knowledge on methodology, theory of method and research process, methodological support of research activities at the stages of writing a master's thesis, formation of the ability to organize scientific research of a particular problem using the whole range of traditional methods of scientific research, including general and special methods, The main objective of the theoretical part of the course is to familiarize students with modern concepts of scientific creativity, with the basics of methodology of scientific knowledge and methods of scientific research. The main tasks of the practical part are to develop the ability to self-education, mastering the skills of forming and using a conscious methodological position of scientific research. As a result of the course, students should improve their skills in searching, selecting and processing scientific information, in accurately formulating the problem, purpose, objectives, object, subject, and research methods. The course is intended to familiarize students with the basics of intellectual property and to guide them in acquiring knowledge and skills in the registration of property rights, their protection, commercialization, evaluation and management.

SPECIAL (PROFESSIONAL) TRAINING CYCLE

Compulsory components of ERP

Automated accounting of energy and material resources. Energy intensity and energy efficiency of production. Methods of calculating specific indicators of energy and material resources consumption. Devices and systems for energy and material resources

accounting. Computer systems for collecting and processing information on energy and resource consumption.

Features of computer modeling of automation systems for biotechnical facilities. Basic algorithms and rules for identification and construction of mathematical models by analytical and statistical methods. Study of mathematical models of the control object with the identification of possible control channels. The main stages of creating and modeling control objects and complex automated control systems. Methods and approaches to creating optimal control systems.

Automation of biotechnical facilities: automated process control systems. Characteristics of technological processes as control objects and their disturbances. Principles of construction of automatic process control systems. Automation of technological processes in crop and livestock production. Information channels and their characteristics. Identification of control objects. Control algorithms. Technical means of automated process control systems. Reliability and cost-effectiveness of automated control systems.

Computer-aided design systems for automation of biotechnical facilities. Basic concepts and definitions. Basic concepts of electrification and automation of technological processes. General information about agricultural technological processes. Technical support of CAD. CAD software. CAD databases. Statistics and dynamics of technological control objects. Regulatory influences and bodies. Automation systems of technological devices.

Installation, adjustment and operation of automation systems for biotechnical facilities. Installation of electrical circuits of automation. Operation of automation systems equipment. Adjustment of sensors, regulators, actuators of automatic control systems. Procedure for commissioning of installed systems. Formation and organization of the service of control and measuring instruments and automation equipment at an agricultural enterprise.

Artificial intelligence in automation systems of biotechnical facilities. Fundamentals of the functioning of intelligent control systems for biotechnical objects and implementation of effective control algorithms. Systems of fuzzy logic, neural networks, fuzzy neural networks and genetic algorithm. Peculiarities of implementing intelligent systems in production in relation to specific agricultural facilities, installations and electrical systems.

Robotic complexes and systems Design and modeling tasks, construction principles, control algorithms for robotic complexes and systems. Purpose, classification and tasks of robotic control systems. Structure, main components of robotic control systems. Intelligent robotic systems. Information perception and recognition system. System of knowledge management, problem solving and formation of control actions. System of environmental impact. Principles of construction of robots and robotic systems. Systematic technological design of robotic control systems. Possibilities of using robots and robotic systems in the agro-industrial complex.

Intelligent automation systems for biotechnical facilities. Classification of types of intelligent systems. Presentation of specialized environments for the development of intelligent systems. Basic concepts of neural networks. Classification of neural networks and their properties. Properties of neural network learning processes. Neural networks of counter propagation. Hopfield neural networks. Heming neural network. Basic concepts of fuzzy logic. Theoretical foundations of fuzzy logic. Fuzzy sets. Fuzzy operations. Algorithms for the functioning of fuzzy inference systems. Fuzzy sets and fuzzy neural networks. Basic concepts of genetic algorithm.

Information security in automation systems. The basic concepts of information security in automation systems, principles of building integrated information security

systems, typical vulnerabilities of systems, analysis of systems for security and determination of regulatory documents for information security in automation systems are considered. The legal, organizational and technical methods of information protection are defined. This provides an opportunity to gain practical skills in the application of modern technologies for information security in automation systems.

Cloud technologies. The discipline examines basic information about the emergence, development and use of cloud computing technologies, typologies of cloud resources deployment (private, public, hybrid, public, etc.). Methods and features of designing cloud services, advantages and disadvantages of cloud computing models and solutions based on them are studied. Students acquire skills in developing applications for major platforms. The expediency of transferring existing applications to the cloud environment is determined, the effectiveness of the application and long-term prospects are evaluated. Security, deployment, and backup issues in the context of cloud infrastructure are considered. An overview of modern solutions from the leaders of the cloud computing market (Amazon, Microsoft and Google, etc.) is provided.

Optional components of ERP

Free choice according to specialty

Optional Block 1 "Energy efficient control systems for biotechnical facilities"

Optimal and adaptive control systems for biotechnical facilities. This discipline will ensure that master's students develop integral competence, a holistic and systematic understanding of the essence of energy-efficient management of biotechnical facilities. The course covers the basic information of the theory of building energy efficient systems, optimization and adaptation of control processes. The basics of construction and operation of automation systems for biotechnical facilities are studied. Problems of modeling efficient control systems for biotechnical facilities and technological processes are solved. Research and optimization of multi-parameter problems using linear and nonlinear programming methods are carried out. Special extreme control systems, adaptive systems with identification and reference model are considered. The algorithms for tuning the controllers of searchless special systems with a reference model with stabilization of control quality are investigated. The creation of experimental systems, their tuning and optimization is carried out in the MatLAB environment using the Simulink application package. This educational component will allow masters to acquire general competencies sufficient to comprehensively solve the problems of energy-efficient management of biotechnical facilities.

World experience of methods and means of modern automation of technological processes. The discipline in the course of which students must master the principles of development, modernization, operation and maintenance of control systems for biotechnical objects of agricultural production using information and communication network technologies. This educational component will allow masters to master modern methods of modeling technical and biological objects under conditions of uncertainty and statistical modeling of random processes. Students will gain knowledge and skills in the practical application of decision-making theory under uncertainty using game-based methods. This discipline will ensure the formation of integrated, interdisciplinary competence in the development of modern energy-efficient systems for the automation of technological processes in agro-industrial production based on programmable logic integrated circuits FPGA and specialized software. The creation of research tools for the modern automation of complex organizational, technical and biotechnical facilities is carried out using the MatLAB Simulink software environment, the Quartus II design automation system, and Cyclone family programmable logic chip sets.

Features of modeling and identification of biotechnical objects. The aim of the discipline "Features of modeling and identification of biotechnical objects" is theoretical and practical training of students, gaining knowledge of the development and research of mathematical models of biotechnical objects of agricultural production based on the use of computer technology, the ability to use them in the educational process, research and design work. Students of the discipline should acquire competencies in algorithmization, rules of identification and construction of mathematical models of biotechnical objects using analytical and statistical methods. As a result of the course, students should be able to conduct research on mathematical models using MathCad and Simulink MATLAB mathematical packages with the study of possible channels of agricultural production management.

Features of computer integrated automation systems for biotechnical facilities. Principles of construction of automated control systems. Information channels and their characteristics. Identification of control objects. Control algorithms. Technical means of automated control systems. Reliability and cost-effectiveness of automated control systems.

Optional Block 2. "Automation of digital infocommunication and electric power computer integrated systems"

Special systems. The discipline deals with the basic information of the theory of building special systems, optimization and adaptation of control processes. The basics of construction and functioning of special automation systems for digital information and communication and power grids are studied. Problems of modeling special control systems for high-tech networks are solved. Research and optimization of multi-parameter problems by linear and nonlinear programming methods are carried out. Digital extreme control systems, adaptive systems with identification and reference model are considered. The algorithms for tuning the controllers of searchless special systems with a reference model with stabilization of control quality are studied. The creation of experimental systems, their tuning and optimization is carried out in the MatLAB environment using the Simulink application package. This educational component will allow masters to acquire general competencies sufficient to comprehensively solve the problems of automation of infocommunication and electric power computer integrated systems.

Methods and means of modern automation of digital electronic communications. A special discipline in the course of which students must master the principles of development, modernization, operation and maintenance of automation systems for digital electronic communications and power grids using intelligent mechatronic and infocommunication network technologies. This discipline will ensure the formation of integrated, interdisciplinary competence in the development of modern automation systems for digital telecommunications, cellular communications, and power grids of SMART technologies based on programmable logic integrated circuits FPGA and specialized software. The creation of experimental automation systems and their components is carried out using the MatLAB Simulink software environment, the Quartus II design automation system, and Cyclone family programmable logic chip sets.

Computer integrated control systems. The purpose of the discipline "Computer integrated control systems" is to provide theoretical and practical knowledge on the creation and operation of computer integrated control systems for biotechnical objects on the example of plantations. Information about the state of biotechnical facilities is obtained primarily through spectral monitoring technologies using satellites and UAVs. The course participants are expected to acquire competencies in technical means and processing algorithms and specialized software for spectral monitoring. On the basis of the obtained

reproducible spectral data, students should learn how to identify the nature of stress and create vegetation indices adapted to crop management technologies.

Programming the Internet of Things. The aim of the course "Programming the Internet of Things" is to provide basic training in the architecture of modern computer systems of the Internet of Things (IoT), peripheral equipment and functional organization and interaction of hardware and software. Upon completion of the course, students should gain an understanding of the main trends in the development and fundamental principles of the Internet of Things. The course is based on the use of the most advanced IoT software based on Cisco Packet Tracer and Microsoft Azure IoT solutions. Microsoft Azure IoT software is paid, but according to Microsoft loyalty programs, students can get personal student licenses for the use of these products for free during the training period

**EDUCATIONAL AND RESEARCH INSTITUTE
OF FORESTRY AND LANDSCAPE-PARK MANAGEMENT**

Director – Doctor of Agricultural Sciences, Professor Roman Vasylyshyn
Tel: (044) 527-85-28
E-mail: R.Vasylyshyn@nubip.edu.ua
Location: Educational Building №1, room 119

The ERI organizes and coordinates educational process of master training in education program within specialties:

Specialty 187 “Woodworking and furniture technologies”

Educational program “ Woodworking and furniture technologies”

Guarantor of the educational and professional program – Olena Pinchevska, Doctor of Technical Sciences (Engineering), professor

Departments in charge of graduate training:

Wood products technologies and design:

Tel.: (044) 527-81-67

E-mail: opinchewska@gmail.com

Head of department – Olena Pinchevska, Doctor of Sciences (Engineering), Professor

Specialty 205 “Forestry”

Educational program “Forestry”

Guarantor of the educational and professional program – PhD of Agricultural Sciences, assistant professor Oleksandr Bala

Departments in charge of graduate training:

Forest restoration and meliorations

Tel.:(044) 527-87-47

E-mail: a_pinchuk@nubip.edu.ua

Head of the Department – PhD of Agricultural Sciences, assistant professor Andrii Pinchuk

Silviculture

Tel.: (044) 527-82-82

E-mail: lisivnutstvo@gmail.com, npuzrina@nubip.edu.ua

Head of the Department – PhD of Agricultural Sciences, assistant professor Nataliia Puzrina

Forest Mensuration and Forest Management

Tel.: (044)527-85-23

E-mail: bilous@nubip.edu.ua

Head of the Department – doctor of science, professor Andrii Bilous

Specialty 206 “Park and Gardening Management”

Educational program “Park and Gardening Management”

Guarantor of the program - PhD of Biological Science, assistant professor Iryna Sydorenko

Departments in charge of graduate training:

Landscape Architecture and Phytodesign:

Tel.: (044) 527-85-47,

E-mail: okolesnichenko67@gmail.com

Head of the department - biological sciences, professor Olena Kolesnichenko

**Training of masters of sciences
in branch of knowledge "Production and Technologies"
in specialty 187 "WOODWORKING AND FURNITURE TECHNOLOGIES"
educational program "WOODWORKING AND FURNITURE TECHNOLOGIES"**

Form of Training:	Licensed number of persons:
– Full-time EPP	40
– Part-time	40
Duration of Training:	
– Full-time educational and professional program	1 year 4 months
– Part-time	1 year 4 months
Credits ECTS:	
– educational and professional program	90
Language of Teaching	Ukrainian, English
Qualification	Master of Woodworking and Furniture Technologies

The concept of training

Master's training in the specialty involves the assimilation of knowledge and skills of developing the designs and technologies of wood materials and products manufacturing, of determination of their characteristics and quality level, mastering of the techniques for analyzing of the existing processes, planning and carrying out the researches aimed for the processes optimization and woodworking industry improving.

After the successful completion of master's education, the graduate should be able to solve the following problems:

- to analyze the technical process of a certain product manufacturing and to make recommendations for its improvement;
- to analyze the structure of wood products and to make recommendations for its improvement;
- to develop the routing of the certain wood product;
- to develop the structure of the certain wood product and to draw it;
- to calculate the cost of the certain wood product manufacturing and the payback period on its implementation;
- to adjust the machines for certain wood products manufacturing;
- to calculate the parameters of power and aspiration for a particular technological process;
- to give the scientific evidence concerning the changes of a timber drying equipment structure.

Educational and professional program of master's training

Optional Block "Woodworking technologies"

The basis the program's optional block is a systematic approach to the study of woodworking technology and forming of students' ability to use equipment, wood and energy rationally. Disciplines cover the theoretical and practical aspects of the 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 the wood products manufacturing, new accessories, methods of the details dimensions calculations of the contemporary structural wood products.

Areas of employment of graduates

The masters of "Woodworking and Furniture Technologies" of the optional block "Woodworking technologies" use their skills in related educational institutions of I-II and III-IV accreditation levels, government and commercial enterprises of the production and sale of construction materials, government and commercial woodworking enterprises (engineer-technologist, Controller of the wood production, specialist, leading specialist, head of the production unit, head of the company). Besides, this level of the professional training allows to work as a junior researcher, researcher, senior researcher, lecturer, assistant in research and educational institutions, to participate in the international research projects.

Optional Block "Furniture technologies"

The basis the program's optional block is a systematic approach to the study of furniture technologies and forming of students' ability to use equipment, wood and wood-based materials. The aim of this block is to form students' skills of rational use of equipment, wood and wood-composite materials in furniture production. Disciplines cover the theoretical and practical aspects of the 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 the wood products manufacturing, new accessories, the design technologies development directions, requirements for furniture products, basic artistic design, the main features of furniture styles, modern trends of the style solutions for the furniture products and the means of their implementation

Areas of employment of graduates

Masters of the selection block "Furniture technologies" apply their qualification in related higher education institutions of I-II and III-IV levels of accreditation, state and commercial enterprises for production and sale of furniture products, state and commercial furniture enterprises (designer of furniture products, designer of furniture products, designer, engineer-technologist, controller of furniture production, specialist, leading specialist, head of production unit, head of enterprise). In addition, the level of professional training allows you to work as a junior researcher, researcher, senior scientist, leading researcher, teacher, assistant in research and educational organizations, participate in international research projects.

Practical training

The bases of practical training are educational, scientific and production laboratories of the university's departments and separate unit of NULES of Ukraine «Boyarka Forest Research Station». Leading forest enterprises of the State Forestry Agency of Ukraine and private woodworking and furniture enterprises.

Proposed Topics of master's qualification thesis:

1. Foundation of technology facades finishing of solid wood for the furniture for the woodworking industry.
2. Prospects for the introduction of deck board production technology to the woodworking industry.
3. Investigation of accuracy and workmanship of the molded products on the woodworking industry.
4. Foundation of the measures on improving the technological process of furniture manufacturing on the woodworking industry.
5. Foundation of furniture manufacturing technology at the enterprise.

6. Foundation of the proposals concerning the improvement of floorboards manufacturing technology at the woodworking industry.
7. Improving of the technological process of polymer production manufacturing at the woodworking industry.
8. Foundation of the modern methods of coatings application while manufacturing the furniture products.
9. Foundation of the infrared heaters applicability for veneer drying.
10. Research of the volume indicators of round timber cutting for the timber production at the woodworking industry.

**Curriculum of Master training
in educational program "Woodworking and furniture technologies"
(educational and professional program of master's training)**

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
GENERAL TRAINING CYCLE			
Compulsory components of EPP			
CC 1	Innovative Woodworking Technologies	6	Exam
CC 2	Fundamentals of Pedagogical Skills and Ethics of the Teacher of Higher Education	4	Exam
CC 3	Forest Policy	4	Exam
CC 4	Current problems of woodworking	4	Exam
CC 5	Methodology and Organization of Research in Woodworking Technologies	4	Exam
CC 6	Occupational Safety and Health	4	Exam
Optional components of EPP			
<i>Free choice according to the preferences of students from the list of disciplines</i>			
OCP 1	Choice from the catalog 1	4	Test
OCP 2	Choice from the catalog 2	4	Test
Total		8	
SPECIAL (PROFESSIONAL) TRAINING CYCLE			
Compulsory components of EPP			
CC 7	Planning and Design of Wood Products	9	Exam
CC 8	The Theory and Practice of Mechanical Wood Processing	6	Exam
CC 9	Modeling and Optimization of Technological Processes	4	Exam
CC 10	Technological preparation of woodworking and furniture industrie	4	Exam
CC 11	Energy use of wood	4	Exam
CC 12	Training practice	2	Test
CC 13	Production practice	6	Test
CC 14	Preparation and defense of master's qualification thesis	5	
Total		66	
Optional components of EPP			
<i>Free choice according to specialty</i>			
<i>Optional Block 1. "Woodworking technologies"</i>			
OC 1.1	Planning at the Woodworking Industry	4	Exam
OC 1.2	Mechanics of wood	4	Exam
OC 1.3	Newest Woodworking Equipment	4	Exam
OC 1.4	Technology Of Special Woodworking Industries	4	Exam
<i>Optional Block 2. "Furniture technologies"</i>			
OC 2.1	Foreign Trade in the Furniture Enterprises	4	Exam
OC 2.2	Mechanical and Technological Properties of Wooden Structures	4	Exam
OC 2.3	Modern Equipment for the Furniture Production	4	Exam

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
OC 2.4	Bonding theory and technology	4	Exam
Total		16	
The total amount of compulsory components		66	
The total amount of optional components		24	
THE TOTAL AMOUNT OF EPP		90	

Annotations of subjects in the curriculum

GENERAL TRAINING CYCLE Compulsory components of EPP

Innovative Woodworking Technologies. Formation of students' knowledge, skills and abilities necessary for the proper design and organization of technological processes in woodworking industries, rational methods of their operation, as well as for active engineering activities aimed at improving the quality of wood products. Study of the state of world raw material bases; solving problems of manufacturing technologies: timber products of different species, value-added products, board materials, construction materials, paper, energy and residential complexes based on wood; definition of domestic and world innovative developments in the field of wood processing.

Fundamentals of Pedagogical Skills and Ethics of the Teacher of Higher Education. Studies ethics of high school teacher and the basics of pedagogical skills.

Forest policy. The purpose of the discipline is to provide theoretical knowledge and practical skills of students in the formation and implementation of forest policy aimed at effective protection, conservation, reproduction and sustainable use of forest resources. The discipline covers: the essence and development of forest policy, its levels; principles and tools of forest policy; goals and objectives of forest policy and conditions for their implementation in Ukraine; the role and functions of the state in the formation and implementation of forest policy; the essence and principles of the concept of sustainable forest management; opportunities for public participation in decision-making on forest and forestry.

Current problems of woodworking. Study of current problems of technology of wood-composite materials and wood products. The current state of the forest and woodworking industries. Study and research of the latest materials, equipment and technologies for the manufacture of wood products, issues of rational use of raw materials. Ability to communicate with a professionals and use scientific and technical documentation in the subject area using a foreign language.

Methodology and Organization of Research in Woodworking Technologies. Students learn the theory dimensionality, physical modeling, statistical methods for object models building. Regressive model of the research object. Elements of the experiment planning theory. Plans of the multifactor experiments. Characteristics of the main stages of the research. Principals of the patents, features of the patents at the woodworking.

Occupational Safety and Health. The purpose of studying the discipline of providing knowledge, skills, abilities (competencies) to carry out effective professional activities by ensuring optimal management of labor protection at enterprises (objects of economic, economic and scientific-educational activities), formation of students' responsibility for personal and collective security and awareness of the need for full compliance by all measures to ensure occupational safety in the workplace. The main task is the formation of theoretical and practical knowledge skills of future specialists in woodworking and furniture technologies in accordance with the goal.

SPECIAL (PROFESSIONAL) TRAINING CYCLE

Compulsory components of EPP

Planning and Design of Wood Products. The purpose of discipline: professional training in the field of production of wood products and parts, as well as active engineering and design activities aimed at the manufacture of wood products, as well as the rational use of wood raw materials. The main tasks of the practical part - the development of the basics of artistic design, taking into account ergonomic requirements for wood products, mastering the basic concepts of the systematic approach to designing; the principles of structural and functional organization of new systems, techniques and means of natural, as well as dynamic and kinetic shaping in furniture design.

The Theory and Practice of Mechanical Wood Processing. Scientific principles of the wood cutting technology, theory of logs cutting for the timber, posture calculation and planning of logs cutting, wood cutting optimization criteria, standardization of raw at the timber cutting, methods of experiments conducting at the timber cutting and its planning, analysis of the equipment and technologies of logs cutting, simulation of logs cutting; practical recommendations for the technological processes of the timber production.

Modeling and Optimization of Technological Processes. Estimation of the basic parameters of statistical aggregate. Analysis of the dependencies of the functional response on the parameters of influence. The method of least squares for constructing single-factor models. Fundamentals of planning full-featured experiments. Construction of mathematical models with the help of experimental plans of the second and third order. Optimization of objects by the method of coordinate search and steep climbing. Simplex-planning method for object optimization study.

Technological preparation of woodworking and furniture industries. The aim of the discipline: to provide knowledge about the technological preparation for the manufacture of wood products, basic technological and regulatory documents, ancillary equipment, integrated and economical use of materials, world achievements in woodworking and modern equipment. The tasks of the discipline according to the requirements of the credit-module system and the recommendations of the European Credit Transfer System (ECTS), is that the master must be theoretically and practically prepared for organizational and managerial, design and research activities in the field of implementation and creation of new modern technologies. processes in woodworking and furniture industries.

Energy use of wood. The purpose of the discipline: training of high level specialists in the field of technology of energy use of wood, development of creative thinking with skills of rational use of wood biomass as fuel and related equipment, testing and implementation of technologies, technical means of energy use and environmental protection. The main tasks are to study the main types of wood raw materials as fuels, features of their production, study of modern technological processes of wood biomass production, ways to improve quality and reduce production costs based on creative thinking with skills of rational planning, design and implementation of technologies and technical means. production.

Optional components of EPP

Free choice according to specialty

Optional Block 1. "Woodworking technologies"

Planning at the Woodworking Industry. The discipline provides theoretical and practical training for students of higher education in matters of production planning with its features at enterprises of the woodworking industry, disclosure of the essence of planning, its role and place in the system of economic management of production.

Mechanics of Wood. The course "Wood Mechanics" is aimed at studying students physical and mechanical properties of wood materials during their processing, used as structural materials under conditions of static and dynamic loads taking into account changes in temperature and processes associated with the duration of operation with simultaneous reliability, durability and cost effectiveness.

Newest Woodworking Equipment. Modern technical solutions in the designs of equipment for wood and wood materials processing, constructions of modern technological equipment.

Technology Of Special Woodworking Industries. Technology of special woodworking industries: consumer products, cooperage products, flooring, match, chip packaging, carbonization. Flow charts, machinery, equipment, raw materials and production quality requirements.

Optional Block 2. "Furniture technologies"

Foreign Trade in the Furniture Enterprises. Purpose of the course - acquisition of theoretical foundations in the area of foreign trade of the Woodworking Industry, and to develop practical skills and the ability to apply the acquired knowledge in export-import operations furniture industry.

Mechanical and Technological Properties of Wooden Structures. The issue of mechanical and technological properties of wood materials for all types of strains. The problems of elasticity of isotropic, anisotropic and orthotropic bodies, rheology, physical properties of wood of various breeds. These practical calculations compounds constructions of wood with real operating conditions.

Modern Equipment for the Furniture Production. The purpose of the discipline is to provide students with a complex of knowledge and skills that are necessary for the correct economical choice of the latest equipment for the furniture production.

Bonding Theory and Technology. The purpose of the discipline is to provide students with a deep theoretical knowledge of the laws of the development of technologies of integrated and rational use of primary and secondary raw materials in the production of glued materials, improving the quality of products, improving productivity, reducing the cost of production.

**Training of masters of sciences
in branch of knowledge "Agricultural Science and Food"
in specialty 205 "FORESTRY"
educational program "FORESTRY"**

Form of Training:	Licensed number of persons:
– Full-time EPP	100
– Part-time	75
Duration of Training:	
– Full-time educational and professional program	1 year 4 months
– Part-time	1 year 4 months
Credits ECTS:	
– educational and professional program	90
Language of Teaching	Ukrainian, English
Qualification	Master of Forestry

The concept of training

The full operation of forestry in a market economy requires highly specialized professionals capable of solving specific problems scale production and research directions. The basis of the formation of the contents Master programs put:

- compliance with existing and future needs of the forestry;
- flexibility in the system of training for their adaptation to the rapidly changing demands of national and international labor markets;
- the integration of education, research and innovation on the pattern of the leading research universities in the world;
- logical relationship of master's programs of training programs education level "Bachelor".

The content of education masters determined by the relevant industry standard of higher education in Ukraine, namely: educational qualification characteristics, educational and vocational training program.

Educational and professional program of master's training

Optional Block "Applied Silviculture and Game Management"

The program provides training with a deeper understanding of the nature of the forest and forest multivariate relationships with the environment, growth and use of forests, ensuring the successful adaptation of alumni in the workplace.

Areas of employment of graduates

After graduation, graduates can be employed in the following organization: state forestry and game management enterprises of the State Forest Resources Agency of Ukraine (chief forest district ranger, chief forester, reforestation forester etc.), Ukrainian Center for training, retraining and advanced training of forestry "Ukrtsentrkadrylis", related universities I-IV accreditation, zoological parks, natural reserve fund institutions, Ukrainian State Project and Searching Institute of Forestry "Ukrdiprolis", Ministry of Ecology and Natural Resources of Ukraine (scientist).

Optional Block "Integrated Fire and Pest Management"

Focused on the students' acquisition of a set of professional knowledge and practical skills in resolving important issues of forest protection and conservation from pests, diseases and fires in the context of modern challenges.

Areas of employment of graduates

After graduation from the master's program, alumni can be employed at the following enterprises: State forestry, forestry and hunting enterprises of the State Agency of Forest Resources of Ukraine and the State Enterprise "Forests of Ukraine" (forester, chief forester, forest management engineer, forestry engineer, forest protection engineer), the state association "Ukrliozahyst" (forestry engineer, chief forestry engineer), Ukrainian Center for Training, Retraining and Advanced Training of Forestry Personnel "Ukrtcentrkadrylis", related higher education institutions of I-IV accreditation levels, zoological parks, nature reserve fund institutions, Production Association "Ukrdelelisproekt" (engineer), Ministry of Ecology and Natural Resources of Ukraine (researcher).

Optional Block "Reproduction of forests and forest melioration"

Program foresees the deep capture of theoretical knowledge's and newest technologies from organization and exploitation of permanent forest seed base, forest seed, mikroklonal propagation of woody plants, forest and decorative nursery, recreation of the forests, on principles of the ecologically oriented forestry, forest plantations, rehabilitations technogenic broken earths and increase of the stability and productivity of the forests of silvicultural methods. Training is carried out in order to equip of modern scientific and practical knowledge creation and use of protective forest plantations, as an integral part of the erosion zonal anti-erosion systems and the basis of architectonic of forest agricultural landscapes.

Areas of employment of graduates

Upon termination of city council graduating students can be employed on such enterprises: State forestry and hunting's enterprises of the State agency of forest resources of Ukraine (forester, main forester, forestry engineer, chief of the plantation nursery forest), Ukrainian Research Institute of forestry and agroforestry named after G.M. Vysotskyi, Center for training, retraining and advanced training of forestry "Ukrtsentrkadrylis", related higher education institutions, Ministry of Ecology and Natural Resources of Ukraine (scientist).

Optional Block "Forests Restoration and Breeding"

Program provides advanced mastery of theoretical knowledge and latest technologies for the organization and operation of permanent forest-seed base, forest seed production, mikroklonal reproduction of woody plants, forest and decorative nurseries, restoration of forests on the basis of ecologically oriented forestry, forest plantations, rehabilitation of technogenically disturbed lands and improvement of forest productivity by forestry methods.

Areas of employment of graduates

Upon termination of city council graduating students can be employed on such enterprises: State forestry and hunting's enterprises of the State agency of forest resources of Ukraine (forester, main forester, forestry engineer, chief of the plantation nursery forest), Ukrainian Research Institute of forestry and agroforestry named after G.M. Vysotskyi, Center for training, retraining and advanced training of forestry "Ukrtsentrkadrylis", related higher education institutions, Ministry of Ecology and Natural Resources of Ukraine (scientist).

Optional Block "Forest melioration"

Передбачає поглиблене опанування теоретичних знань та новітніх технологій створення та використання захисних лісових насаджень, як невід'ємної складової частини зональних протиерозійних систем.

Areas of employment of graduates

Upon termination of city council graduating students can be employed on such enterprises: State forestry and hunting's enterprises of the State agency of forest resources of Ukraine (forester, main forester, forestry engineer, chief of the plantation nursery forest), Ukrainian NDI of forestry and agroforestry the name of G.M. Visockogo, Ukrainian center of preparation (scientist).

Optional Block "Management of forest resources and forest business"

Master's program is focused on training in economics for forestry sector, able to develop and implement strategic vision in forest management and forest use at different levels in a market economy.

Areas of employment of graduates

After graduation, graduates can be employed in such enterprises: state forestry, forestry and hunting and hunting enterprises of the State Agency of Forest Resources of Ukraine (forester, chief forester, forest use engineer, forestry engineer) Ukrainian center for training, retraining and advanced training of forestry "Ukrcentrkadrylis" related higher education institutions of I-IV accreditation levels, zoological parks, the Nature Reserve institution, Ukrainian State Planning Institute of Forestry "Ukrdiprolis", Ministry of Ecology and Natural Resources of Ukraine (scientist).

Optional Block "Forest Management in Eastern Europe"

After graduation, graduates can be employed in such enterprises: state forestry, forestry and hunting and hunting enterprises of the State Agency of Forest Resources of Ukraine (forester, chief forester, forest use engineer, forestry engineer) Ukrainian center for training, retraining and advanced training of forestry "Ukrcentrkadrylis" related higher education institutions of I-IV accreditation levels, zoological parks, the Nature Reserve institution, Ukrainian State Planning Institute of Forestry "Ukrdiprolis", Ministry of Ecology and Natural Resources of Ukraine (scientist).

Areas of employment of graduates

After graduation, graduates can be employed in such enterprises: state forestry, forestry and hunting and hunting enterprises of the State Agency of Forest Resources of Ukraine (forester, chief forester, forest use engineer, forestry engineer) Ukrainian center for training, retraining and advanced training of forestry "Ukrcentrkadrylis" related higher education institutions of I-IV accreditation levels, zoological parks, the Nature Reserve institution, Ukrainian State Planning Institute of Forestry "Ukrdiprolis", Ministry of Ecology and Natural Resources of Ukraine (scientist).

Proposed Topics of master's qualification thesis:

1. Role of erosion and reclamation properties ravine and gully vegetation in forest enterprises.
2. Increasing of productivity and improving of the quality of the forest plantations by care cuttings in forestry enterprises.
3. Improvement of forest fire protection in forestry enterprises.

4. An improvement of high-quality composition and increase of the productivity of the forest planting is in forest enterprises.
5. Natural renewal of main forestry breeds is in the prevailing types of site conditions in Forestry enterprises.
6. Ways of perfection of growing of forest cultures are in forestry enterprises
7. Sanitary condition Arboretum: cell pathogens and insect pests.
8. Current status and characteristics game management in Ukraine.
9. Modelling growing stock volume and dynamics of forest stands parameters.
10. Assessment of forest ecosystem services.
11. Forest resources management under market economy and global climate change.

**Curriculum of Master training
in educational program "Forestry"
(educational and professional program of master's training)**

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
GENERAL TRAINING CYCLE			
Compulsory components of EPP			
CC 1	Forestry Management	5	exam
CC 2	Forest policy	4	exam
CC 3	Methodology and organization research on the forestry ecosystems	4	exam
Optional components of EPP			
Free choice according to the preferences of students from the list of disciplines			
OCP 1	Choice from the catalog 1	4	test
OCP 2	Choice from the catalog 2	4	test
SPECIAL (PROFESSIONAL) TRAINING CYCLE			
Compulsory components of EPP			
CC 4	Regulation of forest productivity	6	exam
CC 5	Planning Forestry	9	exam
CC 6	Sustainable forestry	4	exam
CC 7	GIS technology	6	exam
CC 8	Production practice	7	
CC 9	Preparation and defense of master's qualification thesis	5	
Optional components of EPP			
Free choice according to specialty			
<i>Optional Block 1 "Applied Silviculture and Game Management"</i>			
OC 1.1	Timber Industry	6	exam
OC 1.2	Forest Roads and Forest Transport	5	exam
OC 1.3	Integrated uses of non-timber forest resources	5	exam
OC 1.4	The Biological Basis of Clear Cuttings	6	exam
OC 1.5	Management of population of wild animals	5	exam
OC 1.6	Forest Ecology and typology	4	exam
OC 1.7	Training practice	1	
<i>Optional Block 2 "Integrated Fire and Pest Management"</i>			
OC 2.1	Forest Pathology with the basics of Phytoimmunity	5	exam
OC 2.2	Monitoring Harmful Organisms of Forest Ecosystems	6	exam
OC 2.3	Integrated Forest Protection	5	exam
OC 2.4	Early warning and wildfire hazards in forests	6	exam
OC 2.5	Integrated landscape fire management	5	exam
OC 2.6	Diagnosis of pests and pathogens	4	exam
OC 2.7	Training practice	1	

MASTER CURRICULA AND TRAINING PROGRAMS

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
<i>Optional Block 3 "Forest restoration and meliorations"</i>			
OC 3.1	Modern technologies of forestry nursery	4	exam
OC 3.2	Ecoadaptation forest restoraron	6	exam
OC 3.3	Industrial methods of forest plantations	5	exam
OC 3.4	Forest-cultural methods to increase the stability and productivity of forests	5	exam
OC 3.5	Systems of erosion soils control	5	exam
OC 3.6	Modern technologies of forestry seed production	6	exam
OC 3.7	Training practice	1	
<i>Optional Block 4 "Reforestation and afforestation"</i>			
OC 4.1	Modern technologies of seed production and nursery	6	exam
OC 4.2	Microclonal reproduction of woody plants	5	exam
OC 4.3	Modern approaches to forest reproduction	6	exam
OC 4.4	Forest-cultural methods to increase the stability and productivity of forests	5	exam
OC 4.5	Forest plants of green areas	5	exam
OC 4.6	Industrial methods of forest plantations	4	exam
OC 4.7	Training practice	1	
<i>Optional Block 5 "Forest melioration"</i>			
OC 5.1	Erosion science and systems of soils erosion control	6	exam
OC 5.2	Protective afforestation	5	exam
OC 5.3	Protective plantations management	5	exam
OC 5.4	Optimization of forest-agricultural landscapes	4	exam
OC 5.5	Forest recultivation of lands	6	exam
OC 5.6	Ecoadaptational restoration of forests	5	exam
OC 5.7	Training practice	1	
<i>Optional Block 6 "Management of forest resources and forest inventory"</i>			
OC 6.1	Forest Recourses Management	6	exam
OC 6.2	External Economic Activity in Forestry Sector	4	exam
OC 6.3	Forest Information Systems	5	exam
OC 6.4	Special Types of Forest Inventory	5	exam
OC 6.5	Forest Inventory and Monitoring	6	exam
OC 6.6	Modeling Forest Productivity	5	exam
OC 6.7	Training practice	1	
<i>Optional Block 7 "Forest Management in Eastern Europe"</i>			
OC 7.1	Vegetation Fires: Science & Management	6	exam
OC 7.2	Pest Management in Forests of Eastern Europe	6	exam
OC 7.3	Forest ecosystem services	4	exam
OC 7.4	Agroforestry systems, practices and technologies	5	exam
OC 7.5	Impact of natural disturbances on growth and yield	5	exam
OC 7.6	Forest Inventory and Mapping	5	exam
OC 7.7	Training practice	1	
The total amount of compulsory components			50
The total amount of optional components			40
THE TOTAL AMOUNT OF EPP			90

**Annotations of disciplines in the curriculum
GENERAL TRAINING CYCLE
Compulsory components of EPP**

Forestry Management. Includes the study of a systematic approach to the management of production, mastering organizational, functional and official regulation on forestry enterprises, evaluation of personal and professional qualities of workers, develop creative approach to the study and management decisions taking into account the specific characteristics and forestry production.

Forest policy. Basic concepts of the discipline. Subject, purpose and concept of forest policy. Levels of forest policy. Basic principles of forest policy. Components of forest policy. Aims and objectives of forest policy. Conditions, goals and objectives in Ukraine. Legislation in the field of social, financial and environmental law as instruments of forest policy. Forestry legislation. Forest Code of Ukraine. Analysis of the distribution of government functions in the forestry sector in Ukraine and ways of its reform. The main functions of the state. Strategic priorities of forest policy in Ukraine. Environmental, economic and social aspects of sustainable development. Criteria and indicators of sustainable forest management. The concept of sustainable development in Ukraine. The principles of sustainable forest management. Basic concepts and definitions of certification and forest certification. Features of forest policies of European countries.

Forest policy. The purpose of the discipline is to provide theoretical knowledge and practical skills of students in the formation and implementation of state policy in the sphere of forestry relations aimed at effective protection, conservation, restoration and sustainable use of forest resources. The discipline covers: the essence and development of forest policy, its international, national and regional levels; principles and tools of forest policy; goals and objectives of forest policy and conditions for their implementation in Ukraine; the role and functions of the state in the formation and implementation of forest policy; the essence and principles of the concept of sustainable forest management; opportunities for public participation in decision-making on forests and forestry.

Methodology and organization of research on the forestry ecosystems. Disclosed, the concept of scientific knowledge, science, classification of sciences and basic concepts that define the content of the research. Outlined overview of the methodology and the classification of research, especially research in forest conditions and methods used for this purpose. The problems concerning planning and sequencing research students and young scientists working on the scientific literature.

SPECIAL (PROFESSIONAL) TRAINING CYCLE

Compulsory components of EPP

Regulation of forest productivity. Discipline study after study program issues of forestry, forest inventory, forest species, forest reclamation and hydraulic engineering, forest genetics and breeding, which can solve the problem of forest productivity and improving their quality comprehensively. Details the performance concept, its types, nature wood productivity and ways to improve forestry and silvicultural ways, including the selection and genetic basis.

Planning Forestry. The discipline provides theoretical and practical training of students of higher education on issues of production planning with its features in forestry enterprises, disclosure of the essence of planning, its role and place in the system of economic management of production, a complex combination of forestry, technological and economic knowledge for the development of a technical and economic plan of a forestry enterprise.

Sustainable forestry. Formation of a comprehensive forest management strategy in Ukraine should be in accordance with the criteria that create the preconditions for achieving parity of environmental, economic and social aspects of sustainable development. In this context, it is a training course on the formation of future forestry professionals with a systematic vision of the implementation of the conceptual foundations of sustainable development in the practice of forestry. Concentrated of integration of environmental, economic and social aspects of sustainable development during forest creation, formation of sustainable plantations, accounting and use of forest resources, forest protection and conservation, including to ensure low-carbon forestry based on modern international experience.

GIS technology. The discipline forms in students of higher education a system of knowledge on the theoretical and practical foundations of geoinformatics, with features of the analysis of spatial information in order to improve the quality of management decision-making, the introduction of information technologies for forest management organizations, and the prompt acquisition of spatial information about the state of forest resources.

Optional components of EPP

Free choice according to specialty

Optional Block 1 "Applied Silviculture and Game Management"

Timber Industry. The course program provides an overview of the current state and prospects of integrated use of forest resources; technological schemes and technical means for carrying out logging, transport and lower-warehouse works, forest cutting and forest chemistry; principles of workpiece optimization; rational planning schemes and methods of designing and optimizing technological processes of timber and sawmill units of the enterprise.

The training course allows you to acquire skills in manning the system of machines and designing technological processes of industrial harvesting of forest products.

Forest Roads and Forest Transport. The study of the discipline generates scientific knowledge regarding the principles of the organization of forest road transport networks, the selection and determination of optimal schemes and technical and economic indicators of their work. The ways of establishment of optimum cargo areas of forest roads and their influence on the structure and location of transport networks are considered.

Introduction to the design of the road as an engineering structure, its basic elements and projections. Materials and technologies of forest road construction are considered.

Integrated uses of non-timber forest resources. Use of forest resources. Rules and features of harvesting non-timber forest resources. Use of useful properties of forests. Limitation and control over the use of non-timber forest resources. Area accounting and yield determination of mushrooms, berries and medicinal plants. Rational use and increase of productivity of wild berries, mushrooms and medicinal plants. Plantation breeding of fruit and berry and medicinal plants. Artificial breeding of mushrooms. Organization and technology of birch juice extraction.

The Biological Basis of Clear Cuttings. Biological rationale for clear cuttings. Formation of forest plantations. Changing environment in plantations and physiological processes in woody plants under the influence of clear cuttings. The influence of clear cuttings on the photosynthetic apparatus of woody plants. Calculation of the leaf index. Impact of clear cuttings on productivity and quality of stands. Clear cuttings as the main link of forest cultivation. Optimization of methods and modes of clear cuttings.

Management of population of wild animals. The study of the discipline aims to develop the theoretical base and practical skills in mastering the system of world hunting resources and their rational use, to study the world's faunistic complexes and to develop effective ways of using the resources and practical implementation of this knowledge and skills in farming and hunting. As a result, students will have modern requirements for the functioning of the hunting industry; to know the basic hunting complexes of landscape-geographical zones of the country; the biology, ecology and ethology of game animals; basics of aviary breeding of hunting animals; methods of accounting for resources of hunting fauna; the leading factors that determine the success of breeding and conservation of hunting animals; be able to identify species that are promising for use in hunting economies in particular regions and throughout Ukraine; methods of protection and rational use of hunting fauna, fight against poaching.

Forest ecology and typology. In studying forest ecology emerging necessary theoretical knowledge on forest ecology and skills for management and restoration of forest ecosystems. The basic concept autecology and synecology are studied, also studied the impact of environmental factors on forest ecosystems. It reveals the need for ecological approach to the study of the forests. Highlights the environmental principles of the approach to the study of the formation of forests, forest care outlined the concept of forest typology, its formation and use for the science and forestry practice

Optional Block 2 "Integrated Fire and Pest Management"

Forest Pathology with the basics of Phytoimmunity. General information about the pathology of forest tree plants. Protective properties of wood plants. Basic signs of forest pathology. Ecology and dynamics of forest diseases. Mechanisms of attack on a plant of pathogens and theoretical and applied principles of forest protection against pathogens. System interaction of the host plant, pathogen and the environment. Theories, types and categories of plant immunity. Passive and active immunity. Vertical and horizontal resistance of plants to pathogens. Methods of assessing the resistance of woody plants to pathogens. Ways of induction of demotion processes in forest biocenosis (forestry, forestry, breeding, etc.).

Monitoring Harmful Organisms of Forest Ecosystems. Forest-pathological monitoring. Theories of mass reproduction of harmful insects and pathogens. Regulatory mechanisms of dynamics of the number. Stability of plantations. Modeling the dynamics of the development of harmful organisms in forest ecosystems. Types of mathematical models in forest protection. Technological stages of mathematical modeling. Prognosis of pathogens and pests. Short-term, long-term and long-term prognosis of pathogens of illnesses and harmful insects.

Integrated Forest Protection. Tasks of forest management bodies of forest protection. Forest-pathological supervision. General principles of accounting and forecasting of the number of phytopathogens and forest wreckers. Pest Number Counting and Projection. Forest-entopathological examination. Forest-pathological monitoring. Forest protection measures planning and assessment of their effectiveness. Quarantine.

Early warning and wildfire hazards in forests. The course is including overview of modern systems of early warning with accent on most wide used indexes: Fire Weather Index, Nesterov Index, KBDI and others. Within course student will get a sound theoretical background and practical skills in the assessment and analysis of fire hazards in forests, gain knowledge about the theory of the process of burning and behavior of forest fires; theory of fire environment and the factors that determine it; classification of combustible materials, natural fire hazard and its dynamics in different landscapes; fire regimes in different regions of Ukraine and the world and the factors that determine them; accounting of fire hazard in fire management policy. Will be able to calculate current and predictive value of indexes based on use of meteorological data; apply obtained knowledge for modelling of parameters of grassland and forest fires.

Integrated landscape fire management. Within the course the holistic view on wildfires in landscapes will be presented including description and analysis of key factors that determine igniting of fires and their behavior: land-use, ignition sources, topography, aspects, rivers, streams and lakes, anthropogenic factors, fuel, forestry and agriculture, infrastructure, weather patterns etc. Role of involving of all stakeholders in landscape fire management including city and village authorities, emergency services, forest service, protected areas management, small and medium land owners, NGO's, local communities etc. will be presented. Systematic approach on implementation of integrated landscape fire management, including, early warning systems, prevention measures, ground and aviation detection, fast response, strategy and tactics of fire suppression, rehabilitation,

interagency cooperation, training of interagency personal. Most used systems of incident management will be presented including Incident Command System and EUROFIRE and main features will be compared within Ukrainian wether, landscapes types, land-use and fire services.

Diagnosis of pests and pathogens. Diagnosis of tree and shrub diseases. Configuration and usage of different instruments and tools. Methods for various diagnostic analyses.

Optional Block 3 "Forest Restoration and Meliorations"

Modern technologies of forestry nursery. Forest seed production of Ukraine: current state, problems and prospects. The permanent forest seed base of the forest industry, its current state and compliance with the challenges and requirements of today. The relevance of the transition to forest varietal seed and its regulatory framework. Legislative and regulatory support for domestic seed production (Laws of Ukraine "On seeds and planting material", "On plant quarantine", "On protection of rights to varieties of Ukraine" and other acts), its modern meaning and interpretation. State-of-the-art equipment and innovative technologies for forestry seed production. Modern machines for harvesting and processing of forest and raw material. New ways of storage, preparation of seeds for sowing and improvement of its sowing qualities. The newest technologies of reproduction and obtaining of the healthy seedling material of woody plants of a certain purpose. Ways of modern cultivation of seedlings in open ground with open root system. Improvement of cultivation of planting material of woody plants with closed root system. Modern methods of intensification of cultivation of seedlings in closed soil and boxes. Ways to increase the profitability of production of ornamental seedlings with open and closed root system. Methods of healthy and rehabilitation of permanent forest nurseries.

Ecoadaptation forest restorariion. Current expanded forest reproduction as a basis for modern forestry management in Ukraine. Modern approaches to forest reproduction and their importance in the context of sustainable balanced forestry. Ecoadaptation approach to forest reproduction, its relevance and current importance. Basic principles of ecoadaptation reproduction of forests. Zoning of the territory on the potential success of natural reforestation. Conceptual (general and specific) provisions, organizational and methodological principles and conditions for introduction of ecoadaptation reproduction of forests. Ecological and forestry classification of areas of forest reproduction fund as the basis of scientifically sound use of methods and methods of ecoadaptation reproduction of forests. Requirements for methods and methods of ecoadaptation approach from artificial forest reproduction. Agrotechnology of ecoadaptation reproduction of forests, their features and conditions of use. Features of ecoadaptation reproduction of forests in areas of different categories of plots of forest reproduction fund.

Industrial methods of forest plantations. Plantation forestry its relevance and modern importance. Basic conceptual principles of the transformational approach to plantation forestry. Types of plantation plantations and their features. Potential productivity of plantation crops and selection of woody plants. Principles of organization, creation, cultivation and operation of forest plantations. Regional peculiarities of technologies of creation of forest plantations of fast-growing coniferous and deciduous tree species. Features of creation of plantations of woody plants of different purpose.

Forest-cultural methods to increase the stability and productivity of forests. The current importance of biological stability and complex productivity of forest biogeocenoses and the relevance of their increase in anthropocene conditions. Factors that determine the stability and imbalance of natural forest ecosystems. Types of forest productivity. Features of regulation of endogenous and exogenous factors of influence on

biological stability and productivity of forest biocenoses. Forest-cultural methods of increasing biological stability and productivity of forest plantations (introduction of new approaches to forest reproduction, improvement of types of forest crops, application of fertilizers, reconstruction of low-value plantations, creation of understory forest crops, introduction of introductions, etc.). Features and measures to improve biological sustainability and productivity of forests for various purposes.

Systems of erosion soils control. Substantiation of the use for zonal systems. System of measures for water erosion control: organizational-economic, agro-technical, agroforestry and hydrotechnical. A complex of measures to combat wind erosion (deflation). Erosion in mountainous areas and measures to combat it. Features of zonal systems. Economics and organization of works for soil erosion control.

Modern technologies of forestry seed production. Theoretical principles and organization measures of transferring forest seed production to the genetic and breeding base. The concept of variety and varietal categories of forest woody plants seeds. The organization of the permanent forest seed base on genetic and breeding principles. Laws and regulations of varietal forest seed production. The main provisions of regulatory legal acts that regulate relations in the field of varietal seed. The structure, the main provisions, the scope and the application of the Laws of Ukraine "On Seeds and Planting Material", "On Plant Quarantine", "On Protection of Rights of Varieties of Ukraine". The methods of varietal plant breeding of woody plants. Registration, sustentation and exploitation of the variety of woody plants in the register of varieties of Ukraine.

Optional Block 4 "Reforestation and Afforestation"

Modern technologies of seed production and nursery. Forest seed production of Ukraine: current state, problems and prospects. The permanent forest seed base of the forest industry, its current state and compliance with the challenges and requirements of today. The relevance of the transition to forest varietal seed and its regulatory framework. Legislative and regulatory support for domestic seed production (Laws of Ukraine "On seeds and planting material", "On plant quarantine", "On protection of rights to varieties of Ukraine" and other acts), its modern meaning and interpretation. State-of-the-art equipment and innovative technologies for forestry seed production. Modern machines for harvesting and processing of forest and raw material. New ways of storage, preparation of seeds for sowing and improvement of its sowing qualities. The newest technologies of reproduction and obtaining of the healthy seedling material of woody plants of a certain purpose. Ways of modern cultivation of seedlings in open ground with open root system. Improvement of cultivation of planting material of woody plants with closed root system. Modern methods of intensification of cultivation of seedlings in closed soil and boxes. Ways to increase the profitability of production of ornamental seedlings with open and closed root system. Methods of healthy and rehabilitation of permanent forest nurseries.

Microclonal reproduction of woody plants. Methods and ways reproduction of woody plants and current value and relevance of microclonal reproduction. Advantages of using the microclonal propagation method over traditional methods. Modern directions of culture of isolated cells, tissues and organs of plants. Biosafety basics. Features of plant regeneration in vitro. Types and main stages of microclonal reproduction. Obtaining virus-free planting material. Main directions of biotechnological research in forestry. Features of reproduction of tree species. Influence of genetic, physiological, hormonal and physical factors on plant micropropagation. Adaptation of regenerant plants to in vivo conditions. Use of planting material of regenerating plants in forestry production and ornamental nurseries.

Modern approaches to forest reproduction. Modern expanded forest reproduction as a basis for modern forestry management in Ukraine. Modern approaches

to forest reproduction and their importance in the context of sustainable balanced forestry. Basic principles of eoadaptation forest reproduction and transformation (plantation) cultivation. Conceptual provisions and organizational and methodological foundations of introducing eoadaptation reproduction of forests. Agrotechnology of adaptation reproduction of forests, their features and conditions of use. Features of eoadaptation reproduction of forests in areas of different categories of areas of forest reproduction fund. Types of plantation plantations and their features. Potential productivity of plantation crops and selection of woody plants. Principles of organization of forest raw plantations. Improving growing conditions. Regional technologies of creation of raw material plantations of coniferous and deciduous tree species. Features of creation of plantations of woody plants of different purpose.

Forest-cultural methods to increase the stability and productivity of forests.

The current importance of biological stability and complex productivity of forest biogeocenoses and the relevance of their increase in anthropocene conditions. Factors that determine the stability and imbalance of natural forest ecosystems. Types of forest productivity. Features of regulation of endogenous and exogenous factors of influence on biological stability and productivity of forest biocenoses. Forest-cultural methods of increasing biological stability and productivity of forest plantations (introduction of new approaches to forest reproduction, improvement of types of forest crops, application of fertilizers, reconstruction of low-value plantations, creation of understory forest crops, introduction of introductions, etc.). Features and measures to improve biological sustainability and productivity of forests for various purposes.

Forest cultures of green areas. Historical aspects and modern approaches to reproduction, formation and use of suburban forests. Classification of urban and suburban greenery. Classification of forest park landscapes. Compositional principles of formation of forest park plantations and landscapes. Selection of tree species for the creation of plantations of green areas for various purposes. Technological features of creating forest crops in green areas. Technological and agrotechnical features of the formation of forest park plantations and landscapes. Silvicultural methods of improving sanitary and hygienic properties of forest park landscapes. Selection of woody plants for the reconstruction of low-value plantings of green areas. Under-tent forest crops as a means of improving the sanitary and hygienic properties of suburban forests and forest parks.

Industrial methods of forest plantations. Plantation forestry its relevance and modern importance. Basic conceptual principles of the transformational approach to plantation forestry. Types of plantation plantations and their features. Potential productivity of plantation crops and selection of woody plants. Principles of organization, creation, cultivation and operation of forest plantations. Regional peculiarities of technologies of creation of forest plantations of fast-growing coniferous and deciduous tree species. Features of creation of plantations of woody plants of different purpose.

Optional Block 5 "Forest melioration"

Erosion science and systems of soils erosion control. Concepts, classification and categories of soil erosion. Water erosion: ancient and current, factors of its development; physical properties and erosion of rain, energy structure of surface runoff. Wind erosion; dust storms. Erosion forecasting, deflation modeling. Erosion zoning. Research methods and properties of eroded soils. Substantiation of zone anti-erosion systems. System of measures for water erosion control: organizational-economic, agro-technical, agroforestry and hydrotechnical. A set of measures to combat wind erosion. Erosion in mountainous areas and measures to combat it. Features of zonal systems. Economics and organization of soil protection works against erosion.

Protective afforestation. Forest and field are the only ecological system. Structure of forestry landscape. Agroforestry parameters of forest-agricultural landscape. Forest component of agrolandscape. Forest protection cover. Agroforestry monitoring. Features of formation of protective forest plantations on agricultural lands.

Protective plantations management. The basics of inventory of protective plantations. Legal principles of management of protective plantations. Agroforestry inventory of protective forest plantations on agricultural lands. Modern types of forest management.

Optimization of forest-agricultural landscapes. Principles of formation of optimal forest-agricultural landscapes. Forest cover modeling of agrolandscapes. Optimization of the land fund structure. Agroforestry monitoring. GIS technologies in landscape studies.

Forest recultivation of lands. Objects of recultivation and causes of soil cover disturbance. Areas of reclamation. Specificity of plant conditions of disturbed territories. Methods of improving soil mixtures of soil recultivation layer. Features of technology of creation of plantations for various objects of recultivation. Environmental aspects of biological land reclamation.

Ecoadaptational restoration of forests. Current approaches to restoration of forests and their importance in the context of sustainable forest management. Basic principles of ecoadaptational restoration of forests. Zoning of territory for the potential success of natural regeneration. Conceptual provisions and organizational and methodological foundations of introduction ecoadaptational restoration of forests. Agrotechnologies of adaptive restoration of forests, their characteristics and conditions of use. Features of ecoadaptational restoration of forests on the different categories of forest restoration fund.

Optional Block 6 "Management of forest resources and forest inventory"

Forest resources management. The purpose of the discipline is to deepen students' theoretical knowledge and develop their practical management skills aimed at ensuring the efficient use of forest resources, their conservation, restoration and protection in a market economy and taking into account global environmental threats. This course covers topics addressing theoretical and practical fundamentals of forest resource management, in particular, system, process, adaptive approaches to decision-making in management, risk management in forestry, and management of forest resources in a crisis situation. The discipline reveals approaches and tools for managing forest resources in the context of sustainable development and taking into account the priorities of Ukraine's European integration.

External economic activity in forestry sector. This course offers a theoretical introduction to the external economic activities of forest enterprises. Within the course students will develop practical skills and ability to apply the knowledge in export-import operations in forestry sector. The academic discipline is focused on legislative principles of external economic activity and entrepreneurship in forestry and the procedure for concluding forestry contracts with foreign companies.

Forest Information Systems. The aim of the academic discipline is to enhance knowledge and practical skills of students related to information systems. The expertise in information systems is gained through addressing specific management issues in forestry using database management systems, GIS and information search systems.

Special Types of Forest Inventory. The course aims to introduce mensurational aspects applied in the description of forest landscapes, inventory of shelterbelts, protected forests, recreational areas and natural reserves. The study discipline also covers methods of wildlife populations assessment used in game management.

Forest Inventory and Monitoring. The study course provides theoretical background of sample-based methods. It covers fundamentals of sampling theory and their application in national forest inventories, recent advances of forest assessment, optimization of inventory design using different plot size and configuration. The course provides also knowledge of long-term forest monitoring using remote sensing technologies. The course is designed to provide students with training in forest inventory using fixed- and variable-area plot sampling.

Modeling Forest Productivity. The course provides a workflow for modeling forest stand growth. From a theoretical perspective, it explains correlation analysis, multiple regression, and assessment of model adequacy. The key focus is made on fitting growth models using modern algorithms. Thus, training is provided to students on the use of the R statistical software for complex analysis, modeling, and visualization of research data.

Optional Block 7 "Forest Management in Eastern Europe"

Vegetation Fires: Science & Management. The course address basics of vegetation fire science and management that recently become challenging problem for natural resource managers. Within the fire course students get skills in wildland fire management, fuels management, and restoration based on advancing knowledge of fire science, ecology, fire-related policy and social issues, and the latest tools and technology. The course covers fire conditions, tactics, and strategies to mitigate fire and fire behaviors, emphasizing wildland and urban interface fires. Includes an interdisciplinary review and study of wildfires as ecological process. Special attention will be paid to the role of vegetation fires in the context of global environmental change. Addresses current issues in fire ecology in Ukraine, Eastern Europe and globally, including readings and discussions of recent scientific literature.

Pest Management in Forests of Eastern Europe. The academic discipline provides students with theoretical knowledge and practical skills in relation phytopathological monitoring; diagnosing the causes of damage of forest stands; forecasting the spread, development and harmfulness of phytophages and forest pathogens; developing effective protection measures; technological methods of their implementation, as well as economic and environmental assessment of results. The concept of integrated management of populations of harmful organisms is a steady decrease in their numbers through various measures and methods based on taking into account biocenotic relationships and the dynamics of populations of harmful and beneficial organisms.

Forest ecosystem services. Being a biological object, forests have a much higher value than merchantable timber, especially within the densely populated territories. The course deals with the questions of description and quantification of forest ecosystem services, which helps to reflect the cumulative effect of forests on the environment. A quantitative assessment of the services of forest ecosystems mentioned above also creates preconditions for their further economic evaluation.

Agroforestry systems, practices and technologies. Agroforestry as an integral part of land use systems. Concept and principles of agroforestry. Types of agroforestry. Experience of developed countries in the development and dissemination of agroforestry technologies. Influence of agroforestry systems on increasing the ecological and economic potential of agro-landscapes. Problems and methodologies of research of agroforestry systems. Regional differences in land use based on agroforestry approaches and their environmental benefits. Current technologies and practices of agroforestry.

Impact of natural disturbances on growth and yield. Ukraine as a country features many areas disturbed by natural and anthropogenic factors. The course provides knowledge on quantitative assessment of the impact of disturbances on forest growth and

yield. This forms an underlying basis for further implications in landscape planning and design as well as in forest management on the disturbed territories.

Forest Inventory and Mapping. The course is focused on the theoretical foundations of the sample-based forest inventory which in combination with remote sensing data provides a spatially explicit assessment of forest attributes. The course is designed to provide students with training in forest inventory using fixed- and variable-area plots and introduce the approaches for optimization of sampling design as well as statistical computations in national forest inventory. The course also introduces the necessary knowledge of mapping forest attributes using machine learning and imputation techniques.

**Training of masters of sciences
branch of knowledge "Agricultural science and food"
in specialty 206 "PARK AND GARDENING MANAGEMENT"
educational program "PARK AND GARDENING MANAGEMENT"**

Form of Training:	Licensed number of persons:
– Full-time EPP	75
– Part-time	75
Duration of Training:	
– Full-time educational and professional program	1 year 4 months
– Part-time	1 year 4 months
Credits ECTS:	
– educational and professional program	90
Language of Teaching	Ukrainian
Qualification	Master of Park and Gardening Management

The concept of training

The concept and goal of training specialists in Park Gardening Management is the necessity of training specialists with system knowledge in use of Park Gardening Management resources in our state and transition to European standards of living that are focused on the natural ability of regeneration of forests: ensuring ecological and esthetical management based on forest management and comprehensive use of resources, taking into account historical and landscape aspects, revisions of principles of distribution of plantations according to ecological and economic value depending on benefits of their functions, decreasing recreational activity, replacement of old planting, especially in the forests of green belts situated around settlements; preservation of biodiversity of planting of general and limited use; inventory and optimization of protected areas and objects; including measures of regional ecological, economic and social conditions; monitoring of planting, creation and growing plants resistant to extreme environmental conditions of forest biogeocenosis in Steppe considering the necessity of transfer of management on the landscape- ecological principles; improvement of scientific and staff providing Park Gardening management; improvement of the system of planting inventory and monitoring and objects of landscape architecture based on GIS technology; improvement of the system of informing industry and introduction of information technologies.

Educational and professional program of master's training

Optional Block "Landscape architecture"

Oriented to forming in future specialists complex approach to analysis, ground of acceptance and realization of decisions in exploitation, reconstruction and restoration of park and garden objects, planning of landscape objects of the different special purpose by means of modern computer technologies se in accordance with modern requirements of Park Gardening Management in Ukraine.

Areas of employment of graduates

The graduates of Master's program "Landscape architecture" will be able to work as: junior research worker, planning and organization of public services engineer or specialist, landscape design specialist, park-gardening worker.

Optional Block “Landscape building”

Foresees mastering by student’s theoretical knowledge and practical skills in economic and building work on landscape objects, mastering the latest engineering technologies in creating of landscaping objects, planting and caring of decorative plants, studying machines and mechanisms, which are necessary for creating, organization and keeping of landscaping objects.

Areas of employment of graduates

Graduates of Master’s program “Landscape building” would be able to work as: junior research worker, planning and organization of public services (improvement) engineer, landscaper, green planting or laying out of parks worker, gardener.

Optional Block “Decorative Nursery”

Foresees mastering by student’s theoretical knowledge and modern technologies of decorative planting stock production: generative, vegetative and microclonal woody plants reproduction, container culture of trees and shrubs, features and growing, shaping and using different purpose seedlings, etc.

Areas of employment of graduates

Graduates of Master’s program “Decorative Nursery” would be able to work as: junior research worker, nursery garden chief, planning and organization of public services engineer, landscaper, green planting worker, gardener.

Optional Block “Ecodesign of the urban environment”

It provides theoretical knowledge and practical skills of new technologies of formation and maintenance of green spaces of different functions, assortment of highly decorative and resistant to adverse environment factors trees, shrubs and flower plants; techniques, methods and technology of breeding and cultivation of ornamental plant material in the open and protected ground.

Areas of employment of graduates

Graduates of master’s program “Ecodesign of the urban environment” would be able to work as: junior research worker, green planting master, green planting or laying out of parks worker, gardener, nursery garden chief, hothouse farm master.

Practical training

The bases of practical training, which is carried out during the course of training and production practices in the second semester of study, are educational, educational, scientific and production laboratories of the departments of the Institute and structural units of the University: Separated subdivision of NULES of Ukraine “Boyarka Forestry Research Station”, educational and research nursery of the Department of Forest Restoration and Forest Melioration, Grishko National Botanical Garden, Fomin Botanical Garden, Kyive landscaping Enterprises, regional and district enterprises of housing, communal services and green economy, private structures and nurseries.

Proposed Topics of master’s qualification thesis:

1. The project of reconstruction of the territory of parks-monuments of landscape art.
2. Landscape and planning organization of park territories of various functional directions.
3. Style trends in the aspect of modern phytodesign.

4. Design projects of the territory of small gardens.
5. Country recreation on the territory of Ukraine
6. The project of organizing gardens on artificial grounds
7. Elements of vertical landscaping in the system of the urban environment
8. Elements of geoplastics and vertical planning in landscape compositions
9. Project for the organization of exposition areas of botanical gardens.
10. Analysis of the experience of using certain groups of plants in greening the territories of landscape objects.
11. Dendrological assessment of the existing range of plants and prospects for replenishing the collection of decorative forms of botanical gardens.
12. Technological features of cultivation of flower plant varieties.
13. Features of plant reproduction in a controlled environment.

**Curriculum of Master training
in specialty “Park Gardening Management”
(educational and professional program of master's training)**

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
GENERAL TRAINING CYCLE			
Compulsory components of EPP			
CC 1	Computer technologies for designing GPO	5	Exam
CC 2	Landscape planning	5	Exam
CC 3	Management in gardening	5	Exam
CC 4	Methodology and organization of scientific research on the basics of intellectual property	4	Exam
Optional components of EPP			
Free choice according to the preferences of students from the list of disciplines			
OCP 1	Choice from the catalog 1	4	test
OCP 2	Choice from the catalog 2	4	test
SPECIAL (PROFESSIONAL) TRAINING CYCLE			
Compulsory components of EPP			
CC 5	Shape variety of ornamental plants with basics of dendrodesign	8	Exam
CC 6	Reconstruction and restoration of landscape-gardening objects	5	Exam
CC 7	Forest-park economy	4	Exam
CC 8	Ornamental plants protection	5	Exam
CC 9	Exploitation of garden-park objects	5	Exam
CC 10	Seedling, cultivar flowering plants	5	Exam
CC 11	Academic Practice	6	Test
CC 12	Production Practice	2	Test
CC 13	Preparation and defense of master's qualification thesis	5	
Optional components of EPP			
Free choice according to specialty			
<i>Optional Block 1 "Landscape architecture"</i>			
OC 1.1.	Landscape design	6	Exam
OC 1.2.	Park science	6	Exam
OC 1.3.	Conceptual design	6	Exam
<i>Optional Block 2 "Landscape building"</i>			
OC 2.1.	Vertical planning of landscape objects	6	Exam
OC 2.2	Gardens on artificial grounds	6	Exam
OC 2.3	Phytodesign of interiors	6	Exam
<i>Optional Block 3 "Ornamental Nursery"</i>			
OC 3.1	Modern technologies in ornamental nursery studies	6	Exam

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
OC 3.2	Potted woody plants growing	6	Exam
OC 3.3	Biotechnology methods in decorative nursery	6	Exam
<i>Optional Block 4 "Ecodesign of the urban environment"</i>			
OC 4.1	Eco-technology of ornamental horticulture	6	Exam
OC 4.2	Organization and service of country-recreation	6	Exam
OC 4.3	Protected park science and phytocenology	6	Exam
The total amount of compulsory components		64	
The total amount of optional components		26	
THE TOTAL AMOUNT OF EPP		90	

Annotations of disciplines in the curriculum

GENERAL TRAINING CYCLE Compulsory components of EPP

Computer technologies for designing GPO. Possession of the principles for the implementation of various graphic documentation, provided for by the relevant standards. Solving the issues of developing design documentation for landscape gardening objects (basic plan, master plan, working drawing, detailing of elements) using the graphic editors ArchiCAD, Sketh Ur, Realtime Landscaping Architect. Modeling of three-dimensional space. Various ways of obtaining flat images associated with three-dimensional models.

Landscape planning. Within the discipline, social and urban-planning aspects of the formation of landscape objects are being worked out. The theoretical bases and practical methods of landscape design of objects of various functional purposes are considered.

Park gardening management. The aim of the course is to develop students' theoretical knowledge and practical skills in the sphere of park gardening management for the purpose of making and implementing effective decisions in modern conditions. The subject matter of the course is related to: the essence and features of park gardening management; system, process, adaptive and situational approaches to management in this area; theoretical foundations and practical implementation of management functions, principles and methods in park gardening; risk management in park gardening; project management, marketing management in park gardening enterprises.

Methodology of scientific research of garden and park objects with the basics of intellectual property. Concepts about scientific knowledge, sciences, classification of sciences and basic concepts that determine the content of scientific research are revealed. General information about the methodology and classification of scientific research, features of scientific research of garden and park objects and methods used for this purpose are presented. Issues related to the planning and sequence of scientific research work of students and young scientists, work on scientific literature are highlighted.

SPECIAL (PROFESSIONAL) TRAINING CYCLE Compulsory components of EPP

Shape variety of ornamental plants with basics of dendrodesign. Form diversity of woody plants is a part of dendrology that studies woody plant cultivars, classification of decorative qualities, production methods, biological and ecological features. While studying the basics of arboretum design, students must master the basic principles of designing green systems, features of landscape-spatial and landscape-planning composition, features of selection of the range of woody plants when creating the basic compositional elements of plantings.

Reconstruction and restoration of landscape-gardening objects. Theoretical positions and practical issues of pre-project study the territory of garden-park objects of different functional purpose and especially the application of methods of reconstruction, restoration, conservation and reproduction in the course of renovation work.

Forest-park economy. The theoretical positions and practical skills of creating highly aesthetic, ecologically stable forest park plantations of the functional designation and organization of forest park management in settlements.

Ornamental plants protection. Species composition of the main types of pests (insects, ticks, nematodes, rodents) and pathogens (fungi, bacteria, viruses) of ornamental plants. Symptoms and features of damage / damage to plants by pathogens. Methods of monitoring and accounting for plant pests and pathogens. Development of preventive and extermination methods and means of protection of ornamental plants, prediction of possible pathological changes in biocenoses.

Exploitation of garden-park objects. Theoretical and practical training of specialists on the organization of works at the landscape garden objects, agricultural care directions, the formation of decorative, resistant to environmental conditions of the plantings and their maintenance in proper condition in cities and other settlements.

Seedling, cultivar flowering plants. The discipline envisages the study of commonly used techniques of varieties of flower and ornamental plants. Masters study the classification of species and varieties of the most common herbal plants, as well as the peculiarities of their usage at the objects of garden and park construction. Flower design projects using varieties of different species, hybrids of herbs. Masters also learn to develop the techniques of growing flower plants and evaluate the cost-effectiveness and innovation-technological risks associated with the introduction of cutting-edge technologies.

Optional components of EPP

Free choice according to specialty

Optional Block 1 "Landscape architecture"

Landscape design. Landscape design as a modern direction of landscape architecture, the object of which is a small garden. Stylistic use of landscape elements and principles of landscape architecture in the process of a small garden creation.

Park science. The study of natural landscapes as the source material for park-building, general trends in the development of park phytocenosis, the issue of the ecology of the park environment, the physiognomic types and groups of woody plants, the peculiarities of the creation some types of garden-park landscapes, the formation of exhibitions of botanical gardens and arboretums.

Conceptual design. The discipline introduces the role of artistic and aesthetic concepts, the problems of innovative designing on the basis of social programs, the process of forming ideas and their subsequent implementation in the subject-space environment. He teaches creative search methods, develops critical thinking and decision-making skills in the field of the latest problems and trends in landscape architecture and design.

Optional Block 2 "Landscape building"

Vertical planning of landscape objects. Study of basic concepts, principles, methods, requirements of normative documents and the sequence of work execution when drafting vertical planning of urban territory, residential development, areas of green spaces.

Gardens on artificial grounds. The course studies modern methods of landscaping horizontal and vertical surfaces, technological, biological and aesthetic issues

of creating gardens on an artificial basis in exteriors and their design features in interior design, selection of plants for different types of garden.

Phytodesign of interiors. As a result of studying the discipline future masters will get theoretical knowledge and practical skills interiors of various destination. In the first module, they will master the skills of phytocomposite formation, selection of plants, taking into account their biology and microclimate of the interior, as well as the style of the interior. In the second module, future masters will master the theoretical material on the arrangement of winter gardens and will acquire practical skills for the creation of floras.

Optional Block 3 "Ornamental nursery"

Modern technologies in ornamental nursery studies. World experience of planting stock growing. Planning of ornamental planting stock growing measures. Features of ornamental nurseries organization and agrotechnics of planting stock growing.

Potted woody plants growing. Scientific bases of decorative planting stock in a container culture organization of production. Technological features of growing and use of planting stock with the closed root system for green planting for urban landscapes.

Biotechnology methods in ornamental nurseries. Modern state and prospects of development of method of microclonal reproduction of arboreal plants. Calusogeny, morphogeny and features of microclonal reproduction of decorative woody plants.

Optional Block 4 "Ecodesign of the urban environment"

Eco-technology of ornamental horticulture. The study of the discipline provides future specialists with the ability to dynamically combine knowledge, practical skills, communication skills and autonomous activities, theoretical and practical knowledge about the range of decorative plants, how they are bred, the technology of creating or exploiting ornamental gardens and growing environmentally friendly products.

Organization and service of country-recreation. Masters will learn the basics for planning and assessment of recreational infrastructure objects, as well as modern scientific conceptions, the definition of recreational infrastructure, methods of studying the organization of recreational services. They will be able to explore the diverse potential of natural and cultural landscapes as tourist infrastructure of recreational areas. Using theoretical models, masters will be able to predict the impact of recreation on the ecological, economic and social conditions of the region. They will be able to assess the infrastructure of recreational areas from the point of view of its sustainability and develop proposals for sustainable recreation.

Protected park science and phytocenology. As a result of the study of the discipline, the masters will learn the stages of historical development of reserve park science; the current state of the network of Ukrainian protected parks; international and national parks classification; the procedure for the creation of manmade protected parks, their management system, structural and functional organization, methods of preservation, enrichment, reproduction and usage. The second module focuses on the fundamentals of park phytocenology, the teaching of which will provide future specialists with a holistic view of the structure, dynamics, and functioning of plant communities, including forests, urban forests and park. Phytocenological knowledge should be basic for the formation of landscape and other types of phytocoenocompositions.

**EDUCATIONAL AND RESEARCH INSTITUTE
OF CONTINUING EDUCATION AND TOURISM**

Director – Doctor of Law Science, Professor Ivan Grytsenko

Tel.: (044) 527-87-42, 527-86-53

E-mail: sec_edu_nni_director@nubip.edu.ua

Location: Educational Building Number 10, room. 219

Educational and Research Institute of Continuing Education and Tourism organizes and coordinates the educational process of Master's preparation for educational programs within the speciality:

Specialty 073 "Management"

Educational program "Management of Innovative Activity"

Guarantor of the educational and professional program - Olga Vytvytska, Doctor of Economics, Professor

Departments in charge of graduate training:

Public Administration, Management of Innovative Activity and Extension Service

Tel.:(044) 527-86-53

E-mail: public_admin@nubip.edu.ua

Head of department – Sergii Prylipko, Doctor of Science in Public Administration, Associate Professor

Educational program "Extension Service"

Guarantor of the educational and professional program – Roman Korinets, candidate of economic sciences

Department in charge of graduate training:

Public Administration, Management of Innovative Activity and Extension Service

Tel.: +38(067)7083679

E-mail: agroadvice@ukr.net

Head of department – Sergii Prylipko, Doctor of Science in Public Administration, Associate Professor

Educational program "Management of Tourism and Hotel and Restaurant Business"

Guarantor of the educational and professional program – candidate of economic sciences, associate professor Olena Moskvichova

Department in charge of graduate training:

Tourism, Hotel and Restaurant Business

Tel.:(044) 527-80-61

E-mail: melnychenko55@gmail.com

Head of department – Svitlana Melnychenko, Doctor of Economics, Professor

Specialty 241 "Hotel and restaurant business"

Educational program "Hotel and restaurant business"

Guarantor of the educational and professional program – Tkachenko Liubov, PhD in Economics, Associate Professor

Department in charge of graduate training:

Tourism, Hotel and Restaurant Business

Tel.:(044) 527-80-61

E-mail: melnychenko55@gmail.com

Head of Department– Svitlana Melnychenko, Doctor of Economics, Professor

Specialty 242 "Tourism and recreation"

Educational program "International tourism business"

Guarantor of the educational and professional program – Inna Levytska, Doctor of Economics, Professor.

Department in charge of graduate training:

Tourism, Hotel and Restaurant Business

Tel.:(044) 527-80-61

E-mail: melnychenko55@gmail.com

Head of Department– Svitlana Melnychenko, Doctor of Economics, Professor

Speciality 281 "Public management and administration"

Educational program "Public management and administration"

Guarantor of the professional program – Volodymyr Oliinyk, Doctor of Science in Public Administration, Associate Professor

Department in charge of graduate training:

Public Administration, Management of Innovative Activity and Extension Service

Tel.: (044) 527-86-53

E-mail: pub_admin@nubip.edu.ua

Head of department – Sergii Prylipko, Doctor of Science in Public Administration, Associate Professor

**Training of masters of sciences
in branch of knowledge "Management and Administration"
in specialty 073 "MANAGEMENT"
educational program "MANAGEMENT OF INNOVATIVE ACTIVITY"**

Form of Training:	Licensed number of persons:
– Full-time	15
– Part-time	10
Duration of Training:	
– Full-time educational and professional program	1 year 4 months
– Part-time	1 year 4 months
Credits ECTS:	
– educational and professional program	90
Language of Teaching	Ukrainian
Qualification	Master of Management of innovative activity

The concept of training

Ukraine's current achievements in the international dimension of economic competitiveness, level of development and especially the efficiency of the national innovation system are not enough to ensure the development of domestic economy. Thus, there is a need for high-level professionals, who possess not only special knowledge, but also will be able to make strategic and tactical innovative decision, to identify perspective scientific developments and to implement into production new products (services), to improve the mechanisms of promotion of products to the market, to create and use new methods of calculation and justification of socioeconomic indicators and evaluation of innovative projects results; to design and implement business model innovation entrepreneurship, to commercialize intellectual development achievements.

Areas of employment of graduates

Master of educational program "Management of innovative activity" can hold positions as of heads and deputies for development of enterprises and organizations, in consulting centers, innovation structures of central state and regional authorities, innovation funds, innovative financial and credit institutions of scientific and industrial complexes, financial and industrial groups, technology parks.

Practical training

The task of practical training is to train professionals who will be able to solve production problems in the current market conditions, and will own techniques and methods that are components of company's management of innovative activity. The bases of practical training are leading enterprises of Ukraine. In particular: LLC «Institute of innovation providing», NAAS of Ukraine, LLC "Kernel-Trade", association with additional responsibility "Terezine", farmer economy "Nina", separated subdivision of NULES of Ukraine and others.

Proposed Topics of master's qualification thesis

1. Innovative solutions in enterprise management.
2. Management of commercialization of innovative products in the agricultural sector
3. Formation of strategy of innovative development of enterprises.

4. Management of international innovation.
5. Management of innovative processes for the development of enterprise personnel.
6. Information systems in the management of innovation activities of the enterprise.
7. Formation of innovation and investment attractiveness of the enterprise.

**Curriculum of Master training
in educational program "Management of innovative activity"
(educational and professional program of master's training)**

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
GENERAL TRAINING CYCLE			
Compulsory components of EPP			
CC 1	European strategies of Ukraine	5	exam
CC 2	Innovation agrotechnology	4	exam
CC 3	Methodology of scientific research	4	exam
Total		13	
Optional components of EPP			
<i>Free choice according to the preferences of students in the list of subjects</i>			
OCP 1	Choice from the catalog 1	4	test
OCP 2	Choice from the catalog 2	4	test
Total		8	
SPECIAL (PROFESSIONAL) TRAINING CYCLE			
Compulsory components of EPP			
CC 4	Innovation management	6	exam
CC 5	Economics of innovative enterprises	5	exam
CC 6	International management	4	exam
CC 7	Intellectual property	5	exam
CC 8	Creative management	5	exam
CC 9	Financial and investment management	5	exam
CC10	System analysis and management decisions	5	exam
CC11	Strategic management of innovative development	5	exam
CC12	HR management	4	exam
CC 13	Production Practice	4	
CC 14	Preparation and defense of Master's qualification thesis	5	public defense
Total		53	
Optional components of EPP			
<i>Free choice according to specialty</i>			
OC 1	Marketing innovation	4	exam
OC 2	Organization of innovative businesses	4	exam
OC 3	Innovation projects management	4	exam
OC 4	Logistical support of innovation	4	exam
OC 5	Technology transfer	4	exam
OC 6	Management consulting	4	exam
OC 7	Quality management	4	exam
OC 8	Leadership and team building	4	exam
Total		16	
The total amount of compulsory components		66	
The total amount of optional components		24	
THE TOTAL AMOUNT OF EPP		90	

Annotations of subjects in the curriculum

GENERAL TRAINING CYCLE Compulsory components of EPP

European strategies of Ukraine. The goal of studying the discipline is the formation of key competencies in the development and implementation of strategies for the integration of Ukraine into the EU. The discipline involves providing students with modern knowledge about the evolution of integration processes between Ukraine and the EU and mastering practical skills for determining and justifying the strategic priorities of the development of Ukrainian society in the context of the prospect of our country joining the European Union.

Innovation agrotechnology. The course promotes the formation of competent skills in the modern production and processing of crop production, animal husbandry; studying the principles of functioning of robotic complexes of their executive mechanisms, basics of biosafety; studying the basics of bioengineering; study of the basics of nanomaterials and technologies for further use in the industrial and agro-industrial sectors.

Scientific research methodology. Knowledge formation on the methodology, theory and method process, methodological support of research activities, application of theoretical and empirical research methods; specificity of scientific knowledge; content and structure of the process of scientific research; execution of research results and their implementation in practice; determine the cost-effectiveness research.

SPECIAL (PROFESSIONAL) TRAINING CYCLE Compulsory components of EPP

Innovation management. Mastering the theoretical knowledge of the organization and management of innovative activity of the enterprise, industry, region, country, and tools, methodology development of innovative strategies for the development and acquisition of practical skills for evaluating performance, identification of reserves to improve the efficiency of innovation.

Economics of innovative enterprises. The course provides for the acquisition of theoretical knowledge and practical skills for obtaining and evaluating indicators of forming the economic and production activity which is engaged in innovative activities on the basis of factors external and internal environment; review the process of forming competitive strategy on the basis of scientific and technical progress.

International management. The purpose of discipline is to form a system of modern theoretical foundations and international management environment, new technologies, management of international corporation's methods to solve their key problems of innovative development in a globalized economy; developing abilities to apply the methods and tools of international management at Ukrainian enterprises.

Intellectual property. Mastering the knowledge and skills in the field of protection and use of intellectual property. To acquaint students with the basic characteristics of objects relating to intellectual property; disclosure of the role of intellectual property in economic and cultural development of our society.

Creative management. The educational discipline involves mastering theoretical knowledge and practical skills regarding the formation of innovation thinking; mastering the tools of a creative approach to solving innovative problems; acquisition of knowledge and skills in the field of development of a creative environment and creation of a creative organization.

Financial and investment management. Mastering knowledge about the system of principles, methods, means and forms of monetary relations and financial management, to improve production efficiency and product distribution. The study forms and

mechanisms of investment activity of the enterprise to ensure effective development and continuous growth of the market value of the company.

System analysis and management decisions. Formation of knowledge on modern methods of systems research in the area of economic management, as well as students get practical skills using modern methods of development and adoption of innovative solutions.

Strategic management of innovative development. Mastering the latest knowledge in strategic management of innovative enterprise development and acquisition of practical skills for the development of risk management in order to optimize the level of risk in the innovation enterprise.

HR management. Acquiring by students' theoretical knowledge on effective management of labor collective of innovative enterprises on the basis of scientific principles and methods developed by domestic and foreign experts, and positive experience of advanced enterprises.

Optional components of EPP

Free choice according to specialty

Marketing innovation. Acquiring by students theoretical knowledge in marketing innovative and practical skills on the formation of the marketing innovations to the market; creation of strategic marketing and innovative software development company in a dynamic market environment.

Organization of innovative businesses. The course reveals the basis for the organization of innovative small businesses with modern methods research breakthrough areas of science, technology and civil society through innovative educational space University in partnership with academia, business, government on the basis of international experience and is aimed at the formation of ideas, knowledge and skills.

Innovation projects management. Knowledge and skills acquiring of innovative projects management using the tools in the management of innovation projects, the examination of innovative projects and programs.

Logistical support of innovation. Establishing of modern knowledge about the nature and content of logistic support innovation, practical skills concerning logistics solutions support innovation, evaluation and selection of the optimal solution for the initial conditions to ensure the effective operation of the company.

Technology transfer. Mastering of knowledge and skills in the field of technological audit, technology transfer, introduction into economic circulation of intellectual property. Peculiarities of technology commercialization.

Management consulting. Academic discipline provides theoretical and practical knowledge on the development of consulting management in the world and its formation in Ukraine, the main types of consulting services and their application for the adoption of scientifically based solutions, market research and professional consultant, consulting methods, interactive electronic consulting systems.

Quality management. The educational discipline contributes to the formation of knowledge and skills regarding the management of the quality of the innovative activity of the enterprise; introduces the quality system of innovative enterprises, certification and quality audit at enterprises, global experience in quality management.

Leadership and team building. The goal of the discipline is the formation of systematic knowledge and skills from the methodological basis of leadership, global approaches to the meaningful load of the constituent elements of leadership, leadership qualities, in particular: the ability to determine the strategy, directions of activity and development of the organization, institution, team, initiating changes, the ability to self-control, the ability to a constructive attitude to feedback, criticism; the ability to make optimal and timely decisions in stressful situations, the ability for high self-organization.

**Training of masters of sciences
in branch of knowledge "Management and Administration"
in specialty 073 "MANAGEMENT"
educational program "EXTENSION SERVICE"**

Form of Training:	Licensed number of persons:
– Full-time	15
– Part-time	15
Duration of Training:	
– Full-time educational and professional program	1 year 4 months
– Part-time	1 year 4 months
Credits ECTS:	
– educational and professional program	90
Language of Teaching	Ukrainian
Qualification	Master of Management in Extension

The concept of training

Preparation of highly qualified specialists in advisory activities to disseminate knowledge and information on innovative areas of agricultural production and conservation ecology of the environment, social development of the village, children, youth, families, identify promising scientific developments and put them into production through the organization of informational and consultancy activities.

Areas of employment of graduates

Master of Management in Extension Services may hold positions in the management apparatus of enterprises and organizations, in consulting centers, consulting organizations, advisory structures of central state and regional government bodies, advisory services, work as an advisor manager in various fields of activity, including in agricultural production, social sphere, to organize provision of advisory services on development of rural territories, children, youth, families, as well as to open advisory services, their consulting firms.

Practical training

The objective of practical training is to train professionals who are able to organize informational and consulting activities in the current market conditions and have techniques and methods of dissemination of knowledge and information for the development of competitive enterprises. Practical training bases are developed advisory organizations and enterprises, consulting centers, advisory structures of central state and regional governing bodies of Ukraine and abroad - Poland, Germany, the Netherlands, Portugal, America, etc.

Proposed Topics of master's qualification thesis

1. Organization of consulting on the use of alternative energy sources in agricultural activities.
2. Organization of consulting on the spread of biotechnology in plant production.
3. Informational and consulting support for rural business.
4. Advisory support for agricultural land lease relations enterprises.
5. Organization of consulting on the use of information technology in production.
6. Organization of training programs in advisory services.

7. Organization of advisory services for the development of the social sphere of the village.
8. Advisory support for rural tourism development.
9. Organization of consultative activities of the community.
10. Organization of counseling for growing tomatoes in greenhouses closed soil.

**Curriculum of Master training
in educational program "Extension Service"
(educational and professional program of master's training)**

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
GENERAL TRAINING CYCLE			
Compulsory components of EPP			
CC 1	European strategies of Ukraine	5	exam
CC 2	Innovation Agrotechnology	4	exam
CC 3	Methodology of Scientific Research	4	exam
Optional components of EPP			
<i>Free choice according to the preferences of students in the list of subjects</i>			
OCP 1	Choice from the catalog 1	4	test
OCP 2	Choice from the catalog 2	4	test
SPECIAL (PROFESSIONAL) TRAINING CYCLE			
Compulsory components of EPP			
CC 4	Innovation Management	4	exam
CC 5	Economics of Innovative Enterprises	4	exam
CC 6	Consulting Management	4	exam
CC 7	Information Systems and Technologies at Management	4	exam
CC 8	PR- consulting in Agriculture	4	exam
CC 9	HR-management	4	exam
CC 10	Financial and Investment Management	4	exam
CC 11	Organization of Informational and Consulting Activities	4	exam
CC 12	Planning of Informational and Consulting Programs	4	exam
CC 13	Legal Regulation of Extension Service	4	exam
CC 14	Management of Agro-industrial Formations	4	exam
CC 15	Preparation and defense of Master's qualification thesis	9	
Optional components of EPP			
<i>Free choice according to specialty</i>			
OC 1	Statistical Modeling and Forecasting in Management of Extension Service	4	exam
OC 2	System Analysis and Management Decision Making	4	exam
OC 3	Extension Service	4	exam
OC 4	Risk Management of Agro-industrial Production	4	exam
OC 5	Organization of Training in Extension Service	4	exam
OC 6	Interactive Consulting Systems	4	exam
OC 7	Ethics of Extension Activities	4	exam
OC 8	Information and Consulting Support of Rural GreenTourism	4	exam
Total		16	
The total amount of compulsory components		66	
The total amount of optional components		24	
THE TOTAL AMOUNT OF EPP			90

Annotations of subjects in the curriculum

GENERAL TRAINING CYCLE Compulsory components of EPP

European strategies of Ukraine. The goal of studying the discipline is the formation of key competencies in the development and implementation of strategies for the integration of Ukraine into the EU. The discipline involves providing students with modern knowledge about the evolution of integration processes between Ukraine and the EU and mastering practical skills for determining and justifying the strategic priorities of the development of Ukrainian society in the context of the prospect of our country joining the European Union.

Innovation Agrotechnology. The course promotes the formation of competent skills in the modern production and processing of crop production, animal husbandry; studying the principles of functioning of robotic complexes of their executive mechanisms, basics of biosafety; studying the basics of bioengineering; study of the basics of nanomaterials and technologies for further use in the industrial and agro-industrial sectors.

Scientific Research Methodology. Knowledge formation on the methodology, theory and method process, methodological support of research activities, application of theoretical and empirical research methods; specificity of scientific knowledge; content and structure of the process of scientific research; execution of research results and their implementation in practice; determine the cost-effectiveness research.

SPECIAL (PROFESSIONAL) TRAINING CYCLE Compulsory components of EPP

Innovation Management. Mastering the theoretical knowledge of the organization and management of innovative activity of the enterprise, industry, region, country, and tools, methodology development of innovative strategies for the development and acquisition of practical skills for evaluating performance, identification of reserves to improve the efficiency of innovation.

Economics of Innovative Enterprises. The course provides for the acquisition of theoretical knowledge and practical skills for obtaining and evaluating indicators of forming the economic and production activity which is engaged in innovative activities on the basis of factors external and internal environment; review the process of forming competitive strategy on the basis of scientific and technical progress.

Consulting Management. Academic discipline provides theoretical and practical knowledge on the development of consulting management in the world and its formation in Ukraine, the main types of consulting services and their application for the adoption of scientifically based solutions, market research and professional consultant, consulting methods, interactive electronic consulting systems.

Information Systems and Technology of Management. Formation of theoretical and practical knowledge of the foundation establishment and computer operation information systems and technologies in management. The objective of discipline is to study the construction and operation of information technology and information systems in enterprises, regulatory framework, modern approaches to their design and implementation.

PR-consulting in Agriculture. The course aims at studying theoretical, methodological and practical issues of public relations in market conditions and the role of consulting in this, the concept of public relations technologies and organization of consulting on their use in crisis situations.

HR-management. Acquiring by students theoretical knowledge on effective management of labor collective of innovative enterprises on the basis of scientific principles and methods developed by domestic and foreign experts, and positive experience of advanced enterprises.

Financial and Investment Management. The discipline aims to form in students modern economic thinking and a system of special knowledge in the field of financial and investment management of enterprises, mastering the basic theoretical principles, acquiring the necessary competencies and mastering practical skills and abilities to ensure effective management of real and financial investments.

Organization of Informational and Consulting Activities. The course aims to study the theory and practice of organization of information-consulting activities in the world and the peculiarities of its formation and functioning in Ukraine, organization of consulting service, basic principles and methods of management, financing, experience in the organization of staffing and consulting process, licensing and certification of consulting activities.

Planning of Informational and Consulting Programs. The course involves the study of advisory programs in advisory services, their planning to meet the needs of agricultural production and the population in improving the level of knowledge, implementation of innovations.

Legal Regulation of Extension Service. Formation of the system of knowledge and practical skills in the organizational and legal support of advisory services, the creation of an advisory service, a consulting firm.

Management of Agro-industrial Formations. The discipline aims to give students a holistic and logically consistent amount of knowledge about the essence of management in the enterprise and organization, to reveal the basics of theory, methodology and practice of management under the market mechanism of management.

Optional components of EPP

Free choice according to specialty

Statistical Modeling and Forecasting in Management of Extension Service. The course involves providing theoretical and practical knowledge on modeling and forecasting in advisory services, identifying the most pressing problems and identifying science-based information and consulting services on this basis.

System Analysis and Management Decision Making. The course of this discipline aims to provide students with the latest knowledge on systems analysis and management decision-making and the acquisition of practical skills and abilities in systems approach, its principles and methods in research and design of complex organizational and technical systems, skills development, decision support tools, computing tools to solve practical system problems.

Extension Service The course aims to gain theoretical knowledge and practical skills in the development of agricultural advisory activities, mastering its programs, models, methods, technologies, organizing events and feedback, methods of evaluating results.

Risk Management of Agro-industrial Production. The purpose of the discipline is to acquire students' latest knowledge on risk management in innovative activities of agro-industrial production and the acquisition of practical skills to develop a risk management system to optimize the level of risk in the innovation of the enterprise; acquaintance with the degree of consideration of the goals and interests of various stakeholders in the current strategy of economic development in international markets.

Organization of Training in Extension Service. The course involves acquaintance with the theory and methodology of adult learning, learning methods, organization of training events and feedback, methods of evaluation of results.

Interactive Consulting Systems. The discipline involves the formation of a system of theoretical and practical knowledge on the basics of the creation and operation of interactive consulting systems, the development of consulting algorithms, databases and knowledge bases, the use of software for interactive consulting of science-based technology for the development of competitive production.

Ethics of Extension Activities. The discipline involves the formation of a system of theoretical and practical knowledge of the rules of consulting, business and diplomatic protocol, modern methods and rules of doing business, accepted in world practice.

Information and Consulting Provision of Rural Green Tourism. Formation of a system of theoretical and practical knowledge regarding the principles, methods, types of informational and consulting activities regarding the economic, ecological and social components of rural green tourism with the application of international experience.

**Training of masters of sciences
in branch of knowledge "Management and Administration"
in specialty 073 "MANAGEMENT"
educational program "MANAGEMENT OF TOURISM AND HOTEL
AND RESTAURANT BUSINESS"**

Form of Training:	Licensed number of persons:
– Full-time	15
– Part-time	15
Duration of Training:	
– Full-time	1 year 4 months
– Part-time	1 year 4 months
Credits ECTS:	
– educational and professional program	90
Language of Teaching	Ukrainian
Qualification	Master of Management

The concept of training

The need to prepare applicants for the second (master's) level of master's education in the educational program "Management of tourism and hotel and restaurant business" due to the development of market relations in Ukraine, restructuring of the national economy, Ukraine's entry into the world economic space, in particular, international markets. World experience shows that the tourism industry restaurant and hotel industry is developing rapidly: existing and new hotel and restaurant complexes are expanding, the flow of tourists is growing, the requirements for the quality of service are growing every year.

Innovative direction of the processes of development of the tourism industry, hotel and restaurant industry, increasing competition in this area and consumer demands, control over the work of institutions by government agencies, the need to accelerate management decisions in turbulent environments raise the issue of professionalism. staff shortages, but also in the level of training. Today they are required to have a system of competencies based on knowledge of international service standards, integrated quality management systems, modern technologies for designing and developing tourist destinations, research and innovation. In the process of professional, theoretical training, applicants will gain in-depth knowledge, skills and abilities on the features of effective management of restaurant and hotel businesses and their structural units, which will allow them to survive in a competitive environment.

Areas of employment of graduates

Heads of enterprises, institutions and organizations, heads of small enterprises without management staff, managers (managers) of enterprises, institutions, organizations and their subdivisions, professionals in the field of tourism, researchers (tourism, sightseeing), tourism experts, managers (managers) of travel agencies and bureaus travel, managers (managers) in hotels and other accommodation, manager (manager) of food security systems, managers (managers) in restaurants, managers (managers) in cafes, bars, canteens, managers (managers) at enterprises that prepare and deliver ready meals, managers (managers) in the field of culture, recreation and sports, researchers, hospitality specialist (hotels, tourist complexes, etc.), tourist service specialist, organizer of cultural and leisure activities, rural tourism development specialist, specialist on tourist service, the assistant to the head of production division, the assistant to the head of m scarlet

enterprise without management staff, other technical specialists in the field of management, conductor (by type of tourism).

Practical training

To ensure the practical training of applicants and their successful employment, establishes various forms of cooperation with tourism and hotel and restaurant businesses, as well as organizations on the basis of concluded training agreements, cooperation agreements, bilateral community agreements, agreements on internships for applicants. conditions for the implementation of internship programs and ensure full compliance with the requirements provided.

Proposed Topics of master's qualification thesis

1. Management of innovative activities at the enterprise (hotel and restaurant industry / tourism) and ways of its improvement.
2. Justification of the creation and development of a strategy for the development of enterprises (hotel and restaurant industry / tourism).
3. Justification of the strategy and development of a business plan for the development of enterprise services (hotel and restaurant industry / tourism).
4. Study of factors of the external environment in the process of strategic management of the enterprise (hotel and restaurant industry / tourism).
5. Increasing competitiveness and assessing the influence of environmental factors on the efficiency of enterprise management (hotel and restaurant industry / tourism).
6. Development of a strategy for diversification of enterprise activity (hotel and restaurant industry / tourism).
7. Reengineering of business processes at the enterprise (hotel and restaurant industry / tourism).
8. Development of a business plan for enterprise restructuring (hotel and restaurant industry / tourism).
9. Management of tourism activities based on the sharing economy.
10. Management of the development of extreme tourism in the capital region.

Curriculum of Master training in educational program "Management of Tourism and Hotel and Restaurant Business" (educational and professional program of master's training)

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
GENERAL TRAINING CYCLE			
Compulsory Components of EPP			
CC 1	Methodology and Organization of Scientific Research	4	exam
CC 2	Personal Efficiency and Leadership	4	exam
Total		8	
Optional components of EPP			
<i>Free choice according to the preferences of students in the list of subjects</i>			
OCP 1	Choice from the catalog 1	4	test
OCP 2	Choice from the catalog 2	4	test
Total		8	
SPECIAL (PROFESSIONAL) TRAINING CYCLE			
Compulsory components of EPP			
CC 3	Strategic Marketing in the Tourism and Hotel and Restaurant Business	4	exam

MASTER CURRICULA AND TRAINING PROGRAMS

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
CC 4	Management of business processes of tourism entities	5	exam
CC 5	Tourist Destinations	4	exam
CC 6	Project management in the tourism sector	5	exam
CC 7	Innovations in the Tourism and Hotel and Restaurant Business	5	exam
CC 8	Information Systems and Technologies in Management	5	exam
CC 9	Revenue Management	5	exam
CC 10	HR - Hotel and Restaurant Management	4	exam
CC 11	Practical training	9	
CC 12	Preparation and defense of Master's qualification thesis	12	public defense
Total		58	
Optional components of EPP			
<i>Free choice according to specialty</i>			
OC 1	Business law	4	exam
OC 2	Contract and Labor Law	4	exam
OC 3	International law	4	exam
OC 4	Management psychology	4	exam
OC 5	Business etiquette	4	exam
OC 6	Psychology of conflict	4	exam
OC 7	Serviceology	4	exam
OC 8	Brand Management	4	exam
OC 9	Tourismology	4	exam
OC 10	Cross-cultural Management	4	exam
OC 11	Internet Technology in Business	4	exam
OC 12	Digital marketing technologies	4	exam
Total		16	
The total amount of compulsory components		66	
The total amount of optional components		24	
THE TOTAL AMOUNT OF EPP			90

Annotations of subjects in the curriculum

**GENERAL TRAINING CYCLE
Compulsory components of EPP**

Methodology and organization of scientific research. Theoretical and methodological principles of research in the field of tourism, developing skills of using pattern matching, methods and forms of scientific and practical knowledge, in process analysis of management and economy in tourism industry; application of theoretical and methodological principles of economics, management, geographical sciences and the science of tourism in organization of scientific research and writing qualification work (master thesis), implementation of specific methods of economic and regional-geographical analysis in tourism, basics of organization of researcher's work process, preparation of qualification work (master thesis) approbation of research results in scientific publications, at conferences, seminars, etc.

Personal Efficiency and Leadership. Forming a system of knowledge, applied skills and abilities to use the principles, types, tools of personal effectiveness and leadership of the leader and ensure long-term business partnerships in business. Basic concepts and concepts of leadership theory; advantages and threats of leadership behavior in tourism and hotel and restaurant activities; formation of a systematic idea of personal efficiency and leadership in tourism and hotel and restaurant activities.

SPECIAL (PROFESSIONAL) TRAINING CYCLE

Compulsory components of EPP

Strategic Marketing in the Tourism and Hotel and Restaurant Business.

Formation of a system of theoretical knowledge on marketing strategies and practical skills of management of strategic marketing activities of tourism and hotel and restaurant business on the basis of studying legislative documents, normative, special, reference literature and resources of the world information network.

Management of business processes of tourism entities. Theoretical and methodological principles of business process management in tourism and hotel and restaurant business; applied aspects of business process management of modern tourist and hotel and restaurant enterprises; scientific and theoretical basis of the concept of business process reengineering, which is embodied in the activities of tourism and hotel and restaurant enterprises; Internet technologies in business process management of tourist and hotel and restaurant enterprises to increase the efficiency and effectiveness of business processes of tourist and hotel and restaurant enterprises.

Tourist Destinations. Modern scientific and praxeological approaches to the genesis of the concept, structure and management mechanisms of tourist destinations of different scales on the basis of sustainable development. Fundamentals of destination formation, principles, functions and mechanisms of their management, the main aspects of competitiveness of tourist destinations of different levels in terms of ensuring their sustainable development, features of marketing management of tourist destinations. Applied aspects of the best world and domestic practices of formation and management of development of tourist destinations.

Project management in the tourism sector. The formation of appropriate practical skills and skills in the application of universal tools for the development and implementation of projects in order to achieve the effective existence and development of the organization. The basics of project management and the methodology of drawing up, planning and analyzing projects. With the help of this module, the student should master the methodology necessary for successful project management, as well as acquire the skills of implementing project solutions in practical activities.

Innovations in Tourism and Hotel and Restaurant Business. Current state and prospects of development of formats of establishments of tourist and hotel and restaurant economy according to changes of tourist and hotel and restaurant business; creation and directions of development of innovative forms of service of various-format establishments of tourist and hotel and restaurant economy, innovative forms of rendering of professional services; organization and management of innovative technologies in tourism and hotel and restaurant industry; innovation management, development and implementation of an innovative product, the use of innovative technologies in its formation, customer service; application of new information technologies of promotion and sale of services; formation of knowledge about the latest mechanisms and methods of management of international and domestic enterprises of tourism and hotel and restaurant sphere.

Revenue Management. Formation of a system of knowledge on measures to optimize the revenue management system of hotels and restaurants. Features and pricing strategies in the hotel and restaurant business; modeling of demand in the conditions of economic uncertainty faced by decision-makers in the hotel and restaurant business; methods of identifying income reserves of hotel and restaurant enterprises; basic revenue management strategies for hotels and restaurants; methods and features of information collection and processing in revenue management systems; analysis of profitability of hotels and restaurants.

HR - Hotel and Restaurant Management. Formation of professional competencies in human resources management in hotels and restaurants. Modern techniques of human

management; recruitment, career planning; to acquire skills of conducting business trainings and mastering the peculiarities of their evaluation. Theoretical foundations of international HR management.

Optional components of EPP

Free choice according to specialty

Business law. Formation of a system of knowledge about the legal regulation of entrepreneurship, organizational and legal forms of entrepreneurial activity, legislative requirements for business entities. Study of the main approaches to state regulation of entrepreneurship, legal regulation of financial activity of business entities, economic competition, intellectual property in the field of entrepreneurial activity.

Contract and Labor Law. Disclosure of the most important categories and constructions of contractual and labor law and legislation in this area, the main trends in their development and application by public authorities of current legislation on the implementation of contracts, including labor. The study of contract law aims to acquire students' skills in working with normative material, the ability to resolve specific legal situations that arise in the field of contractual relations on the basis of national and international law. Students must also analyze law enforcement practices, court decisions and decisions of public authorities in terms of regulating contractual relations. The study and analysis of modern labor legislation governing the formation of the labor market, the organization and use of labor of employees is an important part of the development of the modern rule of law.

International law. Concept, structure and types of conflict rules. Basic attachment formulas. Legal status of individuals in international law. Legal status of legal entities in international law State as a party to private law relations with a foreign element Property relations in international law Treaty in international law International carriage of goods and passengers Obligations due to damage in international law Labor relations in international law International commercial arbitration.

Management psychology. Study of psychological regularities of managerial activity, problems of communication and interaction of people in various social structures. Analysis of psychological conditions and features of managerial activity in order to improve the efficiency and quality of work in the management system. Theoretical foundations of the psychology of labor relations and management. Psychological features of managerial decision-making. The psychology of managerial influence in the activity of the manager, the psychology of business communication, increasing work efficiency through stimulation and the formation of permanent motives.

Business etiquette. Acquaintance with the main trends in the field of communications; studying the basics of business protocol and etiquette, diplomatic and international correspondence and communication through other means of communication. Formation of students' scientific outlook and high moral qualities; raising the general cultural level of students, expanding their theoretical and professional training; introducing students to the basic principles of business, including international protocol and etiquette.

Psychology of conflict. Study of the psychological content of conflict, prerequisites for the occurrence, management and constructive resolution of conflicts in various spheres of the individual's life. Understanding the goals and objectives of conflict psychology; familiarization with the main functions of the conflict; study of objective and subjective factors of conflict interaction; familiarization with the structure and dynamics of conflicts; studying the typology of conflicts and conflict personalities; mastering the technology of prevention, prevention and resolution of conflicts; mastering the system of knowledge about the basic principles and technologies of conflict management; students acquired skills of practical work with conflicts.

Servisology. Formation and development of the service sector, its main stages. Types of service. Sectoral structure of the service industry. Role of service providing in people's life. Theoretical analysis of customer service. Basics of service theory. Theory and practice of national, regional, ethnic, demographic and climatic features of service. Modern service: expanding the relationship between producers and consumers of services. Individual service as separate type of service. Adaptive and dynamic characteristics of service. Modern service: the issue of quality and safety of service providing. Culture of service. Modern service technologies. Service in tourism. Foreign experience.

Brand Management. Formation of a system of professional competencies for the use of branding basics, methods of its organization for efficient management at the level of the main link of social production - the enterprise; acquisition of the necessary set of theoretical and practical knowledge to solve specific economic problems at the present stage of economic development. Forms of identification of economic laws and patterns of branding in the economic activity of the enterprise, methods, mechanisms, methodological approaches and practical experience of using brands by tourism and hotel and restaurant businesses in modern business conditions in Ukraine and developed market countries. Theory and practice of management, formation and use of branding; organization and effectiveness of marketing activities and other activities of the enterprise.

Tourismology. Formation of a system of knowledge about tourism, regularities of its formation, development and functioning, variety of approaches to its interpretation, features of motivation and bases of marketing and management in tourism, providing knowledge on specifics of functioning of subjects of tourist activity and features of work of the manager of tourist enterprise; to develop the ability to use knowledge of the discipline in practical and scientific activities.

Cross-cultural Management. Formation of a system of theoretical knowledge and practical skills for effective management of organizations in a global economy, taking into account the characteristics and interaction of different cultures. Coverage of theoretical and methodological and applied aspects of cross-cultural management; methods and mechanisms of cross-cultural management; preparing students to work in a multicultural environment of modern business.

Internet Technology in Business. Formation of a complex of knowledge, skills and abilities necessary for increase of efficiency of professional activity by means of means of information technologies and systems. Hardware and software for information technology in tourism; composition of technical and software of the tourist organization, application of database management systems in the field of tourism and hotel and restaurant business; basics of construction and operation of local and global computer networks, protection of information in computer networks, basics of construction of automated enterprise management systems in the field of tourism, hotel and restaurant business; applied programs for the formation, promotion and implementation of a tourist product, automated reservation and reservation systems, automation systems for hotel and restaurant business management; information technologies of e-commerce in tourism, as well as the use of multimedia and the Internet in the practice of tourism business.

Digital marketing technologies. Formation of a system of theoretical knowledge and practical skills of application of modern digital technologies, principles, methods and tools of marketing. The concept and tools of digital technology. Digital technologies in product and price policy. Digital technologies in the distribution system. Digital technologies in marketing communications. Digital technologies in marketing research. Digital technologies of marketing analysis.

**Training of masters of sciences
in branch of knowledge 24 "Sphere of service"
in specialty 241 "HOTEL AND RESTAURANT BUSINESS"
educational program "HOTEL AND RESTAURANT BUSINESS"**

Form of Training:	Licensed number of persons:
– Full-time	20
– Part-time	20
Duration of training:	
– Full-time	1 year 4 months
– Part-time	1 year 4 months
Credits ECTS:	
– educational and professional program	90
Language	Ukrainian
Qualification of graduates:	Master of Management

Training concept

The need to train applicants for the second (master's) level of master's education under the educational and professional program "Hotel and restaurant business" is conditioned by the training of specialists who are able to identify and solve complex tasks and problems that involve conducting research, organizing service and innovative activities of hotel subjects - restaurant business in order to make effective decisions in conditions of uncertainty. Ukraine's entry into the global economic space, increased competition in the market of hotel and restaurant services, increasing requirements for service quality require the training of creative, innovative specialists whose knowledge is based on knowledge of international service standards, modern design technologies, research and innovation activities.

Areas of employment for graduates

Managers of enterprises, institutions and organizations, managing hotels, catering enterprises, managers of production units in restaurants, hotels and other places of accommodation, projects and programs, small enterprises without a management apparatus, small enterprises without a management apparatus in commercial services, hotel managers (boarding house, camping, etc.), restaurant (cafe, dining room, etc.), managers of small enterprises-hotels and restaurants without a management apparatus, restaurateurs, managers (managers) of enterprises, institutions, organizations and their subdivisions, in hotels and other places of accommodation, in catering establishments, in restaurants, in cafes, bars, canteens, in enterprises that prepare and supply ready-made meals, teachers of secondary education institutions, other teachers of universities and institutions of higher education, research staff (teaching methods), other researchers in the field of education, other specialists in the field of education, researchers (work, employment), researchers (marketing, business efficiency, rationalization of production), economists, researchers, hospitality specialist (hotels, tourist complexes, etc.), assistant to the head of the production unit; assistant to the head of another main unit, assistant to the head of a small enterprise without a management apparatus.

Practical training

To ensure the practical training of applicants and their successful employment, various forms of cooperation are established with enterprises of the hotel and restaurant business, as well as organizations on the basis of concluded contracts on the training of specialists, cooperation agreements, bilateral agreements of the Commonwealth of

Nations, contracts on internships by applicants, which creates conditions for the implementation practice programs and ensures full compliance with the requirements stipulated by the EPP.

Proposed Topics of master's qualification thesis:

1. Benchmarking and improvement of marketing research organization at the hotel and restaurant business enterprise.
2. Increasing the competitiveness of the hotel and restaurant business based on a modern marketing strategy.
3. Development of a marketing strategy of a hotel and restaurant business enterprise.
4. Pricing strategy and price management for hotel and restaurant business services.
5. Business planning of a rural green tourism establishment.
6. Management of innovative activities at the hotel and restaurant business enterprise.
7. Reengineering of business processes at the hotel and restaurant business enterprise.
8. Development of a business plan for the restructuring of a hotel and restaurant business enterprise.
9. Digitization of business processes at the hotel and restaurant business enterprise.
10. Design of a hotel and restaurant business enterprise taking into account environmental requirements.

**Curriculum of Master training
in educational program "Hotel and restaurant business"
(educational and professional program of master's training)**

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
GENERAL TRAINING CYCLE			
Compulsory components of EPP			
CC 1	Professional communication in a foreign language	4	exam
CC 2	Methodology and organization of scientific research	4	exam
Total		8	
Optional components of EPP			
<i>Free choice according to the preferences of students in the list of subjects</i>			
OCP 1	Choice from the catalog 1	4	test
OCP 2	Choice from the catalog 2	4	test
Total		8	
SPECIAL (PROFESSIONAL) TRAINING CYCLE			
Compulsory components of EPP			
OK 3	Project management in the hotel and restaurant business	5	exam
OK 4	Digitalization in the hotel and restaurant business	4	exam
OK 5	Service science	4	exam
OK 6	Innovations in the hotel and restaurant business	4	exam
OK 7	Risk management in the hotel and restaurant business	4	exam
OK 8	Strategic marketing in the hotel and restaurant business	4	exam
OK 9	Business planning of rural green tourism settlements	4	exam
OK10	Management of business processes in the hotel and restaurant business	4	exam
OK11	Eco-trends in the hotel and restaurant business	4	exam

MASTER CURRICULA AND TRAINING PROGRAMS

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
OK 12	Industrial (pre-diploma) practice	9	test
OK 13	Preparation and defense of master's qualification thesis	12	public defense
Total		58	
Optional components of EPP			
<i>Free choice according to speciality</i>			
OC 1	Commercial law	4	exam
OC 2	Intellectual Property	4	exam
OC 3	International law	4	exam
OC 4	Revenue management	4	exam
OC 5	Business etiquette	4	exam
OC 6	Management psychology	4	exam
OC 7	Event management	4	exam
OC 8	Cross-cultural management	4	exam
OC 9	Resort business	4	exam
OC 10	Brand management	4	exam
OC 11	Marketing in small business	4	exam
OC 12	Rural green tourism	4	exam
OC 13	Psychology of conflict	4	exam
OC 14	International tourist business	4	exam
OC 15	Digital marketing technologies	4	exam
OC 16	HR management of hotels and restaurants	4	exam
Total		16	
The total amount of compulsory components		66	
The total amount of optional components		24	
THE TOTAL AMOUNT OF EPP			90

Annotations of subjects in the curriculum

**GENERAL TRAINING CYCLE
Compulsory components of EPP**

Professional communication in a foreign language. Development of professionally oriented intercultural communicative competence as a component of activity competence. Development of cross-cultural business relations; business, culture and environment. Telephone conversations: making and receiving telephone calls; telephone conversations and cross-cultural communication; telephone conversations as a way of solving problems. Presentations: using a presentation to influence the audience; various techniques for preparing presentations; the beginning and main part of the presentation; questions and discussion. Meetings as an option for business interaction: the procedure for conducting effective meetings; decision-making structure; how to end the meeting. Peculiarities of conducting business negotiations: types of business negotiations; bidding, trade agreements and concessions; overcoming conflicts; refusal to satisfy the request.

Methodology and organization of scientific research. Theoretical and methodological provisions of scientific research in the hotel and restaurant business, formation of skills and competencies regarding the application of laws, methods and forms of scientific knowledge in practical activities, during the analysis of phenomena and processes related to managerial and economic activities in the hotel and restaurant business; application of theoretical and methodological provisions of economic and management science in the organization of scientific research and writing of a final qualification thesis (VKR), implementation of specific methods of economic analysis, analysis of the basics of the organization of the work of a researcher, preparation of VKR and approval of research results in scientific publications, at conferences, seminars, etc.

SPECIAL (PROFESSIONAL) TRAINING CYCLE

Compulsory components of EPP

Project management in the hotel and restaurant business. Formation of appropriate practical skills and skills in the application of universal tools for the development and implementation of projects in order to achieve the effective existence and development of the hotel and restaurant business enterprise. The basics of project management and the methodology of drawing up, planning and analyzing projects. With the help of this module, the student should master the methodology necessary for successful project management, as well as acquire the skills of implementing project solutions in practical activities.

Digitalization in the hotel and restaurant business. Characteristics of modern information systems and technologies in the hotel and restaurant business. Organization of management of information resources of the hotel and restaurant business enterprise. Specialized software products for managing business processes of hotel and restaurant businesses. Global (GDS) and alternative (ADS) reservation systems for hotel services. Internet sites of hotel and restaurant business enterprises.

Servisology. Formation and development of the service, its main stages. Types of service activities. Branch structure of the service sphere. Service activity in the context of people's living conditions. Theoretical analysis of service activity. Basics of service theory Theory and practice of service taking into account national, regional, ethnic, demographic and natural and climatic features of service. Modern service: expanding the space of relations between producers and consumers of services. Individual service as an independent type of professional activity. Adaptive and dynamic characteristics of service activity. Problems of quality and security of services in the practice of modern service. Service culture. Modern service technologies. Service activities in the hotel and restaurant business. Foreign experience in the hotel and restaurant business.

Innovations in the hotel and restaurant business. The current state and prospects for the development of enterprise formats in accordance with changes in the hotel and restaurant business; creation and directions of development of innovative forms of service of various formats of hotel and restaurant business, innovative forms of providing professional services; organization and management of innovative technologies in the hotel and restaurant business; innovative management, development and introduction of an innovative product, use of innovative technologies in its formation, customer service; application of new information technologies for the promotion and sale of services; formation of knowledge about the latest mechanisms and methods of management of international and domestic enterprises in the hotel and restaurant sphere.

Risk-management in the hotel and restaurant business. Providing knowledge about methods of assessing risk parameters in the hotel and restaurant business, which characterize quantitative relationships between economic values; predictive risk models, acquiring the skills to use them in the practice of managing business processes of the hotel and restaurant business.

Strategic marketing in the hotel and restaurant business. Formation of a system of theoretical knowledge on marketing strategies and practical skills of managing strategic marketing activities of hotel and restaurant business enterprises based on the study of legislative documents, normative, special, reference literature and resources of the worldwide information network.

Business planning of rural green tourism settlements. Determination of the essence, goals and objectives of the development of a business plan for the development of rural green estates in territorial communities, in particular, the formation of a comprehensive tourist product in the segment of rural green tourism according to territorial specifics. Mastery of the methodology for developing individual sections of the business

plan; substantiation of the expediency and necessity of using business plans as a reliable financial and economic tool for the development and improvement of the functioning of rural green estates.

Management of business processes in the hotel and restaurant business.

Theoretical and methodological principles of business process management in the hotel and restaurant business; applied aspects of business process management of hotel and restaurant enterprises; the scientific and theoretical basis of the concept of business process reengineering, which is implemented in the activities of hotel and restaurant enterprises; Internet technologies in the management of business processes of hotel and restaurant enterprises to increase the efficiency and effectiveness of business processes of hotel and restaurant enterprises.

Eco-trends in the hotel and restaurant business. Trends in the hotel and restaurant business are aimed at improving the environment and protecting nature. Peculiarities of the development and functioning of domestic and foreign ecological enterprises of the hotel and restaurant business. Analysis of business processes of an eco-restaurant and an eco-hotel. The main theoretical and methodological principles of developing a business model of an ecological establishment of the hotel and restaurant business. Economic calculations of the budget.

Optional components of EPP

Free choice according to specialty

Commercial law. Assimilation of the totality of knowledge and acquisition of skills of legal regulation of business activity, use of relevant legal norms in business practice when carrying out professional legal activity. The history of formation, legal means of the functioning of economic law, trends in its development and improvement, analysis and study of the basic principles of legal regulation of economic relations and the practice of applying acts of economic legislation. Legal regime of property of economic entities. Legal regulation of economic activity of certain types.

Intellectual property. The concept of intellectual property, objects and subjects of intellectual property. The concept, principles and sources of copyright; objects and subjects of copyright; literary property law, art and cultural property law, scientific property; collective copyright management; liability for copyright infringement. Legal protection of related rights. Concepts and conditions of legal protection of inventions, utility models, industrial designs. Legal protection of non-traditional results of intellectual property. Legal protection of means of individualization of economic entities, goods, works and services. The concept and legal protection of commercial (brand) names; trademark and geographical indications. Protection from unfair competition. Liability for infringement of intellectual property rights.

International law. The concept and sources of international law. The concept, structure and types of conflict of laws. Basic attachment formulas. Legal status of individuals in international law. Legal status of legal entities in international law. Role of the State in private law relations with a foreign element. Property rights in international law. International law and agreements. International freight and passenger transportation. International liability for injurious consequences. International labour law. International Commercial Arbitration.

Revenue management. Formation of a knowledge system regarding the implementation of measures to optimize the revenue management system of hotels and restaurants. Peculiarities and strategies of pricing at enterprises of the hotel and restaurant business; modeling demand in conditions of economic uncertainty faced by decision-makers in the hotel and restaurant business; the method of identifying the income reserves of the hotel and restaurant enterprise; basic revenue management strategies of hotels and

restaurants; methods and features of information collection and processing in revenue management systems; analysis of profitability indicators of hotels and restaurants.

Business etiquette. Acquaintance with the main trends in the field of communications; studying the basics of business protocol and etiquette, diplomatic and international correspondence and communication through other means of communication. Formation of students' scientific outlook and high moral qualities; raising the general cultural level of students, expanding their theoretical and professional training; introducing students to the basic principles of business, including international protocol and etiquette.

Management psychology. Study of psychological regularities of managerial activity, problems of communication and interaction of people in various social structures. Analysis of psychological conditions and features of managerial activity in order to improve the efficiency and quality of work in the management system. Theoretical foundations of the psychology of labor relations and management. Psychological features of managerial decision-making. The psychology of managerial influence in the activity of the manager, the psychology of business communication, increasing work efficiency through stimulation and the formation of permanent motives.

Event management. Theoretical foundations of event management. Types of events. The role of events in the activities of hotel and restaurant business enterprises. The main components of the success of the event manager. Essential characteristics of special events in the event management system. Event research methodology. Event program development technology. Planning and organization of events at enterprises of the hotel and restaurant business. Organization and evaluation of the results of the events. Determination of the risks of event activities. Risk management of exceptional events. The concept, properties and functions of risks. Event marketing. Financial management of events. Logistics of certain types of corporate events.

Cross-cultural management. Formation of a system of theoretical knowledge and practical skills regarding the effective management of organizations in the conditions of the global economy, taking into account the peculiarities and interaction of different cultures. Coverage of theoretical, methodological and applied aspects of cross-cultural management; methods and mechanisms of cross-cultural management; preparing students to work in a multicultural environment of modern business.

Resort business. Forming an idea about the basic recreational needs of a person, understanding the specifics and types of recreational activities, knowledge of the organization and development of recreational systems, as well as mastering theoretical and practical knowledge of the basics of the resort business: mastering methods for the implementation of natural factors used in sanatorium-resort institutions of Ukraine ; the alimentary factor, aimed at ensuring and skillful use of it in the complex rehabilitation of vacationers; mastering the skills of a creative approach to the organization of the resort business depending on the resort resources.

Brand-management. Development of practical skills based on the basics of branding, methods of effective brand organization for a company; acquisition of the necessary set of theoretical and practical knowledge of solving specific economic problems at the present stage of economic development. Forms of identification of economic laws and patterns of branding in the economic activity of the enterprise, methods, mechanisms, methodological approaches and practical experience of using brands by tourism and hospitality businesses in modern business environment in Ukraine and in countries with developed market economies. Theory and practice of management, formation and use of branding; organization and efficiency of marketing and other types of enterprise activities.

Marketing in small business. Specific features of the functioning of small business enterprises. Classification of small business services in the service economy.

Development of a marketing complex for a small hotel and restaurant business. Marketing strategies of small business enterprises taking into account industry specifics. Marketing technologies in the hotel and restaurant business. Marketing management of a small business organization. Assessment of marketing effectiveness of a small hotel and restaurant business.

Rural green tourism. It provides students with the formation of theoretical, professional knowledge and practical skills regarding the organization of rural green tourism in Ukraine, organizational and legal regulation, specifics of management and marketing in rural green tourism, organization and planning of this type of tourism.

Psychology of conflict. Study of the psychological content of conflict, prerequisites for the occurrence, management and constructive resolution of conflicts in various spheres of the individual's life. Understanding the goals and objectives of conflict psychology; familiarization with the main functions of the conflict; study of objective and subjective factors of conflict interaction; familiarization with the structure and dynamics of conflicts; studying the typology of conflicts and conflict personalities; mastering the technology of prevention, prevention and resolution of conflicts; mastering the system of knowledge about the basic principles and technologies of conflict management; students acquired skills of practical work with conflicts.

International tourist business. Formation of knowledge and practical skills in researching the market of international tourism services, as well as organizing the activities of tourist transnational corporations and international hotel chains on the global and national market. The industry of the international market and its components are analyzed. The principles and world experience of management and marketing of international tourism are explained, the concepts and varieties of the world tourist market and the mechanisms of its regulation are described.

Digital marketing technologies. Formation of a system of theoretical knowledge and practical skills in the application of modern digital technologies, principles, methods and tools in the marketing activities of enterprises. Concepts and tools of digital technologies. Digital technologies in commodity and price policy. Digital technologies in the distribution system. Digital technologies in marketing communications. Digital technologies in marketing research. Digital technologies of marketing analysis.

HR - Hotel and Restaurant Management. Formation of professional competencies in human resources management in hotels and restaurants. Modern techniques of human management; recruitment, career planning; to acquire skills of conducting business trainings and mastering the peculiarities of their evaluation. Theoretical foundations of international HR management.

**Training of masters of sciences
in branch of knowledge 24 "Service sector"
in specialty 242 "TOURISM AND RECREATION"
educational program "INTERNATIONAL TOURISM BUSINESS"**

Form of Training:	Licensed number of persons:
– Full-time EPP	30
– Part-time	40
Duration of Training:	
– Full-time educational and professional program	1 year 4 months
– Part-time	1 year 4 months
Credits ECTS:	
– educational and professional program	90
Language of Teaching	Ukrainian
Qualification	Master of Tourism

The concept of training

The international tourism business is a big important part of the international economy, it is a difficult and complex sector, that has a strong impact on the structure and general condition of the global economy and can affect the domestic economies of the majority of countries and regions.

The educational program "International Tourism Business" is aimed at training highly qualified, socially mobile professionals with fluent English and other languages, who have general and professional competencies for successful economic, organizational, managerial, project, production and technological activities in the international tourism business.

Students will gain knowledge and skills to put into practice the basics of tourism law, national and international standards for tourist services, understanding of the principles, processes and technologies of the tourism business and its subsystems (administrative, socio-psychological, economic, technical and technological)

In addition, this training will form an individual educational trajectory through the study of interesting optional subjects, which will significantly expand the knowledge and skills of a master in the international tourism business.

Areas of employment of graduates

International tourism business specialists will be able to do administrative work (management, financial or personnel management) and try themselves in creative areas - branding, creating new domestic and foreign tourism products, and starting a travel company. The tourism demand continues to grow, and quality offers are lacking, so graduates of the educational and professional program "International Tourism Business", who have a large amount of theoretical knowledge and practical experience, can succeed in this field.

Practical training

Students gain in-depth knowledge of how to successfully start and develop a business, knowledge of effective management and how international organizations operate, supporting the concept of the information society as one of the factors of international development. The program is based on an interdisciplinary approach that allows students to gain competence in various aspects of the international tourism market and business management. In-depth study of foreign languages is the most important tool

for understanding the processes taking place in the international tourism market. This allows not only to communicate freely, but also to master specialized literature. To ensure the practical experience of students and their successful employment, various forms of cooperation are established with the tourism industry, as well as organizations on the basis of training agreements, cooperation agreements, bilateral cooperation agreements, internship agreements, which creates comfortable and useful conditions for meeting the requirements of the educational and professional program and gain the degree.

Proposed Topics of master's qualification thesis

1. Management of international integration activities of the national tourism system (using the example of one of the specific or regional markets).
2. Mechanisms of state regulation of Ukraine's international tourism policy.
3. International tourism development strategy of a specified destination of Ukraine.
4. Development of a system for ensuring the quality of tourist services as a direction of Ukraine's integration into the EU.
5. Internet technologies in the formation of business processes of an international tourist operator.
6. Implementation of the TQM concept in the work of an international tourist operator.
7. Reengineering of service processes of an international tourist operator.
8. System of operational management of an international tourist operator.
9. Promotion of the tourist destination (name) on the international market.
10. Branding of the tourist destination (name) on the international market.

Curriculum of Master training in educational program «International tourism business» (educational and professional program of master's training)

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
GENERAL TRAINING CYCLE			
Compulsory Components of EPP			
CC 1	Professional Foreign Language Communication	6	exam
CC 2	Methodology and organization of scientific research	3	exam
Total		9	
Optional components of EPP			
<i>Free choice according to the preferences of students in the list of subjects</i>			
OCP 1	Choice from the catalog 1	4	test
OCP 2	Choice from the catalog 2	4	test
Total		8	
SPECIAL (PROFESIONAL) TRAINING CYCLE			
Compulsory components of EPP			
CC 3	International Tourism	6	exam
CC 4	Project management in the tourism sector	6	exam
CC 5	Tourism Destinations	6	exam
CC 6	Innovations in the Tourism and Hotel and Restaurant Business	6	exam
CC 7	Quality management in tourism	6	exam
CC 8	Strategic Marketing in Tourism	6	exam
CC 9	Business planning of rural green tourism settlements	4	exam
CC 10	Management of business processes of tourism entities	4	exam
CC 11	Pre-diploma Practical Training	9	
CC 12	Preparation and defense of Master's qualification thesis	12	
Total		57	

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
Optional components of EPP			
<i>Free choice according to specialty</i>			
OC 1	Contract law	4	exam
OC 2	Intellectual property	4	exam
OC 3	Commercial law	4	exam
OC 4	International law	4	exam
OC 5	Business etiquette	4	exam
OC 6	Management psychology		exam
OC 7	International credit - settlement and currency transactions-operations	4	exam
OC 8	Hotel business	4	exam
OC 9	Digitalization of tourism	4	exam
OC 10	Brand - management	4	exam
OC 11	Organization of tourism	4	exam
OC 12	Restaurant business	4	exam
OC 13	Psychology of conflict	4	exam
OC 14	Serviceology	4	exam
OC 15	Tourismology	4	exam
OC 16	HR - Hotel and Restaurant Management	4	exam
Всього		16	
Загальний обсяг обов'язкових компонентів		66	
Загальний обсяг вибіркових компонентів		24	
Разом за ОПП		90	

Annotations of subjects in the curriculum

GENERAL TRAINING CYCLE Compulsory components of EPP

Professional Foreign Language Communication. Development of professionally oriented intercultural communicative skills as a part of practical competence. Cross-cultural business relationship development; business, culture, and the environment. Making and receiving phone calls; phone conversations and cross-cultural communication; effective problem solving through phone calls. Presentations: presentation as a tool to influence any audience; various techniques of presentation preparation; beginning and main part of the presentation; questions and discussions. Meeting as a variant of business interaction: the procedure for running effective meetings; decision-making structure; how to close and end a meeting. Successful business negotiations: types of business negotiations; bargaining, trade agreements and concessions; conflict resolution; refusal to meet a demand.

Methodology and organization of scientific research. Theoretical and methodological principles of research in the field of tourism, developing skills in using pattern matching, methods and forms of scientific and practical knowledge, in process analysis of management and economy in tourism industry; applying of theoretical and methodological principles of economics, management, geographical sciences and the science of tourism in organization of scientific research and writing qualification work (master thesis), implementation of specific methods of economic and regional-geographical analysis in tourism, basics of organization of researcher's work process, preparation of qualification work (master thesis) approbation of research results in scientific publications, at conferences, seminars, etc.

SPECIAL (PROFESSIONAL) TRAINING CYCLE

Compulsory components of EPP

International tourism. Formation of the system of international tourism terminology, evolution of the formation and development of international tourism, assessment of the impact of international tourism on the national economy, methodological approaches to determining indicators of international tourism development and research of global and regional markets of international tourism services. The operation of multinational tourism business corporations, their types and models of management. International hotel chains as a form of multinational corporations in tourism, analysis of the state and priorities of development of tourism transnational corporations in the global and national markets. Features of organizational structures of tourism multinational corporations and an estimation of economic efficiency.

Project management in the tourism sector. General description of project management in tourism. Substantiation of the project in tourism. Project planning in tourism. Time management during project implementation in tourism. Project risk management in tourism. Monitoring the implementation of the project in tourism. Project quality management in tourism. Assessing the effectiveness of project management.

Tourism destinations. Theoretical principles of formation and development of tourist destinations, methodology of tourism destinations research, competitiveness of tourism destinations, the behavior of consumers of the destination's tourism product, institutionalization of tourism destination management, tourism destination's marketing, tourist destination as a category of sustainable tourism development.

Innovations in the Tourism and Hotel and Restaurant Business. Current state and prospects of development of formats of establishments of tourist and hotel and restaurant economy according to changes of tourist and hotel and restaurant business; creation and directions of development of innovative forms of service of various-format establishments of tourist and hotel and restaurant economy, innovative forms of rendering of professional services; organization and management of innovative technologies in tourism and hotel and restaurant industry; innovation management, development and implementation of an innovative product, the use of innovative technologies in its formation, customer service; application of new information technologies of promotion and sale of services; formation of knowledge about the latest mechanisms and methods of management of international and domestic enterprises of tourism and hotel and restaurant sphere.

Quality management in tourism. Scientific bases of quality management in tourism. Quality management of hotel and food & beverage services. Quality management of tourist services. Quality management of transport services. Personnel quality management in tourism. Methods of assessment and quality control in tourism..

Strategic Marketing in Tourism. Theoretical bases of strategic marketing. The main categories and concepts of strategic marketing. Subjects of marketing strategy development in tourism. Marketing environment of tourism businesses. Strategic planning. Methodological principles of marketing strategic analysis in the tourism industry. STP-marketing strategies of tourism businesses. Competitive marketing strategies of tourism businesses. Marketing strategies for the development of tourism businesses. Portfolio analysis. Portfolio marketing strategies of tourism business.

Business planning of rural green tourism settlements. Determination of the essence, goals and objectives of the development of a business plan for the development of rural green estates in territorial communities, in particular, the formation of a comprehensive tourist product in the segment of rural green tourism according to territorial specifics. Mastery of the methodology for developing individual sections of the business plan; substantiation of the expediency and necessity of using business plans as a reliable

financial and economic tool for the development and improvement of the functioning of rural green estates.

Management of business processes of tourism entities. Theoretical and methodological principles of business process management in tourism and hotel and restaurant business; applied aspects of business process management of modern tourist and hotel and restaurant enterprises; scientific and theoretical basis of the concept of business process reengineering, which is embodied in the activities of tourism and hotel and restaurant enterprises; Internet technologies in business process management of tourist and hotel and restaurant enterprises to increase the efficiency and effectiveness of business processes of tourist and hotel and restaurant enterprises.

Optional components of EPP

Free choice according to specialty

Contract law. Subject, method and system of contract law. Basic principles of contract law. Sources of contract law. Subjects of contract law. Obligations and contract in commercial contract law. Types of business agreements in Ukraine. Property transfer contract, rental agreement, service agreement.

Intellectual property. The concept of intellectual property, objects and subjects of intellectual property. The concept, principles and sources of copyright; objects and subjects of copyright; literary property law, art and cultural property law, scientific property; collective copyright management; liability for copyright infringement. Legal protection of related rights. Concepts and conditions of legal protection of inventions, utility models, industrial designs. Legal protection of non-traditional results of intellectual property. Legal protection of means of individualization of economic entities, goods, works and services. The concept and legal protection of commercial (brand) names; trademark and geographical indications. Protection from unfair competition. Liability for infringement of intellectual property rights.

Commercial law. Assimilation of the totality of knowledge and acquisition of skills of legal regulation of business activity, use of relevant legal norms in business practice when carrying out professional legal activity. The history of formation, legal means of the functioning of economic law, trends in its development and improvement, analysis and study of the basic principles of legal regulation of economic relations and the practice of applying acts of economic legislation. Legal regime of property of economic entities. Legal regulation of economic activity of certain types.

International law. The concept and sources of international law. The concept, structure and types of conflict of laws. Basic attachment formulas. Legal status of individuals in international law. Legal status of legal entities in international law. Role of the State in private law relations with a foreign element. Property rights in international law. International law and agreements. International freight and passenger transportation. International liability for injurious consequences. International labour law. International Commercial Arbitration.

Business etiquette. Acquaintance with the main trends in the field of communications; studying the basics of business protocol and etiquette, diplomatic and international correspondence and communication through other means of communication. Formation of students' scientific outlook and high moral qualities; raising the general cultural level of students, expanding their theoretical and professional training; introducing students to the basic principles of business, including international protocol and etiquette.

Management psychology. Study of psychological regularities of managerial activity, problems of communication and interaction of people in various social structures. Analysis of psychological conditions and features of managerial activity in order to improve the efficiency and quality of work in the management system. Theoretical foundations of

the psychology of labor relations and management. Psychological features of managerial decision-making. The psychology of managerial influence in the activity of the manager, the psychology of business communication, increasing work efficiency through stimulation and the formation of permanent motives.

International credit - settlement and currency transaction-operations.

Exchange rates in the system of international credit and settlement, currency correlation. The methodological basis of international settlements. Financial and credit support of foreign economic activity. Practical aspects of using foreign exchange transactions as a basis for currency risk management of the enterprise / financial institution. Methods of preventing, accepting or reducing the currency risk of an enterprise / financial institution.

Hotel business. The Genesis of the hotel business. International, European, domestic approaches to the classification and typing of accommodation facilities. Classification and typification of hotel enterprises of Ukraine. Functional organization of hotel enterprises. Organization of the room capacity of hotel enterprises. Organization of administrative and non-residential groups of hotel premises. Cleaning technologies in ensuring the sanitary-hygienic and ecological requirements of the territory of hotel enterprises, vestibule group of premises, residential, non-residential and administrative premises. Hotel service booking systems. Mobile applications and information technologies in the organization of customer service. Logistic processes of hotel enterprises. Management of operational and functional divisions of hotel enterprises. The exterior and interior organization of hotel enterprises. Customer service standards. Ensuring the safety of guests in hotel. Effective staff management. Diversity of competencies according to different work requirements of hotel divisions.

Digitalization of tourism. Characteristics of modern information systems and technologies in the tourism business. Organization of information resources management of a tourist enterprise. Information and technical support of the tourism office. Automated management systems for enterprises. Use of internet technologies in tourism. Global (GDS) and alternative (ADS) distribution systems. Internet sites of travel companies. E-business in tourism. Multimedia and mobile technologies in tourism. Geographic information systems (GIS) in tourism.

Automation of planning and financial calculations in the tourism business management system. Automation of financial settlements. Organizational principles of automation of financial settlements in the tourism business, specifics of methodology. Formation of information support for automation of economic settlements. Software development. Intellectual support for solving financial and economic tasks.

Brand-management. Development of practical skills based on the basics of branding, methods of effective brand organization for a company; acquisition of the necessary set of theoretical and practical knowledge of solving specific economic problems at the present stage of economic development. Forms of identification of economic laws and patterns of branding in the economic activity of the enterprise, methods, mechanisms, methodological approaches and practical experience of using brands by tourism and hospitality businesses in modern business environment in Ukraine and in countries with developed market economies. Theory and practice of management, formation and use of branding; organization and efficiency of marketing and other types of enterprise activities.

Organization of tourism. Tourism as an industry. Terminology in tourism. Functions of tourism, conditions and factors of its development. The concept of tourist service, its socio-economic characteristics. Tourism product and its components. Classifications in tourism. Historical prerequisites of origin and development of tourism. Stages of tourism development in the world. History of tourism development in Ukraine. Modern travel policy. International regulation of tourism. International and regional tourism

organizations. International instruments of influence on tourism development. Forms of tourist activity. Terms and principles of creation and operation of tourist enterprises in Ukraine. The essence and features of tour operators and travel agents. The concept and types of tour operating. The main types of tourism product distribution channels. Formation of a distribution network of tour operators.

Restaurant business. Restaurant business as part of the hospitality industry. Types of catering establishments and their characteristics. Principles in choosing a restaurant location. Sales management in restaurants. Production and service processes. Material & technical base of production. Providing quality service in different types of restaurant establishments. Process of dealing with different types of customers. Organization of customer service in transport, participants in cultural, social and sporting events, hotel guests, foreign tourists, consumers in public places, markets and shopping malls.

Psychology of conflict. Study of the psychological content of conflict, prerequisites for the occurrence, management and constructive resolution of conflicts in various spheres of the individual's life. Understanding the goals and objectives of conflict psychology; familiarization with the main functions of the conflict; study of objective and subjective factors of conflict interaction; familiarization with the structure and dynamics of conflicts; studying the typology of conflicts and conflict personalities; mastering the technology of prevention, prevention and resolution of conflicts; mastering the system of knowledge about the basic principles and technologies of conflict management; students acquired skills of practical work with conflicts.

Servisology. Formation and development of the service sector, its main stages. Types of service. Sectoral structure of the service industry. Role of service providing in people's life. Theoretical analysis of customer service. Basics of service theory. Theory and practice of national, regional, ethnic, demographic and climatic features of service. Modern service: expanding the relationship between producers and consumers of services. Individual service as separate type of service. Adaptive and dynamic characteristics of service. Modern service: the issue of quality and safety of service providing. Culture of service. Modern service technologies. Service in tourism. Foreign experience.

Tourismology. Formation of a system of knowledge about tourism, regularities of its formation, development and functioning, variety of approaches to its interpretation, features of motivation and bases of marketing and management in tourism, providing knowledge on specifics of functioning of subjects of tourist activity and features of work of the manager of tourist enterprise; to develop the ability to use knowledge of the discipline in practical and scientific activities.

HR - Hotel and Restaurant Management. Formation of professional competencies in human resources management in hotels and restaurants. Modern techniques of human management; recruitment, career planning; to acquire skills of conducting business trainings and mastering the peculiarities of their evaluation. Theoretical foundations of international HR management.

**Training of masters of sciences
in branch of knowledge "Public management and administration"
in speciality 281 "PUBLIC MANAGEMENT AND ADMINISTRATION"
educational program "PUBLIC MANAGEMENT AND ADMINISTRATION"**

Form of Training:	Licensed number of persons:
– Part-time	90
Duration of Training:	
– Part-time	1 year 4 months
Credits ECTS:	
– educational and professional program	90
Language of Teaching	Ukrainian, English
Qualification	Master of public administration

The concept of training

Preparation of public administration professionals capable of developing, analyzing and implementing public policy, effectively and efficiently performing managerial functions, facilitating innovative processes in public administration based on world and European standards. The feature (uniqueness) of the educational program is the formation of a specialist in public management and administration, who has additional competence in the ability to organize and carry out professional activities in the agricultural and environmental spheres, which is due to the study of the educational disciplines "State and branch management", "Modern concepts of management", "Organization of activities of public authorities", "State regulation of agrarian sphere", "Agrarian policy", "Public administration of nature management ". Specialists of public authorities and local self-government bodies, international experts, scientists and public figures are involved in the implementation of its content.

Areas of employment of graduates

In positions in state authorities, central and local executive bodies, local self-government bodies; in positions in structures of non-state entities of civil society and public organizations; in management positions and positions of specialists at the enterprises, establishments and organizations of different forms of ownership with non-profit status; management and administrative positions in international organizations and their representative offices in Ukraine.

Practical training

Practical training in state executive bodies, local self-government bodies, civil society institutions and other institutions and organizations whose activities are related with the sphere of public administration.

Proposed Topics of master's qualification thesis

1. State policy of food security formation.
2. State management of the development of the agrarian sphere of the region.
3. Mechanisms of formation and implementation of local target programs of support for agricultural producers.
4. Improvement of the mechanisms of rational use of the natural resource potential of the territorial community.
5. Interaction of local self-government bodies with the public in the field of environmental safety.

**Curriculum of Master training
in educational program "Public management and administration"
(educational and professional program of master's training)**

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
GENERAL TRAINING CYCLE			
Compulsory components of EPP			
CC 1	Public policy and European integration processes	4	exam
CC 2	Methodology and organization of scientific research	4	exam
CC 3	Foreign language in professional activity	4	test
Total		12	
Optional components of EPP			
<i>Free choice according to the preferences of students from the list of disciplines</i>			
OCP 1	Choice from the catalog 1	4	test
OCP 2	Choice from the catalog 2	4	test
Total		8	
SPECIAL (PROFESSIONAL) TRAINING CYCLE			
Compulsory components of EPP			
CC 4	State and branch management	4	exam
CC 5	Law in public administration	4	exam
CC 6	Organization of activities of public authorities	4	exam
CC 7	Public finance management	4	exam
CC 8	Professional ethics in public administration	4	exam
CC 9	Public administration of national security	4	exam
CC 10	Strategic technologies in public administration	4	exam
CC 11	Digital state and e-democracy	4	exam
CC 12	Modern management concepts.	4	exam
CC 13	HR management in public authorities	4	exam
CC 14	Communications in public administration	4	exam
CC 15	Practice by profession	5	exam
CC 16	Unified state qualification exam	2	exam
CC 17	Preparation and defense of Master's qualification thesis	3	public defense
Total		54	
Optional components of EPP			
<i>Free choice according to specialty **</i>			
OC 1	Agrarian policy	4	exam
OC 2	State regulation of agrarian sphere	4	exam
OC 3	Public administration of nature management	4	exam
OC 4	Management of state and municipal lands	4	exam
OC 5	Legal regulation in separate spheres and branches of management	4	exam
OC 6	Territorial organization of power	4	exam
OC 7	Regional policy	4	exam
OC 8	Public governance	4	exam
OC 9	State mechanisms of crisis management	4	exam
OC 10	Public administration of innovation activity	4	exam
OC 11	State anti-corruption policy	4	exam
OC 12	Public procurement	4	exam
OC 13	Quality management of public services	4	exam
OC 14	Public administration in social and humanitarian sphere	4	exam
OC 15	Public administration of municipal institutions	4	exam
OC 16	Management psychology and conflictology	4	exam
Total		16	
The total amount of compulsory components		66	
The total amount of optional components		24	
THE TOTAL AMOUNT OF EPP		90	

* according to the Catalog of optional subjects <https://nubip.edu.ua/node/67362>

Annotations of subjects in the curriculum

GENERAL TRAINING CYCLE

Compulsory components of EPP

Public policy and European integration processes. Theoretical and methodological principles of public policy: categories, patterns, principles, concepts, values, goals, priorities, directions; subject-object relations in public policy; classification of political-managerial relations; models and patterns of political-administrative interaction in public administration; mechanisms of public policy making and implementation; public policy resources; public policy analysis, evaluation of national and regional programs; political decisions; European and foreign principles of public policy making; European integration processes; Euro-Atlantic integration.

Methodology and organization of scientific research. The essence of key categories: subjects and objects, methods, forms, hypotheses, principles, models, approaches, concepts, doctrines, theories, paradigms, problems; factors, features, patterns, trends; relations, processes and interaction in the system of public administration and administration; methodology of research on problems of public administration; the main stages of the master's study are: choosing a topic, preparing a task and drawing up a work schedule, working with sources of information, observing academic integrity and checking for plagiarism.

Foreign language in professional activity. Complex foreign language training in professional activities: reading, listening, speaking; formation of skills of dialogic and monologic speech; preparation of students for professional communication in oral and written forms in a foreign language; negotiation; the concept of business communication; business correspondence; rules for drafting essays, resumes, CVs, official documents, statements, complaints, replies to the official application; rules of treatment and maintenance of business communication; rules and methods of communication in different situations; speeches at public events; preparation of joint proposals with foreign partners.

SPECIAL (PROFESSIONAL) TRAINING CYCLE

Compulsory components of EPP

Public and branch management. Principles and regularities of the functioning of the system of public management and administration. Levels of government in the state. Organizational and functional structure of the state administration system. Distribution of powers between state executive bodies by levels of management. Interaction of public authorities. Authority of authorities in the formation and implementation of policy. Institutionalization of multi-level management. Network management and non-governmental structures. Methodology of evidence-based policy formation by central bodies of executive power. The specifics of the formation of branch management.

Law in public administration. General provisions on the theory of state and law, constitutional and administrative law; legal regulation of the activity of public authorities and other entities of public administration; legislation on public service and service in local self-government bodies; legal liability of public servants; the relationship of public authorities with individuals and legal entities; legislative process; Ukrainian legislation and EU normative acts in the field of public administration, European integration, international obligations; regulations of foreign countries in the field of public administration.

Organization of activities of public authorities. Types, categories, patterns, principles, concepts, approaches, structure of public service; organizational-legal, managerial, social-psychological, moral-ethical and other principles of public service; organization of recruitment and public service; management of public service personnel; responsibility, competence, professional competence and professionalism of public

servants; image, professional ethics and culture; corporate culture of public authorities; motivation, adaptation, evaluation and stimulation of professional activity of public servants; formation and development of vocational training system; development, adoption and implementation of management decisions in public authorities; personnel technologies; leadership.

Public finance management. Content, basic concepts, principles, functions, approaches in the field of public finance management; budgetary policy of Ukraine; regulatory and legal regulation; powers of state and local governments in the area of budget and finance; peculiarities of implementation of intergovernmental budgetary relations; mechanisms and methods of attracting state and local borrowing, credit and investment resources for the needs of the territories; foreign experience in public finance management.

Professional ethics in public administration. The role and importance of ethics in public administration; professional ethics and professional morality; basic ethical principles, values and norms of ethics; regulatory and legal support for ethics of public servants; ethics of business communication; manager's track record; formation of ethical foundations of relations between public authorities and citizens; business and business etiquette in public administration; general rules of ethical behavior of civil servants and officials of local self-government; business and business etiquette in public administration; ethical aspects of professionalization of public servants.

Public administration of national security. Concepts, components, conceptual bases, laws, principles and basic directions of national security; basic legal acts regulating public relations in the field of national security; approaches to public administration of national security; current state of national security, major threats and challenges; state programs on national security; peculiarities of implementation of national security measures in various spheres (political, economic, food, information, military, environmental, information, etc.); national security management strategies in foreign countries.

Strategic technologies in public administration. Content, basic concepts, principles, functions, methods, features, types of strategizing; national, regional and local development strategies, concepts, programs; determining the appropriateness of strategic planning in the activities of public entities; goal formation; techniques, approaches, technologies, mechanisms and tools of strategy; institutional support for the implementation of projects and programs; identifying the needs of public authorities in attracting investment resources; sources of financing for investment projects; international technical assistance projects; public participation in the strategic process; management decision making; foreign strategic experience.

Digital state and e-democracy. Conceptual foundations, concepts, essence, organizational and institutional foundations of e-government and e-democracy; the legal framework for the implementation of e-governance and e-democracy technologies; digital transformation and managing the development of the information society; development of e-government at the state, regional and local levels; information and analytical support of administrative processes in public authorities; electronic interaction of public authorities; electronic workflow; electronic services; access to public information; protection of information; involvement of citizens in the decision-making process on the basis of modern technologies of development of e-government and e-democracy; features of digital study of public servants; foreign experience in using e-governance and e-democracy tools.

Modern management concepts. Basics of managerial decision-making. Basic models of managerial decision-making. Methods of development and decision-making. Modern approaches to managerial decision-making. Management concepts. General requirements when formulating decisions. Technologies for finding a management

problem, choosing goals, criteria for achieving goals. Conceptual model of the solution based on the analysis of the directives of the European Commission. The use of indicators in assessing the effects of management decisions. Program indicators. Evaluation of the effectiveness and efficiency of management decisions. Organization of management decision implementation and control over its implementation. The main means of influence during the implementation of a management decision.

HR management in public authorities. Personnel policy; strategy of personnel management in public authorities; HR management and technologies; organization of recruitment and selection of personnel; organization of activity of personnel management service; formation of the collective of the organization; leadership and team building; staff performance appraisal; management of personnel development; efficiency of personnel management; professionalization of civil servants and officials of local self-government bodies; worldwide experience in HR management.

Communications in public administration. Types, types, classification of communication and communication activities in public administration; methods, forms, types, technologies, techniques of communication and communication activities; current trends, principles, goals, decisions, rules, measures, communications policy; communication activity as a multi-channel system of interaction, communication skills; communicative strategies of public authorities; coordination of communication policy; government external communication policy; involving citizens in the development and implementation of public policy; building public support in the implementation of public-management and public-administrative decisions; foreign and domestic practices of public communications.

Optional components of EPP

Free choice according to speciality

Agrarian policy. Mechanisms of formation of national and world agri-food markets, influence of agrarian policy on international trade and food security of the country; instruments for regulating agri-food markets and economic consequences of their application; basic approaches to assessing the level of state support for the agricultural sector; principles of agrarian-ecological, agrarian-social policy, their modern aspects and problems of realization; the main stages of development of agricultural policy in Ukraine and the main directions of modern agricultural policy of the state; the current state of the process of reforming economic relations in the agro-industrial complex of Ukraine, the characteristics of budget, tax, financial and credit and pricing policy; features of agricultural policy formation in countries with different levels of economic development.

State regulation of agrarian sphere. Food security in Ukraine; evolution of approaches to state regulation; bodies that carry out state regulation of agro-industrial complex; the main instruments of state regulation of the agro-food markets; peculiarities of state support for producers of crop and livestock products; classification of instruments of regulation of agricultural production; measures of state regulation of the internal agro-food market; government regulation that stimulates demand for agricultural products and measures that restrict supply of agricultural products; price policy in the agri-food market: tasks and basic tools; state administrative control over prices; tools for limiting the supply of agricultural products; instruments for increasing demand for agricultural products in the domestic market: public purchases of agricultural products, direct price subsidies to producers.

Public administration of nature management. Nature management as an object of public administration; the concept of sustainable development; subjects of public administration in the field of nature management; problems of rational use of limited natural resources by society to meet human needs; main categories and concepts of

management in the field of ecology and economics of nature management; modern approaches to public administration in the field of nature management; provisions of normative-legal regulation in public administration in the field of nature management; criteria and indicators of efficient and rational use of natural resources; scientific principles of rational nature management; management tools and economic mechanism of rational nature management.

Management of state and municipal lands. The concept of state and municipal land, regulatory framework; mechanisms for managing land resources at the level of the state, region, district and territorial community; specifics of the use and management of the land plots on which the objects of communal property of territorial communities are located (objects of social infrastructure: kindergartens, schools, hospitals; plots under electric, transport, gas networks, cemeteries, landfills of municipal waste; sites under communal enterprises and institutions); reserve land; decision to grant land plots; electronic technologies in the field of management of state and municipal lands.

Legal regulation in separate spheres and branches of management. Legal principles of state regulation of public relations in certain spheres and branches of public administration; definition of features, principles and functions of legal regulation; subjects and objects of legal regulation, their functions, powers and relationships; laws and regulations on legal regulation of the activities of public administration bodies in certain spheres and industries; preparation and harmonization of legal acts; Involvement of the public in management decisions on the legal regulation of certain spheres and branches of public administration.

Territorial organization of power. Constitutional and legal principles of the administrative and territorial structure of Ukraine. Reform of local self-government and territorial organization of power in Ukraine. Principles of delimitation of powers of local executive bodies and local self-government bodies. Local state administrations: their structure, functions and powers. Functions and powers of military-civilian administrations. Institute of Prefect. Territorial bodies of central executive bodies: varieties and functional purpose. The powers of local councils. Basic principles of functioning of representative and executive bodies of local self-government.

Regional policy. National regional policy: subjects of implementation, main goals and objectives; state strategy for regional development; state regional policy for sustainable development of Ukrainian territories; tasks and functions of local self-government bodies in state regulation of regional development at the current stage of the decentralization of power reform; organizational and legal basis for the formation of material, technical and financial-economic base; cooperation of local self-government bodies with state bodies of executive power, civil society institutions and business representatives in the implementation of regional policy.

Public governance. Establishment, functioning and development of civil society; basic concepts in public administration; legal and regulatory support for the activities of civil society institutions; realization of citizens' right to participate in public administration; ensuring transparency of the activity of public authorities; the principle of accountability to public authorities; the content, forms and nature of the participation of civil society organizations in the process of forming and implementing public policy; organization and conducting of public examination of the activity of public authorities; planning and conducting public monitoring; state of development of civic governance in developed countries of the world.

State mechanisms of crisis management. General characteristics of statistical and dynamic models of the environment; threats as crisis-forming factors of the external environment; types of crisis phenomena; multivariate definition of crisis phenomena, causes and consequences of their occurrence; general characteristics of state

mechanisms of crisis management; main stages of crisis management; symptoms, causes and mechanisms of local crisis formation; the essence and place of the crisis of personnel management in public authorities; the role and place of staff in the formation, identification and overcoming of crisis phenomena; methods of diagnosing crisis phenomena.

Public administration of innovation activity. Theoretical and methodological bases of development and regulation of innovative activity; features of implementation of innovations; planning of measures for implementation of innovative projects; project implementation and monitoring; mechanisms of public innovation management; methods and instruments of state support of innovative activity; the need for state support for innovation; classification of state support instruments for innovation; areas of application of state influence on innovation processes; direct and indirect methods of promoting the development of innovative activity by the state; domestic experience in supporting innovative activity; the concept and content of regulation of innovation activity at different levels of public administration; foreign experience of supporting innovative development; monitoring of innovations in public authorities.

State anti-corruption policy. The concept of corruption, its types, causes and consequences, corruption risks; the current paradigm of public policy for the prevention of corruption; legal bases of the state policy on prevention of corruption; international normative-legal acts against corruption, the system of current legislation in the sphere of combating and preventing corruption; international experience in combating and preventing corruption; the system of subjects of combating and preventing corruption, their functions and powers, new national legislation on combating and preventing corruption; implementation of anti-corruption reform; mechanisms for overcoming corruption in public authorities.

Public procurement. State policy in the field of procurement. Regulatory framework and functioning of the procurement system in Ukraine. State regulation and control in the field of public procurement. The order of formation and main functions of the tender committee. Rights, duties and responsibilities of the chairman, secretary and other members of the tender committee. Procurement planning. The procedure for determining the subject of procurement. General overview of the electronic procurement system. Procurement procedures. Tender documentation.

Quality management of public services. Content of key concepts, classification, types of public services; client-oriented approach; conceptual foundations for building a service state; public policy in the field of public services; legal and regulatory support for the provision of services to public entities; provision of public services to individuals and legal entities through administrative service centers; organization and criteria for the provision of public services; standardization of public service delivery; mechanisms and tools for monitoring and improving the quality of public services; quality control of public services; information and communication and personnel support for the organization of public service provision; electronic services.

Public administration in social and humanitarian sphere. Content, principles, functions, subjects, objects, directions of social and humanitarian policy; main problems of social development of society; features of implementation of transformation processes in Ukraine; conceptual directions of public policy in planning and implementation of strategies, concepts and programs in social and humanitarian spheres; level and quality of life indicators; social security and population protection systems; criteria for evaluating the functioning of the social and humanitarian sphere; mechanisms, tools and technologies for the formation and implementation of social and humanitarian policies at all levels, mutual responsibility of the state and society.

Public administration of municipal institutions. Theoretical foundations and legislative support for the functioning of communal property establishments of territorial

communities; features, mechanisms and tools of public administration and administration; planning of municipal property institutions; organization of activities and sources of financing; personnel and logistical support of municipal property institutions; organization of provision of services on a self-financing basis; quality of public service delivery; monitoring, evaluation and control over the provision of public services; cooperation of municipal property institutions with public authorities; crisis management; foreign experience of public management and administration.

Management psychology and conflictology. The role of human and psychological factors in public administration; optimal distribution of professional and social roles within the team; informal relationships between team members; psychological mechanisms of managerial decision making; social and psychological qualities of the head; psychological factors that determine the effectiveness of the team members; professional self-determination; search and activate the capacity of the organization's staff; formation and maintenance of organizational climate in public authorities; psychological methods of grouping staff around the organization's goals; methods of improving the style and culture of business relationships in public authorities; psychological compatibility of team members; methods of establishing effective interaction between subjects and objects of public administration; ability to prevent and resolve conflicts.

FACULTY OF AGRICULTURAL MANAGEMENT

Dean - PhD in Economics, Associate Professor Anatolii Ostapchuk

Tel.: (044) 527-85-73

E-mail: agromen_dean@nubip.edu.ua

Location: educational building 10, room 313, 525

Faculty organizes and coordinates educational process of master training in educations programs within specialties:

Specialty 073 "Management":

Educational program "Management of organization and administration"

Guarantor of the educational and professional program – PhD in Economics, Associate Professor Olga Gogulya

Departments in charge of graduate training:

Management named after J. Zavadskyi

Тел.: (044) 527-85-66

E-mail: manag_chair@nubip.edu.ua

Head of department – PhD in Economics, Professor Tetiana Balanovska

Educational program "Management of foreign economic activity"

Guarantor of the educational and professional program - PhD in Economics, Associate professor Larisa Dibrova

The graduating department:

Administrative Management and Foreign Economic Activity

Tel .: (044) 527-86-51

E-mail: worldagro_chair@nubip.edu.ua

Head of department - Doctor of Economics, Professor Vitalii Lutsiak

Educational program "Administrative Management"

Guarantor of the educational and professional program - PhD in Economics, Associate Professor - Olena Kovtun

The graduating department:

Administrative Management and Foreign Economic Activity

Tel .: (044) 527-86-51

E-mail: worldagro_chair@nubip.edu.ua

Head of Department - Doctor of Economics, Professor Vitalii Lutsiak

Educational program "Management of investment activity and international projects"

Guarantor of the educational and professional program - Corresponding Member of the National Academy of sciences of Ukraine, Professor, Doctor of Economics Lidiia Shynkaruk

The graduating department:

Production and investment management

Tel.: (044) 527-80-80

E-mail: proinvestman@nubip.edu.ua

Acting head of the department – doctor of economic sciences, professor Maryna Dielini

Specialty 075 "Marketing"

Educational program "Marketing"

Guarantor of the program – PhD in Economics, Professor, Oleksandr Lutsiy

The graduating department:

Marketing and International Trade

Tel .: (044) 527-89-78

E-mail: market_chair@nubip.edu.ua

Head of department - Doctor of Economics, professor Ruslan Buriak

**Training of masters of sciences
in branch of knowledge "Management and Administration"
in specialty 073 "MANAGEMENT"
educational program "MANAGEMENT OF ORGANIZATION AND ADMINISTRATION"**

Form of training	Licensed number of students:
– Full-time EPP	60
– part-time	50
Duration of Training	
– Full-time educational and professional program	1 year and 4 months
– part-time	1 year and 4 months
Credits ECTS:	
– educational and professional program	90
Language of teaching	Ukrainian
Qualification of graduates	Master of Management, Manager of the Organization

The concept of training

The educational and professional program "Management of Organizations and Administration" is aimed at providing fundamental theoretical and practical training specialists capable of solving practical problems and complex specialized tasks in the field of management of the organization and its departments. The program will promote the formation of masters of business qualities, professionalism, creativity, entrepreneurship, independence in the process of development and decision-making, organization, and willingness to work in a dynamic highly competitive environment.

Educational and professional program of master's training

Optional block "Management in various organizational and legal forms of business"

Training of specialists to manage the activities of economic entities of various organizational and legal forms. Future masters in management, choosing this block of disciplines, will gain theoretical knowledge and practical skills to increase the competitiveness of the business entity through the production of quality products or services, using a system of specific modern management tools corresponding to various organizational and legal forms of management (including cooperatives), stages of their organizational development, etc.

Optional block "Energetic Management"

Training of specialists in the management of rational use of energy resources. The program is aimed at training a specialist capable of solving complex problems and problems in the energy sector, creating modern energy management systems, and provides students with a higher education understanding of concepts, approaches, and criteria for defining, comparing, justifying management decisions in the field of electricity; acquaintance with the basics of energy flow management; consideration of modern theories and practices of energy resources use.

Areas of employment of graduates

The graduate is suitable for employment in the following positions:
- heads of enterprises, institutions, and organizations(CEO);

- heads of production and other main divisions;
- heads of functional divisions (including heads of financial, accounting, economic, legal, and administrative divisions and other heads; heads of divisions of personnel and social and labor relations; heads of divisions of marketing; heads of divisions of logistical supply; heads of projects and programs; heads of others functional units);
- managers of small enterprises without management staff;
- managers (managers) of enterprises, institutions, organizations, and their divisions;
- and other positions of managers, their deputies, and assistants in organizations of various forms of ownership and organizational and legal forms of management, production and non-production spheres of the economy, in public administration and local government.

Practical training

Future masters in organization management and administration in specific enterprises, institutions, and organizations acquire: knowledge of production issues of the enterprise, knowledge, and skills in management decisions, innovation; ability to manage oneself and others, to influence others, to build clear personal and organizational goals, to solve problems, to teach and develop subordinates; skills of work with modern methods and technologies of management.

Proposed Topics of master's qualification thesis

1. Business management.
2. Formation of a management system in the enterprise.
3. Adoption and implementation of management decisions in the enterprise.
4. Formation of enterprise development strategy.
5. Enterprise management (in various organizational and legal forms).
6. Team Management of the enterprise.
7. Formation and development of leadership potential of employees.
8. Formation of a system of social responsibility of business in the conditions of modern challenges.
9. Formation of the corporate culture of the enterprise.
10. Formation and use of communication systems in enterprise management.
11. Human resource management of the enterprise.
12. The use of modern personnel management technologies in the organization.
13. Formation of a system of motivation and stimulation of work in the enterprise.
14. Management of enterprise competitiveness.
15. Formation of quality management system in the enterprise.
16. Management of the formation and use of production potential of the enterprise.
17. Project management in the enterprise.
18. Crisis management of the enterprise.
19. Management of marketing activities of the enterprise.
20. Supply chain management.
21. Management of logistics processes in the enterprise.
22. Digital management in the enterprise.
23. Change management in the enterprise.
24. Risk management in the enterprise.
25. Management of energy efficiency incentives.
26. Formation of energy management system in the enterprise.

**Curriculum of Master training
in educational program "Management of organizations and administration"
(educational and professional program of master's training)**

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
GENERAL TRAINING CYCLE			
Compulsory components of EPP			
CC 1	Business management	4	exam
CC 2	Psychology of management	4	exam, coursework
CC 3	Business ethics and corporate social responsibility	4	exam
CC 4	Methodology and Organization of Scientific Research with the Principles of Intellectual Property	4	exam
Optional components of EPP			
<i>Free choice according to the preferences of students from the list of disciplines</i>			
OCP 1	Optional subject from the catalog	4	test
OCP 2	Optional subject from the catalog	4	test
SPECIAL (PROFESSIONAL) TRAINING CYCLE			
Compulsory components of EPP			
CC 1	Management of enterprise competitiveness	4	exam
CC 2	Digital Management	4	exam
CC 3	Modern management concepts	7	test, exam
CC 4	Project management in organizations	4	exam, coursework
CC 5	Quality management	4	exam
CC 6	Practical training	12	
CC 7	Preparation and defense of master's qualification thesis	14	
Optional components of EPP			
<i>Free choice of the students according to specialty</i>			
<i>Optional Block 1 "Management in various organizational and legal forms of business"</i>			
OC 1.1	Anti-crisis management of enterprises	4	exam
OC 1.2	Risk Management and Economic Security	4	exam
OC 1.3	Supply chain management	4	exam
OC 1.4	Logistics management	4	exam
OC 1.5	Contract law	4	exam
OC 1.6	Complex quality management system of products and services	4	exam
OC 1.7	Corporate management	4	exam
OC 1.8	Management of cooperatives	4	exam
OC 1.9	Change management	4	exam
<i>Optional Block 2 "Energetic Management"</i>			
OC 2.1	Energy and resource conservation in the energy sector	4	exam
OC 2.2	Analysis and expertise of energy supply projects	4	exam
OC 2.3	Basics of energetic audit	4	exam
OC 2.4	Methods of energy efficiency analysis of energy consumption systems of production processes	4	exam
OC 2.5	Methods of energy efficiency analysis of buildings	4	exam
OC 2.6	Combined power supply systems of local facilities	4	exam
OC 2.7	Local equipment for data collection and processing in energy consumption systems	4	exam
OC 2.8	Energy management software and hardware complexes	4	exam
OC 2.9	The internet of things in energy consumption systems	4	exam
The total amount of compulsory components		66	

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
The total amount of optional components		24	
THE TOTAL AMOUNT OF EPP		90	

Annotations of subjects in the curriculum

GENERAL TRAINING CYCLE Compulsory components of EPP

Business Management. Basics of business management. The concept of business and entrepreneurship. Signs and principles of entrepreneurial activity. Legal basis of entrepreneurship. Entrepreneurs. Business and management. Management in business. Types of enterprises and organizational and legal forms of management, features of their management. Organization of entrepreneurial activity. The process of creating own business. Human resource management in business. Business ethics in business. Strategic management in business development. Business planning in the business management system. Marketing in the business management system. Business information support.

Psychology of management. Theoretical approaches and results of practical research in the field of management psychology and conflict studies. Methods of psych diagnostics in working with individual employees and their groups in the team. Psychological features of employee behavior in the organization. The main psychological patterns of the manager as a leader of the organization, the main tools of its managerial influence. Technology of formation of organizational culture. Basic methods of self-regulation, stress management and conflict management.

Business ethics and social responsibility of business. Ethics is the foundation of modern business. Theoretical and methodological aspects of business ethics and its role in management. Ethical problems and violations of modern business ethics. Business ethics in Ukraine and foreign countries. Internal mechanisms of influence of business ethics on activity of organizational formations. Conceptual bases of development of social responsibility. Social responsibility in the management system of the organization. Formation of relations with employees based on corporate social responsibility. Strategy of socially responsible behavior in the market environment. Evaluation of the effectiveness of corporate social responsibility.

Methodology and organization of scientific research with the basics of intellectual property. Science and research in the modern world. Specifics of research activities, types and features of research. Characteristics of the general methodology of scientific developments. Characteristics of stages and registration of results of research works. Information retrieval technologies in the process of scientific work. Methods of preparation and design of publications, text writing techniques. Intellectual property: concepts, features. Basic institutes of intellectual property law. Sources of intellectual property law. Objects and subjects of intellectual property rights. Personal non-property and intellectual property rights. Use of intellectual property. Protection of intellectual property rights.

SPECIAL (PROFESSIONAL) TRAINING CYCLE Compulsory components of EPP

Management of enterprise competitiveness. Competition in a market economy. Competitive environment of the enterprise. The essence of the competitiveness of goods and services in the market. Factors of enterprise competitiveness. The main strategies of

enterprise competitiveness. Enterprise competitiveness management system. Regulation of competition at the national and international levels. Competitiveness in the context of globalization.

Digital Management. The essence of the digital category and its features. Digital environment and how it works. Digital tools of manager. Effectiveness of digital management. Strategic management of development of Ukrainian agro-industrial enterprises on the principles of digitalization. Digital management of public resources. The process of combining digital transformation and the main strategy of the enterprise. Management of an agro-industrial enterprise with full digitalization of production.

Modern management concepts. The essence and meaning of management concepts. Process management concept. Goals management concept. Controlling concept. The concept of project-oriented team management. Business process reengineering concept. Knowledge concept. Approaches to the formation of a knowledge management system. Knowledge strategy of the organization. Logistics concept. Modern resource concept in management. Quality management concept. Financial management concept. Kaizen management concept. The concept of total control. Benchmarking concept. The concept of Lean technologies. System "5S". Value Stream Mapping. Just-in-Time system. Kanban system. Time management concept. Flexible management concept. Risk management concept. Brand management concept. The concept of organizational design. The concept of organizational culture. Modern concepts of strategic management.

Project management in the organization. Project management system: goals, functions, structure elements. Organization of project management. External organizational structures of the project. Project content planning. Project structuring. Project planning in time. Project calendar planning. Project implementation control. Project content management. Creating a hierarchical structure of works. Distribution of work between participants and conclusion of contracts. Basic time management processes. Methods of reducing project implementation time. Defining operations to reduce their execution time. Deviation management. Project cost, resource, and contract management. Personnel and project quality management. Project risk management. The essence and classification of project risks. Integration and automation of project management.

Quality Management. Product quality as an object of management. Economic aspects of product quality. Factors affecting product quality. Legal aspects of quality assurance. History of quality management. International and regional cooperation of Ukraine in the field of quality management. Creation and implementation of a quality management system in the enterprise. Quality management based on the concept of TQM, stages of its development. Standards as a regulatory framework for quality management. Certification in the quality assurance system. Product quality planning and assessment. System of product quality indicators. Economic efficiency of quality management. Foreign experience in product quality management.

Optional components of EPP

Free choice according to specialty

Optional block 1 "Management in various organizational and legal forms of business"

Anti-crisis management of enterprises. General concepts of the crisis and crisis phenomena. Classification of crises. The cyclical nature of crisis phenomena. Crisis recognition methodology. The purpose and objectives of anti-crisis management. The stability of the enterprise and the crisis. Transitional periods of enterprise development. Crisis as a turning point in development. A system of monitoring and early detection of signs of an impending crisis. Anti-crisis management problems and differentiation of management technologies. Functional and anti-crisis management. Crisis management

scheme. The role of innovation in crisis management. The situational approach to management in a crisis. Organization of work to overcome the crisis.

Risk-Management and Economic Security. Risk in management and the basic principles of its analysis and management. Qualitative and quantitative risk analysis. System of quantitative assessments of the degree of risk. Risk and usefulness. Diversification as a way to reduce risk. Portfolio theory. Using game theory and statistical solutions to model risk. Making multi-purpose decisions in risk conditions. Cost, time, and risk. Risk and stochastic forecasting. Strategic (investment) management and risk. Economic security of the enterprise as a science, its subject, and method. The system of economic security of the enterprise. Assessment of economic security of the enterprise.

Supply chain management. Theoretical foundations of supply chain management. The structure of the logistics supply chain. Choosing an alternative to improve the processes in the supply chain. Development of a multidimensional dynamic supply chain management model. Basic levels of decision-making in supply chain management, their classification, and relationship. Decision-making models in supply chain management. Decision-making in supply chain management in conditions of uncertainty. Operation of supply chains in conditions of risk. Business process management in supply chains. Development and implementation of logistics strategies in supply chains. Integration and cooperation in supply chains. Supply chain management information technology. Systems for measuring the economic efficiency of the supply chain. Value chain. Global supply chain management.

Logistics management. Logistics in the enterprise management system and current trends in logistics management. Theoretical foundations of logistics management: the essence of logistics management, stages of logistics management development. Logistics-oriented enterprise management system, logistics management tools. Logistics strategy of the enterprise and its components. The essence and main characteristics of logistics management organizing. Logistic management of procurement and production promotion processes. Logistics management of distribution processes and strategic partnerships in the supply chain. Strategic planning in the logistics management system. Strategic analysis of enterprise logistics. The efficiency of the logistics service of the enterprise.

Contract law. The concept and general characteristics of contract law in Ukraine. General provisions on contracts in the field of entrepreneurial activity. Fulfillment of contractual obligations by business entities (entrepreneurs). Agreements on the transfer of ownership. Agreements on the transfer of property for use. Contracts for the performance of works. Contracts for the provision of legal and factual services.

Complex quality management system of products and services. Theory and methodology of quality management, principles of operation of quality management systems for different types of goods (products, services). Regulatory, organizational and economic issues of quality management of goods (services). Features of functioning of quality management systems of products, services and environment. The problem of quality at the present stage and its impact on the development of the country's economy; domestic and international experience in product quality management; the use of methodological bases of management: general approaches, principles and methods of work according to quality of goods.

Corporate management. The essence and economic nature of corporate management. Varieties of corporate associations as objects of corporate management. Joint-stock company as an object of corporate management. External environment of corporate management. Corporate capital management. Development of corporate management. Corporate control. Corporate culture.

Management of cooperatives. The essence of management activities in cooperatives. Administration in cooperatives and cooperative associations. Management communication skills: meetings, negotiations, conflict management. Ensuring transparent relations between managers and members of the cooperative. Management of planning processes in the cooperative, strategic planning. Improving processes and control in the cooperative. Leadership and team building. Management of financial activities in cooperatives.

Change Management. Study of theoretical approaches to change. Features of formation of organizations in the conditions of continuous changes. Forms and methods of changes in the organization. Features of changes in relation to individual functional blocks. Practical application of the theory and methodology of change in enterprises, overcoming resistance to change and structural change.

Optional Block 2 "Energetic Management"

Energy and resource conservation in the energy sector. The main directions of development of energy saving issues in Ukraine and in the world. Basic concepts and definitions. Energy and life. Energy and civilization. Energy as the main problem of our time. Energy consumption and its indicators as a criterion for the well-being of society. Energy and ecology. Energy conversion chain. Fuel and energy complex (FEC). The structure and development trends of the fuel and energy complex and energy consumption. Energy and the environment - a systematic approach. The complex impact of energy on the economy. Natural resources. Traditional energy. Alternative energy. Secondary energy resources. Energy consulting schemes. Conceptual provisions for the development of energy in Ukraine. Conceptual provisions and main directions of energy and resource conservation in Ukraine.

Analysis and expertise of energy supply projects. Prospects and main directions of energy management in Ukraine and in the world. The main problems and ways of developing energy management in modern energy. Formation of energy supply strategies. Power supply and load management. Normalization of energy consumption. Methods of determining the norms of unit costs. Economic efficiency of energy saving management at the enterprise. The essence of the project, its conceptual level and objectives. Fundamental solutions, feasibility study. Composition and content of the project and working documentation. Determination of the construction cost. Regulatory framework and procedure for determining the cost of construction on the territory of Ukraine. Expertise of the project.

Basics of energetic audit. The main normative documents governing the activities of auditors. The principles of energy auditing. Energy audit technologies. Audit requirements. Financial, energy and environmental audit. Audit task. Energy audit market participants. Typical objects of energy audit. Classification of types of energy audit. Previous energy audit. Targeted energy audit. Comprehensive energy audit. Energy service companies. Energy passport of the enterprise.

Methods of energy efficiency analysis of energy consumption systems of production processes. Indicators of the quality of electrical energy. Basic terms and definitions. State and international standards for the quality of electrical energy. Electrical energy certification. The influence of the quality of electricity on the work of consumers. Devices and means for measuring the quality indicators of electrical energy. Energy management and quality control of electrical energy. Technical and organizational measures to ensure the quality of electrical energy. Compensation of higher harmonics. Reactive energy compensation. Technical means of voltage stabilization. Specific consumption of energy resources. Methodological foundations for planning and forecasting the costs of energy resources. Strategic energy plan.

Methods of energy efficiency analysis of buildings. Regulatory documents in the field of certification of energy performance of buildings. Basic terms and definitions. Energy inspection of buildings. Instrumental support. Energy balance of buildings and systems. Heat transfer by transmission through the building area. Heat transfer by ventilation. Internal and solar heat gain. Shading elements. Dynamic parameters. Internal conditions. Quasi-constant heating and cooling. The energy requirements for heating and cooling the building. Energy consumption by heating, cooling, and ventilation systems. Regular heat loss in the system and auxiliary energy. Determination of the energy efficiency class of the building. Energy efficiency certificate. Report on the survey of engineering networks. Energy classification of buildings.

Combined power supply systems for local facilities. Methods of structural-parametric synthesis of combined power supply systems with renewable sources. Modeling of micro energy systems taking into account their redundant structure and the set functional properties, character of power consumption, and regularities of reliability-cost characteristics for an increase of efficiency of power supply of local objects based on smart technologies. Indicators of coordination of deterministic choice of structural-parametric organizations of traditional and renewable energy sources. Features of stochastic functioning of renewable energy sources. The nature of electricity consumption and patterns of formation of the dynamic cost of electricity of micropower systems with heterogeneous sources. Substantiation of the principles of optimal power management of local facilities.

Local equipment for data collection and processing in energy consumption systems. Legislative and normative bases of metrology and metrological activity. Normative principles of electricity metering. Electricity meters and systems. Normative principles of heat energy accounting. General information about the "green tariff". Alternative and renewable energy sources. State regulation of electricity prices. Electricity supply to consumers. Basic requirements for the energy metering system. Primary sensors and technical means of information transmission.

Energy management software and hardware complexes. Basic principles of creating an automated energy accounting system. Main software products for LOSOD maintenance. "Energocenter" software environment. ADAX software environment. The software environment "NovaSys. Advanced Metering Infrastructure". System configuration creation. Counter surveys. AWP power engineering. Formation of reporting channels. Creation, reservation and transfer of databases to third parties. Formation of reports. Creation of mnemonic diagrams for control rooms.

The Internet of Things in Energy Consumption Systems. Theoretical foundations for the formation of energy balances of local facilities and forecasting performance indicators in real-time. Discrete and combinatorial mathematical modeling of power supply systems with the differentiated cost of energy carriers. The principles of structuring, decomposition, pipelining in the substantiation of structures and model series (capacities) of energy sources. Methods for the synthesis of intelligent energy management systems. The architecture of the Internet of Things. Hardware and software systems for the development of control systems based on the Internet of Things. Network components and technical platforms for managing the combined power supply of local facilities based on the Internet of Things.

**Training of Masters
in branch of knowledge 07 "Management and Administration"
in specialty 073 "MANAGEMENT"
educational program "MANAGEMENT OF FOREIGN ECONOMIC ACTIVITY"**

Form of training	licensed number of students:
– full-time	75
– part-time	50
Duration of training	
– full-time educational and professional program	1 year and 4 months
– part-time	1 year and 4 months
Credits ECTS:	
– educational and professional program	90
Language of teaching	Ukrainian, English
Qualification of graduates	Master of Management in Foreign Economic Activity

The concept of training

The main task of training masters in foreign economic activity management is to provide international and joint ventures and organizations in the field of agribusiness with specialists who could plan and forecast the activities of the subject of foreign economic activity (unit); forecasting the dynamics of demand for export-import products; development and substantiation of directions and means of expansion of markets of subjects of foreign economic activity; make effective management decisions in the implementation of foreign economic activity; to organize the foreign economic activity of the business entity in order to achieve its mission; manage the quality and competitiveness of domestic products on the world market; organization of commercial activity in international markets; currency and financial management of foreign economic activity; organization of advertising activity of the subject of foreign economic activity; formation of the company's image in the foreign market; monitoring the implementation of foreign economic transactions; carrying out activities related to customs management, interaction with customs authorities; registration of customs documentation and customs control. Graduates of the educational program are capable of creative professional activity and innovative approaches to foreign economic activity in conditions of global competition. The acquired knowledge combines a full-fledged fundamental economic education with practical skills of managerial decision-making, teamwork, negotiation and ensuring the effective operation of professional activities in the field of foreign economic activity management.

Educational and professional program of master's training

The educational and professional program "Management of foreign economic activity" provides a combination of the study of business disciplines and disciplines that allow to use the advantages of the world market in their activity; organize and carry out foreign economic transactions, evaluate their economic efficiency; develop and support foreign trade contracts, negotiate with representatives of foreign companies; to manage foreign economic activity, using the basic forms and methods of foreign economic activity, guided by the principles of organization of foreign economic activity.

Areas of graduate employment

The graduate is suitable for employment in accordance with the National Classification of Occupations (DK 003: 2010):

- 121 - directors of enterprises, institutions and organizations;
- 1238 - project and program directors;
- 14 - managers (administrators) of enterprises, institutions, organizations and their departments;
- 141 - managers (administrators) in agriculture, hunting, forestry, fisheries and water sector;
- 1452 - managers (administrators) in wholesale trade and intermediary in trade;
- 1475.4 - managers (administrators) for commercial activity and management.

Practical training

Future masters in management of foreign economic activity acquire skills of work with modern methods of management, proceeding from the tasks set before participants in foreign economic relations in the field of planning and organizing the export-import operations, international trade, including joint ventures and international corporations. Considerable attention is also paid to the peculiarities of the work of domestic enterprises and organizations that have access to the world market. Taking into account the peculiarities of foreign economic relations with partner companies, students learn to use the knowledge gained in the learning process in the event of any situations in the implementation of foreign economic activity.

Proposed Topics of Master's qualification Thesis

1. Trade and economic cooperation of Ukraine with EU member states.
2. Foreign economic security of the state in the conditions of European integration of Ukraine.
3. Organizational and economic mechanism of creation and functioning of joint ventures in Ukraine.
4. International leasing in the conditions of market transformation of Ukraine.
5. Marketing strategies of European companies and experience of their implementation in Ukraine.
6. Enterprise risk management when entering foreign markets.
7. World trade in agricultural products and prospects for Ukrainian exports.
8. Export potential of the grain industry of Ukraine.
9. Ukraine's foreign trade in agri-food products.
10. Forming the competitive advantages of the native agri-food products in world markets
11. Organization of customs logistics of the enterprise-participant of FEA
12. Management of the international competitiveness of enterprise.
13. Estimation of opportunities and threats for the native enterprises under conditions of European Green Deal implementation.
14. Forming the export strategy of enterprise to ensure the climate neutrality
15. Economic consequences for the native enterprises from Ukraine's integration into the EU.

**Master's curriculum
under the educational program "Management of foreign economic activity"
(educational and professional training program)**

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
GENERAL TRAINING CYCLE			
Compulsory components of EPP			
CC 1	Organizational behavior and leadership	4	exam
CC 2	Business communications	4	exam
CC 3	Methodology and organization of scientific research with the basics of intellectual property	4	exam
Total		12	
Optional components of EPP			
<i>Free choice according to the preferences of students from the list of disciplines</i>			
OCP 1	Optional subject from the catalog	4	test
OCP 2	Optional subject from the catalog	4	test
Total		8	
SPECIAL (PROFESSIONAL) TRAINING CYCLE			
Compulsory components of EPP			
CC 4	Management of foreign economic activity	10	exam, project protection with evaluation
CC 5	Business design in an international environment	4	exam
CC 6	Cross-cultural management	4	exam
CC 7	International credit and settlement and currency transactions	4	exam
CC 8	Critical thinking and risk management in foreign economic activity	4	exam
CC 9	Management of international competitiveness of enterprises in the agri-food sector	4	exam
CC 10	Control and evaluation of the results of foreign economic activity of the enterprise	4	exam
CC 11	World agricultural markets	5	exam, project protection with evaluation
CC 12	Practical training	6	protection of the evaluation report
CC 13	Preparation and defense of master's qualification thesis	8	protection of the evaluation report
Total		53	
Optional components of EPP			
<i>Free choice according to specialty</i>			
OC 1.1	Management of international commercial activity	5	exam
OC 1.2	International commercial law	5	exam
OC 1.3	TNCs in a global environment	4	exam
OC 1.4	Logistics in foreign economic activity	4	exam
OC 1.5	International agribusiness	4	exam
OC 1.6	International standardization and certification	4	exam
OC 1.7	Business strategies in marketing activities	4	exam
OC 1.8	Supply chain management	4	exam
OC 1.9	Change management in international agribusiness	4	exam
Total		17	

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
The total amount of compulsory components		65	
The total amount of optional components		25	
THE TOTAL AMOUNT OF EPP		90	

Annotations of subjects in the curriculum

GENERAL TRAINING CYCLE Compulsory components of EPP

Organizational behavior and leadership. The purpose of teaching the discipline is to study the individual psychological characteristics of the individual, his motivation and attitude to various components of the labor process, vertical and horizontal communications and interpersonal relationships, trends in organizational development and reactions to change, which will identify, understand and predict human behavior in specific situations. The main tasks of teaching the discipline are: to acquaint future managers with the terminology, the conceptual apparatus of the discipline "Organizational Behavior" and to ensure its assimilation by students; to equip students with a system of knowledge in the field of theoretical, methodical, information bases of the discipline; to teach future managers to form a system of adaptation and development of personnel in the organization; teams and team interaction; learn to develop a reward system in the organization; personnel evaluation system of the organization; a system of values that support the mission of the organization and motivate employees to achieve it; to ensure students' interest in active teaching and research work.

Business communications. The purpose of the discipline is to form a system of communication skills in the field of international business for higher education students, in particular, to take into account the specific features of a multicultural business environment. The application of theoretical knowledge in the preparation, organization, and conduct of business meetings and negotiations to improve the effectiveness of private international cooperation to gain practical skills in business communication with foreign partners; the application of knowledge of relevant software; and the simplification of business procedures in the international partnership are tasks in the study of the discipline.

Methodology and organization of scientific research with the basics of intellectual property. Science and research in the modern world. Specifics of research activities, types and features of research. Characteristics of the general methodology of scientific developments. Characteristics of stages and registration of results of research works. Information retrieval technologies in the process of scientific work. Methods of preparation and design of publications, text writing techniques. Intellectual property: concepts, features. Basic institutes of intellectual property law. Sources of intellectual property law. Objects and subjects of intellectual property rights. Personal non-property and intellectual property rights. Use of intellectual property. Protection of intellectual property rights.

SPECIAL (PROFESSIONAL) TRAINING CYCLE Compulsory components of EPP

Management of foreign economic activity. Module 1. FEA Management. The subject of the course "Management of Foreign Economic Activity" is a complex set of management relations arising in the field of foreign economic activity in connection with planning, organization, management and control of specific international business operations at various levels of business management, mainly enterprises. It also includes

management activities not only of Ukrainian enterprises in foreign markets, but also of foreign firms in Ukraine, various activities at the level of enterprises, regions, ministries and departments. Module 2. State regulation of foreign economic activity. The main purpose of the discipline "State regulation of foreign economic activity" is to study modern methods and tools for regulating foreign economic activity, factors influencing the choice of regulatory policy in foreign trade, foreign investment and monetary finance of the economy, areas of effective system of state regulation of foreign economic activity. The main objectives of the discipline are: to acquaint students with the relevant concepts, categories, methods and tools for regulating foreign economic activity; acquisition of practical skills in choosing regulatory policy in foreign trade, foreign investment and monetary and financial spheres of the country's economy; education of the ability to creatively search for directions and reserves for improving foreign economic activity.

Business design in an international environment. The modern methodology of business design is considered, the main stages, approaches and basic tools, the methodology of business design are determined, the efficiency of the logical-structural approach used by international organizations in the development of development and restructuring projects is determined. The main purpose of the course is to provide students with an idea of the methodology of preparation and implementation, methods and means of attracting resources for the implementation of international projects and mechanisms for their management.

Cross-cultural management. The course "Cross-Cultural Management" examines the management of relations arising on the border of national and organizational cultures, explores the causes of intercultural conflicts and their neutralization, clarification and use in managing the organization of patterns of behavior inherent in the national business culture. The purpose of the discipline is to form a cross-cultural approach to doing business in today's globalization in order to improve the efficiency of management and the application of knowledge in practice.

International credit and settlement and currency transactions. The purpose of the discipline is to form students' conscious involvement in deepening Ukraine's integration into the world community through the ability to carry out credit and settlement and currency transactions. The task of studying the course is for students to acquire theoretical knowledge and acquire practical skills in performing credit and settlement and currency transactions carried out in the service of foreign economic activity of exporters and importers. The main attention is paid to the essence, motivation and forms of international settlement, credit and currency operations. The evolution of the world monetary system, the specifics of development and functioning at the present stage of the international currency exchange market, the directions of international business development are shown.

Critical thinking and risk management in foreign economic activity. In the conditions of fast dynamics of market processes the integral part of effective management becomes risk management of the enterprise. It is especially important when working in foreign markets, where the rules of operation differ significantly from those within the country. Hence, effective risk management of foreign economic activity is not only an important prerequisite for the survival of enterprises in modern conditions, but also the key to successful commercial activity in foreign markets.

Management of international competitiveness of enterprises in the agri-food sector. The purpose of studying the discipline is to provide students with knowledge about the objective laws, real processes and specific features of the international competitiveness of the enterprise, in terms of foreign economic activity, the acquisition of skills for their practical application. The objectives of the course are: students' understanding of the essence and features of international competitiveness, study of the

theoretical foundations of international competitiveness, acquaintance with the main forms of international trade and investment cooperation; understanding of features, mechanisms, principles and tasks of ensuring international competitiveness; acquainting students with the features and nature of modern competition in world agricultural markets, integration processes, Ukraine's place in them.

Control and evaluation of the results of foreign economic activity of the enterprise. The purpose of studying the discipline is to master the knowledge of a balanced system of indicators that are used to determine the effectiveness of management of foreign economic activity of the enterprise. The substantiation of the importance of economic and financial indicators in the management of foreign economic activity, key aspects of the company's financial statements, balance sheet, profit and loss statements, cash flows, liquidity and financial stability of enterprises, company valuation, financial levers, valuation system product portfolio of the enterprise; the ratio of costs, sales and profits; efficiency of foreign trade operations. The strategic approach to construction of the balanced system of indicators of the enterprise adapted to its needs, a stage of a life cycle and specificity of foreign economic activity is considered. To establish effective control over the foreign economic activity of the enterprise, various methods of planning and control of activity are studied, in particular the SMART method.

World agricultural markets. The purpose of the discipline is to acquire and develop students' theoretical knowledge and practical skills of market analysis, issues of interest to individual producers of agri-food products, managers of agricultural enterprises and analysts to assess the consequences of certain management decisions in agriculture. Study of the world agricultural market as a system of exchange of agri-food products. Functional and organizational features of world agricultural markets. History of origin, evolution and main tendencies of modern development of world agricultural markets, place of Ukraine on them. Characteristics of world markets for agricultural products; formation of global demand and supply of agri-food products. Subjects and objects of world agricultural markets, principles and patterns of pricing in world agricultural markets.

Optional components of EPP

Free choice according to specialty

Management of international commercial activity. The nature of international market relations implies flexibility of entrepreneurial behavior and rapid response to ever-changing external conditions by participants in international trade. Therefore, in their arsenal should be knowledge of the many options for conducting commercial transactions. Commercial activity in international markets has several features: a specific external environment in which participants have to act in trade agreements, fluctuations in the market price of national currencies, the application of international law, participation in agreements of counterparties from different countries. All this multiplies the risks of international commercial entrepreneurship.

International commercial law. The aim of the course is an in-depth study by students of the basic concepts, principles, and norms of international commercial law. Particular attention is paid to acquainting students with the principles and norms of law of the World Trade Organization. The main objectives of the course are to deepen students' knowledge of the principles and rules of law of the World Trade Organization, institutional mechanisms for regulating modern international economic relations, modern standards and prospects for international investment.

TNCs in a global environment. One of the main trends in globalization is transnationalization, when a significant part of production, consumption, exports, imports, and income of the country depends largely on the activities of TNCs located outside a country. TNCs are both the result and the main participants in globalization.

Transnationalization is a new stage, which is a process of strengthening global integration as a result of global operations of TNCs. Transnational corporations provide economic, financial, trade, technological and political-social interaction between countries. The activities of transnational corporations are changing the economic policies of the world community.

Logistics in foreign economic activity. The purpose of the discipline is the formation of systematic theoretical knowledge and the acquisition of practical skills of students in the organization of logistics in foreign economic activity. The main objectives of the discipline - to show future professionals that the rational organization of international transport provides intensive use of rolling stock, timely delivery of goods from country to country, optimizes transport costs for exports and imports of goods; study by students of international legal agreements, acts of bilateral agreements and norms of domestic legislation that establish the procedure for regulating transport activities for international transportation; acquaintance of students with the list and forms of transport document circulation on foreign economic operations; analysis and substantiation of competencies of state bodies for licensing and certification.

International agribusiness. The purpose of the discipline is to form systematic knowledge of the basics of the international agri-food system, identify major trends in the world food market and Ukraine's place in it, experience in international agribusiness in some regions of the world and in countries with different levels of development. In the process of studying the discipline, the regional structure of international agribusiness is analyzed; features of its development in the most developed countries of the world, in the countries of Eastern Europe and the CIS, and also in the developing countries are defined.

International standardization and certification. The purpose of the discipline is to form specialists with knowledge of the full process of crop production in the field of standardization with international, regional and progressive national systems of standardization of foreign countries to improve the quality of domestic products and their competitiveness in the world market. Objectives of the discipline: convergence and harmonization of the state standardization system of Ukraine with interstate and regional systems, progressive national standardization systems of other countries, improvement, and development of the fund of scientific achievements of Ukraine on standardization on the basis of international, regional and national standards of other countries. generalization and maximum use of scientific and technological progress; conducting a purposeful scientific, technical and economic policy by developing international and regional standards based on the standards of Ukraine for new competitive products and services; improving the regulatory framework for trade, economic and scientific and technical cooperation with other countries and participation in the international division of labor; ensuring the protection of the country's interests during the development of international, regional and interstate standards; ensuring the unity of measurements; ensuring mutual recognition of test results and product certification.

Business strategies in marketing activities. The main purpose of the course is to form in students a system of theoretical knowledge and applied skills for the modern methodological apparatus of solving problems of business internationalization, work in international markets and management in international companies. The discipline studies the systems of organization of international activities of firms, their strategies in an internationally competitive environment, specific examples of the organization of international business in multinational companies, as well as mechanisms of control, coordination, protection against risks in international business.

Supply chain management. Theoretical fundamentals of business processes in supply chains. Role and importance of supply chain management in the international business practice. Design, classification, supply chain parameters and methods of their

improvement. Management of organizational changes in supply chains. Conception of supply chain management. Decision making in supply chain management under conditions of uncertainty. Logistic strategy and its role to ensure the efficiency and effectiveness of a supply chain. Integration and cooperation in supply chains. Information technologies of supply chain management. Supply chains in the Internet environment. Economic aspects of supply chain management. Systems for measuring the economic efficiency of a supply chain. Global supply chain management. The tendencies in a supply chain globalisation. Supply chains as a logistical form of the organization of interfirm interaction.

Change management in international business. The purpose of the discipline is to teach future specialists in the management of foreign economic activity to adequately understand rapid changes in the global economic environment and to use them for the competitive advantages formation of the domestic enterprises in international markets. The main tasks of the course include: explaining to students the essence and classification of external and internal organizational changes; generalization and systematization of strategies types of change management; a detailed study of the features of change management at various stages of the enterprise's life cycle; conducting an analysis of the global market in order to identify key changes and leading trends; explaining to the audience the role of power and leadership style in managing changes at the enterprise; formation of students' skills for the development and substantiation of mechanisms of adaptive change management in the field of international business.

**Training of masters of sciences
in branch of knowledge "Management and Administration"
in specialty 073 "MANAGEMENT"
educational program "ADMINISTRATIVE MANAGEMENT"**

Form of training	Licensed number of students:
– full-time	75
– part-time	50
Duration of training	
– full-time educational and professional program	1 year and 4 months
– part-time	1 year and 4 months
Credits ECTS:	
– educational and professional program	90
Language of teaching	Ukrainian, English, German
Qualification of graduates	Manager (administrator) in administrative management

The concept of training

The educational program is focused on training highly professional managers capable of managing agribusiness based on the possession of deep professional knowledge and skills, modern computer technology, innovative knowledge and foreign languages. Specialists have the right to hold senior positions in enterprises and organizations of agro-industrial production, as well as in central and local government.

The Administrative Management educational program is the highest level of business qualification of a manager and the most prestigious business education program in the world. The specialty involves the training of senior management of the new generation, competitive in the labor market, capable of creative professional activity and innovative management methods in conditions of global competition; providing students with integrated system knowledge that combines a full-fledged basic economic education with practical skills in management decision-making, teamwork, negotiation and presentations for professional business management.

The program provides a prerequisite for industrial and undergraduate practice in enterprises of various sectors of the economy and spheres of activity, in agricultural companies, farms, investment companies and investment divisions of large enterprises, in international companies.

Educational and professional program of master's training

Optional components of EPP

Individual educational path in the framework of the project "Agrokebety"

The educational program is focused on training highly professional managers capable of managing agribusiness on the basis of deep professional knowledge and skills in management, agronomy, agricultural engineering, and animal husbandry. Graduates have innovative knowledge in agricultural production.

The Project providing training of specialists to manage the process of efficient production in agricultural companies by introducing intensive production technologies, reducing costs, increasing the economic efficiency of production and intensifying international cooperation in technology exchange and organization of teamwork. In terms of the project are prepared top managers and systems analysts capable of making strategic decisions in terms of risk, continuous development and improvement of entrepreneurial activity in a competitive environment of the agricultural sector.

***Individual educational path with the possibility of obtaining double diplomas
“IMA-Agrarian Management”***

The Program providing training of specialists to manage the process of efficient production in agricultural companies through the introduction of intensive production technologies, cost reduction, the latest economic efficiency of production and intensification of international cooperation in technology exchange and teamwork. We are training top managers and systems analysts capable of making strategic decisions in terms of risk, continuous development and improvement of entrepreneurial activity in a competitive environment of the agricultural sector. The program has international accreditation ACQUIN. Studying for the 1st and 2nd semesters of the first year of study are semesters of international mobility.

Areas of employment of graduates

Management of enterprises and structural subdivisions of enterprises of agrarian and related spheres of economy, including with foreign investments.

Management of health care facilities and their structural subdivisions.

Practical training

Future master's graduates at specific enterprises acquire knowledge on technological issues of the enterprise and acquire skills of selection and successful use of methodological tools for assessing the market environment and developing options for strategic behavior of enterprises. Taking into account the industry specifics of master's programs, students learn to apply the knowledge gained in the learning process in accordance with any situations that may arise in agricultural production. All production tasks are solved from the standpoint of technological, organizational and personnel support.

Proposed Topics of master's qualification thesis

1. Operational management and ways to improve production and logistics processes of the enterprise.
2. Innovative strategy for growing crops indoors.
3. Product quality management as a factor in improving the efficiency of the enterprise.
4. Organization of the enterprise management system and measures to increase its efficiency.
5. Rationale management decisions in the management of soil fertility zones.
6. Introduction of resource-saving technologies in the enterprise.
7. Substantiation of expediency of introduction of innovative technologies in crop production.
8. Outsourcing of human resources in the enterprise management system.
9. Social aspects of management in agricultural enterprises.
10. Management of crop production at the enterprise.
11. Psychology of management in the field of health care.
12. World experience in the organization and management of the health care system and the ability to adapt it to the conditions of Ukraine.
13. Areas of reform and the concept of health care development in Ukraine.
14. Priority areas of management of training of heads of health care institutions.
15. Health insurance as a component of compulsory social insurance in Ukraine.

**Curriculum of Master training
in educational program "Administrative Management"
(educational and professional program of master's training)**

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
1. GENERAL TRAINING CYCLE			
Compulsory components of EPP			
CC 1	Personal productivity and communication efficiency	4	exam
CC 2	Team building and HR management	4	exam
CC 3	Methodology and Organization of Scientific Research with the Principles of Intellectual Property	4	exam
Total		12	
Optional components of EPP			
Free choice according to the preferences of students from the list of disciplines			
OCP 1	Optional subject from the catalog	4	test
OCP 2	Optional subject from the catalog	4	test
Total		8	
SPECIAL (PROFESSIONAL) TRAINING CYCLE			
Compulsory components of EPP			
CC 4	Business management	6	exam
CC 5	Monitoring and evaluation of performance	5	exam
CC 6	Critical thinking and management decision making	4	exam
CC 7	Project and business processes management	4	exam
CC 8	Modern approaches and management tools	4	exam
CC 9	Organizational behavior and leadership	4	exam
CC 10	Production Practice	5	defense report with grade
CC 11	Preparation and defense of master's qualification thesis	5	defense thesis with grade
Total		37	
Optional components of EPP			
Free choice according to specialty			
with the possibility of creating an individual educational path in the framework of the project "Agrokebety" OR double diplomas "IMA-Agrarian Management" OR "Management of health care facilities"			
OC 1	Systems of modern technologies	13	exam
OC 2	Smart technologies in agromanagement	4	exam
OC 3	Business planning	4	exam
OC 4	Business strategies and marketing decisions	4	exam
OC 5	Land and legal relations in agribusiness	4	exam
OC 6	Ethics of business communication and rhetoric	4	exam
OC 7	Agrarian policy	5	exam
OC 8	Strategies of international agricultural marketing	4	exam
OC 9	Methodology of empirical and social research and economic informatics	5	exam
OC 10	Economics of production	5	exam
OC 11	Management consulting	5	exam
OC 12	Enterprise planning and organization	5	exam
OC 13	Cross-cultural management	4	exam
OC 14	Management of medical institutions	5	exam
OC 15	Management psychology and conflictology	5	exam
OC 16	Medical insurance	5	exam
OC 17	Anti-crisis management of health care facilities	6	exam
OC 18	Strategic management	6	exam
OC 19	Quality management of medical services	6	exam
Total		33	

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
The total amount of compulsory components		49	
The total amount of optional components		41	
THE TOTAL AMOUNT OF EPP		90	

Annotations of subjects in the curriculum

GENERAL TRAINING CYCLE Compulsory components of EPP

Personal productivity and communication efficiency The task of the subject is to ensure the development of effective systemic thinking of the leader in order to increase his own effectiveness and efficiency, to learn how to manage his life and time, as well as the time of subordinate employees, will ensure an increase in the efficiency of both his own work and the work of the entire team. The subject providing acquisition of theoretical knowledge and practical skills for effective personal development of a manager; formation and behavioral skills necessary for the future leader; development of skills to organize personal work and work of subordinates. The main tasks of studying this subject are theoretical and practical training for acquiring the competencies of managing personal self-development; developing skills in using time as a resource.

Team building and personnel management. *Module 1. Team building and conflict resolution.* The purpose of the presentation of the course is to study the features of group dynamics; differences between the team and the team, the definition of the main characteristics of the team, the main types of groups depending on the level of development of group activity, the basic principles of the team's work; description of the stages of team formation and development; building team interaction, distribution of roles in the team, application of team building techniques; determination of the means of forming a cohesive team; assimilation of the methodology for conducting teambuilding trainings; identify team development problems. Personnel management in the management system of organizations. Human resource management is a social system. HR policy and HR strategy. Personnel planning in organizations. Organization of recruitment and selection of personnel. Organization of activities and functions of personnel management services. Formation of the team of the organization. Cohesion and social development of the team. Assessment of personnel in the organization. Managing the development and movement of the organization's personnel. Personnel release process management. Social partnership in the organization. Efficiency of personnel management.

Methodology and organization of scientific research with the basics of intellectual property. Science and research in the modern world. Specifics of research activities, types and features of research. Characteristics of the general methodology of scientific developments. Characteristics of stages and registration of results of research works. Information retrieval technologies in the process of scientific work. Methods of preparation and design of publications, text writing techniques. Intellectual property: concepts, features. Basic institutes of intellectual property law. Sources of intellectual property law. Objects and subjects of intellectual property rights. Personal non-property and intellectual property rights. Use of intellectual property. Protection of intellectual property rights.

SPECIAL (PROFESSIONAL) TRAINING CYCLE

Compulsory components of EPP

Business management. *Module 1. Business management: the basics.* The main goal of studying this academic course is the formation of students' analytical creative thinking by mastering the theoretical foundations of the analysis of activities and the acquisition of skills necessary in practical work, control in all areas of the enterprise as a tool to improve the efficiency of management activities. In the process of studying the course, students must learn to understand the essence of economic phenomena and processes, their interconnections and interdependence, the ability to detail them, systematize and model, determine the influence of factors, evaluate the results achieved, and identify reserves for increasing the efficiency of the enterprise. Conflict identification, conflict management.

Module 2. Business management: business game. The main task of course is acquiring knowledge of objective laws, conditions, processes and specific features of managing economic activity and development of an agricultural enterprise, as well as acquiring skills in their practical application. Fundamental management concepts. Operating expenses of fixed assets. Classification of costs and outputs in agricultural enterprises. Foundations of production theory. Multi-period calculations of investment efficiency. Agricultural management. Fundamentals of business planning using AI software planning.

Critical thinking and management decision making. The main tasks in teaching the course are the definition of organizational and personal goals, the decomposition of goals, the whole structure. The course involves the presentation of the foundations of the theory and practice of making managerial decisions: organizational, economic, mathematical, psychological and heuristic aspects of the process of making managerial decisions; target orientation of management decisions, reduction of uncertainty and risk in decision-making at all management levels.

Monitoring and evaluation of performance. *Module 1. Analysis and control of the enterprise.* The main goal of studying this academic discipline is the formation of students' analytical creative thinking by mastering the theoretical foundations of the analysis of activities and the acquisition of skills necessary in practical work, control in all areas of the enterprise as a tool to improve the efficiency of management activities. In the process of studying the course, students must learn to understand the essence of economic phenomena and processes, their interconnections and interdependence, the ability to detail them, systematize and model, determine the influence of factors, evaluate the results achieved, and identify reserves for increasing the efficiency of the enterprise.

Module 2. Key management indicators. Studying a set of coefficients - key management indicators that allow for a comprehensive analysis of the company and propose informed management decisions for improvement through the criteria of profitability, value, cash flows, and possible risk. Determination of the scale of assessment and determination of the rating of the company.

Project and business processes management. General characteristics of project management. Project management system. Functions, principles, methods of business modeling. Design functions, design principles, organizational foundations for building projects and identifying changes. The environment of projects and modern models of design solutions. Control over the implementation of the project. Project quality and cost management. Informational communication in the project. Formation and development of a project team. The objectives of the course are to acquire management knowledge from the standpoint of process approach, the principles of distribution of business processes in the organization, the use of methodological and methodological issues of process-oriented enterprise management in the application of process approach, building models of end-to-

end business processes. The purpose of studying the course is to form a system of theoretical knowledge and applied skills and abilities to use the principles, methods and tools of business process management.

Modern approaches and management tools. The essence and development of the theory of strategic management. Strategic management process: essence and components. The environment of the organization and its strategic analysis. Formation of the strategic goals of the enterprise. Enterprise strategy system. Portfolio analysis methods and tools. Decision making theory. Models for solving problems of break-even activity. Transport tasks and logistics. Optimal investment portfolio formation model. Quantitative Methods in Strategic Management.

Organizational behavior and leadership. The purpose of the course is to form students' knowledge of behavioral economics, involves learning to act rationally, with maximum benefit for themselves. determination of the role of emotions in the acquisition of goods, mistakes in the acquisition of goods, risk appetite and effective protection of funds, weighted investment, efficient market hypothesis, framing, prejudice and self-control in the implementation of consumer behavior. The study of the course allows you to understand the laws of nature and be guided by the granted eternal values, develop a culture of mutual trust and respect, ensure a well-coordinated team, understanding the differences in the behavior of subordinates, the concept of creative space for other people, effective delegation of authority, leadership development programs.

Optional components of EPP

Free choice according to specialty

Systems of modern technologies. *Module 1. Agronomy (technology systems).* The purpose of studying the course is to form in modern managers practical and scientific ideas about advanced systems in relation to modern intensive technologies in agronomy on the basis of the latest developments in science and technology. As a result of studying the course, students will be able to: compare the features of growing crops with different growing technologies; to plan material and technical support of the economy; select varieties and hybrids for the zone; calculate the norms of pesticides in the transition to a new technology and system for reducing the pesticide load; if necessary, carry out statistical processing of results.

Module 2. Agricultural engineering (technology systems). The purpose of the course - the formation of higher education students a set of knowledge, skills and abilities for implementation in production activities using mechanized production technologies, primary processing, storage and transportation of agricultural products, use, maintenance and repair of agricultural machinery, organization and management of structural units

Module 3. Livestock (technology systems). The composition of productive livestock: meat and dairy cattle breeding (milk production, beef production), pig breeding, poultry, sheep, horse breeding, beekeeping, pond fish farming, silkworm breeding, etc. In the process of studying the course, students acquire knowledge of the technology of milk and beef production; technologies of pig production, technologies of poultry production, technology of sheep production. Acquisition of knowledge on breeding and feeding of farm animals, their maintenance, animal hygiene.

Smart technologies in agromanagement. The purpose of the course is to consider the main problems and prospects for the use of the latest progressive technologies in agriculture in Ukraine. Study of individual technologies of UAVs in agro, precision farming systems, satellite monitoring, meteorological, ground scanners, their logic, value, etc. Ensure the study of each operation in agricultural production (tillage, fertilization, sowing, plant protection products, harvesting) with the logic of the correct and most effective application of the necessary AgTech technologies.

Business planning. Ensuring a sufficient level of theoretical knowledge and practical skills, necessary for the formation of future knowledge of organizational processes regarding the management of agrarian business and priority areas of their development; the development of business plans in agricultural enterprises. Use of software for planning processes (familiarization with the work of MAX, BEP programs) elements of linear programming: calculation of the optimal feed ration, production model, investment and financing.

Business strategies and marketing decisions. The task of the course is to provide students with a holistic and logical system of theoretical knowledge and practical skills in the main areas of marketing activities: research, comprehensive analysis and market forecasting, development of a marketing strategy and tools for its implementation (product and price policy, distribution policy, communication policy, control of marketing activities). Particular attention is paid to the definition of business strategies based on marketing research: strategic planning, marketing research, analysis of consumer markets, customer behavior, market segmentation. Determination of assortment, price, sales policies, basic strategies of integrated marketing communication.

Land and legal relations in agribusiness. The main provisions of the land reform in Ukraine. The current state of the mechanism of administrative and legal regulation of relations in the agrarian sphere. Types and procedures of legal liability. State registration and state regulation of organizations, enterprises, institutions.

Ethics of business communication and rhetoric. *Module 1. Ethics of business communication.* Study of ethical norms and ritual rules of business relationships, the acquisition of knowledge and skills related to the exchange of information, the use of methods and means of mutual influence, mutual understanding. Moral norms of business communication. Study of the rules and norms of behavior of partners that contribute to the development of cooperation. Code of honor for employees. Tools and methods of professional communication, professional culture of communication, communication norms, documents' flow in an organization, types of documents.

Module 2. Rhetoric. The aim of modern rhetoric educational course is preparing students to master professional knowledge and skills in the field of communicative methods and public speaking. The main goal is to increase the level of students' communicative competence and develop knowledge in the field of rhetoric. Mastering the skills of proper communication and interaction between social subjects, social groups, communities and society as a whole.

Agrarian policy. The reasons for state regulation of agricultural production, the essence and goals of the state's agrarian policy. Economic consequences of the use of certain instruments for regulating the domestic agricultural sector. Measures to regulate the domestic agri-food market. Measures for regulating foreign trade in agri-food products. Basic approaches to assessing the level of state support for the agricultural sector and Regulation of the global agri-food system within the WTO. Evolution of state support for the agrarian sector and the main directions of modern agrarian policy in Ukraine. Features of the agrarian reform in Ukraine and the main factors that follow from it. Tax regulation in agriculture. Regulation of the main agricultural markets in Ukraine.

Strategies of international agricultural marketing. Management of the marketing activities of the enterprise. Marketing environment and information system. Segmentation of the agricultural market. Marketing pricing and product policy. Marketing communications policy.

Methodology of empirical and social research and economic informatics. Theoretical foundations and hardware of modern information systems. Data management. Economic information processing software. Organization of effective Internet search. Application software for processing economic data. The essence, types and process of

scientific research. Fundamentals of Research Methodology. Empirical and special methods. The structure of social empirical research. Information support of social empirical research. Design and forms of implementation of the results of social empirical research.

Economics of production. Methods for assessing the economic efficiency of production. Production of marketable crop products. Feed production processes. Dairy farming. Keeping and fattening cattle. Breeding pig breeding. Fattening pigs. Determining the need for working capital. Simplified planning of economic activity of the enterprise with the help of program planning I and II.

Management consulting. Development of the institute of counseling. Methods of consulting activities. Marketing consulting services. Management consulting technologies.

Enterprise planning and organization. Enterprise planning: general economic principles, key indicators and methods for determining the optimal organization and planning of the enterprise; drawing up a description of the enterprise; definition and comparison of production processes; a combination of production processes, calculation of the main production and economic indicators; the concept of fact-enterprise and optimized enterprise; drawing up plans for the development of the enterprise; analysis of indicators of profitability, stability and liquidity; differentiation of static and multi-period methods of planning economic activities; drawing up an estimate of the enterprise; program planning; elements of linear programming; basic concepts of investment and financing; forms of financing; credit, liquidity and financial planning; software for planning processes (familiarization with the work of MAX, BEP programs) elements of linear programming: calculation of the optimal feed ration, production model, investment and financing.

Cross-cultural management. Cross-cultural management studies the behavior of people in organizations around the world and teaches them to work in companies where people and customers are from different cultures. The course provides knowledge on typical organizational behavior in different countries, summarizes, describes and compares their cultural characteristics of doing business in different countries, allows you to understand and improve interaction in an international team and improve relations between employees, customers, suppliers and partners. Cross-cultural management expands the possibilities of internal management in areas covering international and intercultural relations.

Management of medical institutions. Approaches to the management and organization of the provision of medical services to the population, especially the functioning of medical institutions. Study of the basic and specific functions of management. Principles, methods and objectives of management. Management decision making process.

Management psychology and conflictology. The essence and content of the main categories of psychological science used in management, the psychological characteristics of the personality of a modern manager (temperament, stable and individual characteristics of mental processes, focus, etc.) and their impact on the effectiveness of management are considered. The problems of development and dynamics of the labor collective, the criteria for its stability, compatibility of group members and types of groups are deeply analyzed. The theory of intervention in conflict situations (General concept of a conflict situation and conflict. Model of the conflict process. Types and types of conflicts. Objective and subjective prerequisites and causes of conflict situations and conflicts. The main elements of the theory of intervention). The norm as a basis for assessing conflict behavior (Normative requirements for social forms of behavior. Altruism and egoism as social norms of behavior. Coercive norms of behavior in interpersonal relations). Power relationships in organizations. The nature of the conflict at the enterprise (The concept of the work collective and its functions. Classification of work collectives and their structure. Formal and informal groups. Characteristics of informal

organizations and their management. Model of the conflict process. Consequences of the conflict).

Medical insurance. Health insurance services in Ukraine. Health insurance system. Voluntary health insurance, a contract for the provision of medical services, a contract between the insurance company and the organization of assistance.

Anti-crisis management of health care facilities. Methods and technologies of crisis management. Crisis, definition of crisis. Tasks and principles of crisis management. Tools for crisis management, determining the state of crisis and bringing the company out of crisis.

Strategic management. The essence and development of the theory of strategic management. The process of strategic management: essence and components. The environment of the organization and its strategic analysis. Formation of strategic goals of the enterprise. The system of enterprise strategies. Methods and tools of portfolio analysis. Decision theory.

Quality management of medical services. Legislative regulation of medical services. Quality of medical services. Quality management of medical services. Subjects and objects of control over the provision of medical services. External departmental control. Internal quality control of medical services. Public control over the provision of medical services. Performing control functions in health care facilities.

**Training of masters of sciences
in branch of knowledge “Management and administration”
Specialty 073 “MANAGEMENT”
educational program “MANAGEMENT OF INVESTMENT ACTIVITY
AND INTERNATIONAL PROJECTS”**

Form of Training:	Licensed number of persons:
–full-time	50
– part-time	25
Duration of training:	
– full-time educational and professional program	1 year and 4 months
– part-time	1 year and 4 months
ECTS credits:	
– educational and professional program	90
Language of Teaching	Ukrainian, English
Qualification	Master in Investment Management and Project Management

The concept of training

Training in the educational program is aimed at training specialists in the development of investment policy of companies and project management, search for international programs and grants and identifying sources of investment, due to the need for agro-industrial production in project managers, coordinators and project managers, investment managers and analysts, heads of investment departments and investment consultants. Mastering the writing of projects and obtaining a diploma in leading educational institutions of Poland and a diploma of NUBiP of Ukraine thanks to double diploma programs.

Educational and professional program of master’s training

Optional block "Investment Management"

The purpose of the program is to train investment management specialists who are able to skillfully develop and justify the concept of an investment project, evaluate its effectiveness taking into account risk factors and uncertainties, perform feasibility studies and develop a business plan for the project, evaluate and select the most effective investment tools, develop the estimate and budget of the project and ensure its implementation, form a project team, implement monitoring of the project implementation and change management.

Areas of employment of graduates

Graduates will be able to work as project managers, coordinators and managers of investment and business projects, investment managers, analysts and consultants, heads of investment departments at enterprises of various sectors of the economy and spheres of activity, in investment companies and investment departments of large enterprises.

Practical training

Future specialists in project management and programs in the field of tangible (intangible) production, using the example of developing real investment projects, study the peculiarities of investment management, acquire practical skills in drawing up a business plan for an investment project, analyzing the financial condition of business entities and determining investment directions, assessing the quantitative and qualitative

characteristics of investment projects, management of investment portfolio optimization, assessment of investment attractiveness and selection of specific projects.

Proposed Topics of master's qualification thesis

1. Strategic analysis of factors influencing the investment of the agricultural sector.
2. The role of the state in stimulating the investment activity of processing enterprises.
3. Assessment of the investment attractiveness of the region (enterprise).
4. Organization of pre-investment research in the organic market.
5. Modeling of investment strategy of agricultural enterprise.
6. Development of strategic directions and forms of investment activity of the enterprise.
7. Planning of investment activity of the enterprise.
8. Management of the effectiveness of the investment activity of the corporation.
9. Formation of business strategy of the enterprise.
10. Management of the implementation of an investment project at the enterprise.

Optional block "Management of international projects"

The aim of the program is to train international project management professionals who will have knowledge and practical skills in finding information about international programs and grants, preparing and submitting project applications and managing projects using international project standards. The program provides for the training of qualified personnel capable of creative professional activity and the introduction of innovative methods in the management of international projects.

Areas of employment of graduates

Graduates will be able to work as project managers, coordinators and managers of international investment and business projects, investment managers, analysts and consultants, heads of investment departments at domestic enterprises of various sectors of the economy and spheres of activity, in international companies.

Practical training

Future masters on the example of preparing real international projects study the basic requirements for their writing and implementation, master the directions of grant activity of international organizations and governments of countries. As potential managers, they learn how to manage international projects, acquiring knowledge of the practical aspects of finding sources of funding based on the analysis of international programs and grants, negotiating with potential partners in a complex investment environment.

Proposed topics of master's qualification thesis

1. International programs and grants as sources of project financing.
 2. Development of a business plan for an international project for an agricultural enterprise.
 3. Development of an investment project for an agricultural enterprise.
 4. Management of the cost of an investment project.
 5. Managing risks and changes in the project.
 6. Management of the implementation of the investment project of an agricultural enterprise.
 7. Development of a strategy for financing innovative projects.
 8. Financial substantiation of programs at the stage of pre-project research.
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9. Management of efficiency of investment projects of agricultural enterprises.
 10. Risk management in investment projects of agricultural enterprises.

**Curriculum of Master training
 in educational program "Management of investment activity
 and international projects"
 (educational and professional program of master's training)**

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
GENERAL TRAINING CYCLE			
Compulsory components of EPP			
CC 1	Investment Management	4	Exam, Course project
CC 2	Macroeconomic analysis and investment strategy	4	Exam
CC 3	Project Management: Project risk management Creative Technologies in Start-Up Project Management	8	Exam
			Exam
CC 4	Methodology and organization of scientific research with the basics of intellectual property	4	Exam
CC 5	State mechanisms for managing investment programs and projects	4	Exam
Total		24	
Optional components of EPP			
<i>Free choice according to the preferences of students from the list of disciplines</i>			
OCP 1	Optional subject from the catalog	4	Credit
OCP 2	Optional subject from the catalog	4	Credit
Total		8	
SPECIAL (PROFESSIONAL) TRAINING CYCLE OF			
Compulsory components of EPP			
CC 6	International programs and grants	4	Exam
CC 7	Project approach in business management	4	Exam
CC 8	Project finance	4	Exam
CC 9	Marketing strategy in project management	4	Exam
CC 10	Information technologies in project management: Scrum, agile, MS Project in Project Management Creative technologies in the social projects management	8	Exam
			Exam
CC 11	Practical training	8	Credit
CC 12	Preparation and defense of master's qualification thesis	10	master's thesis defense
Total		42	
Optional components of EPP			
<i>Free choice according to the specialty</i>			
<i>Optional block 1 "Management of investment activity"</i>			
OC 1.1	Strategic project management: Business game "Project Capital Management" Business game "Strategy of investment in agro-industrial complex"	10	Exam, Course project
OC 1.2	Business game "Investment policy of agro-industrial complex enterprises"	6	Exam
Total		16	
<i>Optional block 2 "Management of international projects"</i>			
OC 2.1	Strategic project management: Business game "Project Capital Management" Business game "Strategy for the implementation of the project in the agro-industrial complex"	10	Exam
OC 2.2	Formation, management and development of the project	6	Exam

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
	team		
Total		16	
The total amount of compulsory components			66
The total amount of optional components			24
THE TOTAL AMOUNT OF EPP			90

Annotation of disciplines in the curriculum

GENERAL TRAINING CYCLE Compulsory components of EPP

Investment management. Tasks, functions and organizational support of investment management. Methods of investment analysis. Investment planning. Principles of formation, methods of development and evaluation of the effectiveness of the investment strategy. Features of real investment management. Types of investment projects. Risk assessment of real investment projects. Formation of a real investment program. Management of investment projects. The structure of a real investment project. Risk optimization and evaluation of the effectiveness of a real investment project. Features of financial investment. Financial investment management policy. Evaluation of the effectiveness and risks of financial instruments. Management of financial investment portfolio formation.

Macroeconomic analysis and investment strategy. The content of macroeconomic analysis and its place in the system of sciences. The system of national accounts as a tool of macroeconomic analysis. Analysis of economic sectors. Analysis of macroeconomic imbalances. Macroeconomic policy analysis. Analysis of macroeconomic factors. Analysis of the effectiveness of strategic investment instruments. The essence of the investment strategy of the enterprise and the principles of its development. Methods of developing the investment strategy of the enterprise. Formation of strategic goals of investment activity. Substantiation of strategic directions and forms of investment activity. Evaluation of the effectiveness of the investment strategy.

Project management. The essence of project management. Features of agro-industrial complex project management. Basic processes in project management and their relationships. Project participants. Stages of project development. Project cost planning, methods and means of its evaluation. Features of control over the implementation of agricultural projects. Identification, assessment and methods of risk minimization in different phases of the project. Development of measures to minimize risks. Implementation of projects in the agro-industrial complex with the support of donor organizations, features of management. Project risk management. Technical and socio-cultural aspects of project management.

Methodology and organization of scientific research with the basics of intellectual property. Science and research in the modern world. Specifics of research activities, types and features of research. Characteristics of the general methodology of scientific developments. Characteristics of stages and registration of results of research works. Information retrieval technologies in the process of scientific work. Methods of preparation and design of publications, text writing techniques. Intellectual property: concepts, features. Basic institutes of intellectual property law. Sources of intellectual property law. Objects and subjects of intellectual property rights. Personal non-property and intellectual property rights. Use of intellectual property. Protection of intellectual property rights.

State mechanisms for managing investment programs and projects. Formation of mechanisms of state management of investment process. State regulation of investment activity in Ukraine. Regulatory and legal support for the management of investment programs and projects. Establishment of mutual investment institutions. Formation of investment resources. Issues of management of public investment programs and projects. Attracting foreign investment and state regulation of international investment cooperation. Mechanisms of state management of investment programs and projects in financial markets. State investment management at the enterprise. Bank lending for investment processes. State instruments for stimulating and motivating investment activities of industrial enterprises. Mechanisms of state management of investment programs and projects in construction. Public management of financial portfolios. Investment factors to increase the competitiveness of the economy. Evaluation of the effectiveness of investment programs and projects.

SPECIAL (PROFESSIONAL) TRAINING CYCLE

Compulsory components of EPP

International programs and grants. Research grants. State Fund for Basic Research. NATO grant programs. US Civilian Research and Development Foundation. Funds of European governments. Grants from the International Agency for Development in Culture, Education and Science (IADCES). Structural Funds of the European Union. Scholarships for study and research. Eureka International European Innovation Science and Technology Program. International Visegrad Foundation. Eurasia Foundation.

Project approach in business management. Business management systems and their combination. Project ideology and advantages of the project approach to business organization. Principles of project activity. Identification of problems affecting the level of project success. Model of project-oriented behavior of business entities. Development of applied principles of the project approach in business management.

Project funding. Theoretical principles of project financing. Project financing system. Project management in the project financing system. Evaluating the effectiveness of investment projects in the project financing system. Sources of project funding. Cost and structure of investment resources in project financing. Features of the organization of various forms and types of project financing. Banks in project financing. Project financing with the participation of international financial institutions. Features of project financing from EU funds.

Marketing strategy in project management. Management of marketing activities in the general management system of the enterprise. Marketing management functions. Trends and concepts of marketing management. Marketing activity of the enterprise as a process. Organization and stages of marketing management. Tasks and stages of organization of marketing activities. Organizational structure of marketing management. Interfunctional coordination of enterprise units in the process of performing marketing functions. Marketing strategic planning. Control as a means of improving the effectiveness and efficiency of marketing activities. Management of marketing tools.

Information technology in project management: The role and place of information systems and technologies in project management. Methods and methodology of designing information systems in project planning. System-methodological aspects of modeling in project management. Requirements for the project team and its manager, requirements for systems analyst. Means of structural analysis. CASE technologies. Data flow charts. Context diagrams. Professional and non-professional project management systems. Modern software for project management Microsoft Project 2010. Project resources in MS Project. Advanced features of MS Project. Primavera software package. Concept Draw software. MS Visio software. Project Expert software. CRM systems.

Scrum, agile, MS Project in project management. Agile is a program development approach that reveals the philosophy of the approach through four main values: people and interactions are more important than processes and tools; a working program is more important than comprehensive documentation; cooperation with Customer is more important than agreeing on the terms of the contract; readiness for change is more important than going through the previous plan. Scrum is a project management methodology based on time management principles. Its main feature is the involvement of all participants in the process, and each participant has a role. The fact is that not only the team is working on the problem, but all those who are interested in solving the problem, not just set it and relax, but constantly "work" with the team, and this work does not mean only constant monitoring.

Creative technologies in social project management. Application of creative technologies in personnel management in the contexts of external and internal environments: organizational culture, climate, socialization and mentoring; development of managers in the context of globalization. Management of individual factors: social perception, assessment of qualifications, skills, personality, mentality, introspection, emotions and attitudes towards the organization. Motivation: needs, job design, career satisfaction. Theories of equality, expectations and goal setting. Staff involvement and efficiency. Management of group factors and social processes: effective groups and teams, decision making, conflict management and negotiation, communication in the digital age. Organizational performance management. Contemporary leadership: situational, contextual and behavioral theories, charismatic and transactional leaders. Creating creative enterprises capable of transformation based on new experience and the requirements of a competitive business environment.

Optional block 1. "Management of investment activity"

Strategic Project Management: Business Game "Project Capital Management". Business game as a means of modeling the situation of making managerial decisions on project capital management. Creating several teams of players to solve the problem of solving the problem of optimizing the capital structure of the project, to be aware of the conceptual apparatus and types of capital value. To form the ability to think critically about models of determining the value of equity and theories of optimization of capital structure. To activate the ability to analyze and synthesize leverage as a characteristic of the economic potential of the enterprise / borrower. Enterprise restructuring as a way to increase the value of enterprise capital. Presentation of the obtained results.

Business game "Agricultural Investment Strategy". Business game as a tool for modeling the situation of making managerial decisions on strategic project management. Creating several teams of players to solve the problem of forming a set of strategic alternatives and justify the choice of one of them in the management of a particular project. Investment management is a system of principles and methods of development and implementation of management decisions related to the implementation of various aspects of investment activities. Investment activity is closely related to other fundamental management systems of the enterprise with financial management through the formation of investment resources; with the production management, this connection is mediated through the joint management of the formation of fixed and working capital; with personnel management through the implementation of intellectual investment in employees of the enterprise.

Business game "Investment policy of agro-industrial enterprises". Business game as a means of modeling the situation of making managerial decisions on the formation of investment policy of agricultural enterprises. Creation of several teams of players to solve a specific problem of forming the investment policy of agricultural enterprises. Search and substantiation of the choice of the best of the alternative options

for investment activities and building on this basis the investment strategy of enterprises, determining the mechanisms of their implementation. Formation of a portfolio of investment projects. Estimation of efficiency of investment policy of agro-industrial enterprises. Presentation of the obtained results.

Optional block 2. "International Project Management"

Strategic Project Management: Business Game "Project Capital Management". The business game as a means of modeling the situation of making managerial decisions on project capital management. Creating several teams of players to solve the problem of solving the problem of optimizing the capital structure of the project, to be aware of the conceptual apparatus and types of capital value. To form the ability to think critically about models of determining the value of equity and theories of optimization of capital structure. To activate the ability to analyze and synthesize leverage as a characteristic of the economic potential of the enterprise / borrower. Enterprise restructuring as a way to increase the value of enterprise capital. Presentation of the obtained results. **Business game "Strategy for project implementation in the agro-industrial complex"**. Business game as a tool for modeling the situation of making managerial decisions on strategic project management. Creating several teams of players to solve the problem of forming a set of strategic alternatives and justify the choice of one of them in the management of a particular project. Initial conditions of the business game: the competitive position of the company, trends in the market in which the company is represented, strengths and weaknesses of the company and its competitors, determining competitive advantages and opportunities to strengthen them, the effectiveness of project integration into enterprise development strategy. Determining the conditions and options for resource provision of the project and choosing the best of them. Presentation of the obtained results.

Formation, management and development of the project team. Necessity and principles of project team formation. Methods and organizational aspects of team building. The main characteristics of the project team. Organization of team interaction. Psychological features of project team management. International project team management. Conflict management.

**Training of masters of sciences
in branch of knowledge "Management and Administration"
in specialty 075 "MARKETING"
educational program "MARKETING"**

Form of Training:	Licensed number of persons:
– Full-time	60
– Part-time	60
Duration of training	
– Full-time educational and professional program	1 year and 4 months
– Part-time	1 year and 4 months
Credits ECTS:	
– educational and professional program	90
Language of teaching	Ukrainian, English
Qualification of graduates	Master of marketing

The concept of training

The program in the specialty is aimed at training marketing specialists able to work in the field of marketing, advertising, logistics, market research and forecasting, international marketing and trade. Masters in the specialty are able to form a company market strategy, ensure the competitiveness of enterprises, develop and implement marketing operational plans of a company; organize foreign economic activity of an enterprise in accordance with the international marketing principles; organize distribution systems such as “just in time”, “door to door” etc.; organize company communication policy and performance in an unstable environment; prevent adverse factors and crises; assess risk factors, measure their size and manage them when implementing marketing activities.

Educational and professional program of master's training

Optional Block "Advertising Management"

Training of specialists in advertising project management, organization and quality management of an advertising project and its implementation. The objective is to provide students with the knowledge of modern communication technologies, advertising projects management methods, standards and technology of development and implementation of promotional activities.

Areas of employment for graduates

Advertising agencies and advertising departments of enterprises and organizations.

Optional Block "Trade marketing"

The aim of the master’s program is to train experts in marketing and intermediary activities with a high level of professionalism and culture, competence and responsibility, able to perform the basic functions of business, to use various marketing tools to promote goods from producer to consumer, introduce new organizational and economic technologies in the field of marketing. It is to train specialists in marketing logistics who are competent, professional and responsible to perform basic logistics functions, to facilitate the effective promotion of the goods from producer to consumer, to introduce new organizational and economic technologies in the field of marketing. The program provides

training of highly qualified managers, able to creatively apply innovative methods in the field of logistics.

Areas of employment for graduates

Businesses and organizations engaged in intermediary activity; marketing and sales departments of enterprises of different organizational and economic forms. Logistics companies and logistics divisions of large enterprises

Practical training

Using case methods masters in marketing explore the specific characteristics of agricultural production as a commodity, mechanisms of formation and implementation of marketing strategies, pricing strategies and the peculiarities of marketing pricing, sales, advertising management. As potential leaders they learn to manage marketing departments, acquire knowledge of the practical aspects of the market and their impact on the development of the company, the competitive environment and the market on the whole, to determine the role of professional marketers in the economic system of the state in the increasing global competition, globalization and modern challenges.

Proposed Topics of Master's qualification Thesis

1. Development of product promotion strategies to the market.
2. Development of product marketing strategy.
3. Improvement of agricultural enterprise activity on the basis of market research.
4. Organization of marketing activity at the enterprise.
5. Organization of business on the basis of marketing.
6. Formation of communication policy of an enterprise on domestic (foreign) market.
7. Transportation management in modern transport logistics.
8. Rationale of marketing distribution policy.
9. Management of marketing activities at the enterprise.
10. Formation of competitive strategy of the enterprise in the market.

Curriculum of Master training in educational program "Marketing" (educational and professional program of master's training)

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
GENERAL TRAINING CYCLE			
Compulsory components of EPP			
CC 1	Agrarian Policy	4	exam
CC 2	Methodology and Organization of Scientific Research with the Principles of Intellectual Property	4	exam
CC 3	Management of enterprise competitiveness	4	exam
CC 4	Marketing planning and forecasting of agricultural markets conjuncture	8	credit, exam
CC 5	Social responsibility	4	exam
Optional components of EPP			
Free choice according to the preferences of students from the list of disciplines			
OCP 1	Optional subject from the catalog	4	credit
OCP 2	Optional subject from the catalog	4	credit
SPECIAL (PROFESSIONAL) TRAINING CYCLE			
Compulsory components of EPP			

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
CC 6	Strategic Marketing	4	exam
CC 7	Logistics management	4	exam
CC 8	Advertising management	4	exam
CC 9	Marketing Management	4	exam
CC 10	Production practice	12	
CC 11	Preparation and defense of master's qualification thesis	14	
Optional components of EPP			
Free choice according to specialty			
<i>Optional Block 1. "Advertising management"</i>			
OC 1.1	Creativity in advertising	4	exam
OC 1.2	Psychology of Advertising	4	exam
OC1.3	Speechwriting	4	exam
OC1.4	Brand Management	4	exam
<i>Optional Block 2. "Trade marketing"</i>			
OC.2.1	Organization and technology of wholesale and retail trade	4	exam
OC2.2	E-commerce	4	exam
OC2.3	Merchandising	4	exam
OC2.4	Commercial activity of intermediary enterprises	4	exam
The total amount of optional components			24
The total amount of compulsory components			66
THE TOTAL AMOUNT OF EPP			90

Annotations of disciplines in the curriculum

GENERAL TRAINING CYCLE Compulsory components of EPP

Agricultural policy. The discipline introduces future professionals to the basics of policy-making in agriculture. The students study both domestic and foreign experience and get an opportunity to form professional opinion about the processes and phenomena in the agricultural sector of the national economy.

Methodology and organization of scientific research with the basics of intellectual property. Science and research in the modern world. Specifics of research activities, types and features of research. Characteristics of the general methodology of scientific developments. Characteristics of stages and registration of results of research works. Information retrieval technologies in the process of scientific work. Methods of preparation and design of publications, text writing techniques. Intellectual property: concepts, features. Basic institutes of intellectual property law. Sources of intellectual property law. Objects and subjects of intellectual property rights. Personal non-property and intellectual property rights. Use of intellectual property. Protection of intellectual property rights.

Management of enterprise competitiveness. The aim of the discipline is to deepen the theoretical knowledge, to master modern methods and practical skills of effective management of enterprise competitiveness based on marketing in modern business environment. The objectives of the course are: awareness of the role and importance of the problems of company competitiveness management; profound knowledge of the role and place of marketing in management of enterprise competitiveness; synthesis of theoretical knowledge and practical skills in forming competitive status of a company and its management in specific practical situations.

Marketing planning and forecasting of agricultural markets conjuncture.
Module 1. Forecasting methods in marketing research. The aim of discipline is to develop

students' knowledge and skills in the theory and methodology of forecasting market research of macro- and micro-markets, products / services. The discipline studies methodological and technological principles of research methods and processes and forecasting of economic entities and the conditions of the business environment. The program includes two modules: the theoretical foundations of forecasting for marketing research; quantitative forecasting methods in marketing research. *Module 2. Marketing planning.* The aim of the discipline is to provide knowledge and practical skills in drawing up marketing plans, managing the process of their implementation, forming and maintaining consumer demand for goods and services, identifying target segments, plan benchmarking. The objective of the discipline is to study phases, functional structure and information support of marketing planning system. The discipline studies marketing planning process and factors affecting it. The students learn methods and techniques to perform planning management in specific situations.

Corporate social responsibility. The purpose of the discipline: to form students' fundamental knowledge of the theory and practice of social responsibility and relevant professional competencies. Tasks of the discipline: study of theoretical positions and practice of interaction of the state, business, society and man in the field of social responsibility as a condition for sustainable development of society.

SPECIAL (PROFESSIONAL) TRAINING CYCLE

Compulsory components of EPP

Strategic Marketing. The aim of the discipline is to master theoretical and methodological principles of strategy formation and practical skills in strategic decision-making in marketing management and market development of an enterprise. The main tasks of the discipline is to provide theoretical training of students and formation of skills in strategic marketing analysis, market segmentation, positioning, development of general, competitive and functional strategies, searching and keeping competitive advantages.

Logistics Management. The aim is to master theoretical principles, the basic categories of logistics management and methodological aspects of organization and management of logistics activities in modern conditions.

Advertising management. The aim of discipline is to form a system of theoretical and applied knowledge of advertising management, strategy and tactics of advertising in Ukraine. The main tasks of the discipline are to study the issues of advertising planning, stages of creating advertising messages, the sphere of advertising management application, knowledge of the characteristics of the main participants of the process, to provide students with practical skills for marketing service. The student explore approaches to creating advertising, its movement on the market and evaluation of effectiveness.

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.

Optional components of EPP

Free choice according to specialty

Optional Block 1 "Advertising Management"

Creativity in advertising. The aim of the discipline is to provide students with knowledge of methods and technologies of creativity in advertising by means of media and graphic art, to form creative thinking, practical skills and abilities in advertising and the use of specialized and reference books on creativity in practical economic activity. The objective of the discipline is to learn the basic directions of creative activity in advertising; principles and methodological approaches to generation of new ideas in advertising from the positions of different creative schools; to be able to analyze the effectiveness of advertising messages in different media.

Psychology of advertising. The aim of the discipline is to provide students with theoretical knowledge and practical skills in the field of advertising psychology and in the dynamics of psychological processes of interaction in the system "advertising to consumer" to address the psychological challenges of designing effective advertising images of products (services); to form skills of creating and using special advertising psycho-technologies to promote products on the market. The task of the course is to teach students to form effective advertising images (image) of goods (services) in target groups, as well as provide methods of memorizing advertising messages, implement effective advertising influence on consumer behavior, arouse a desire to buy a product (service) advertised.

Speechwriting. The purpose of the study of the discipline "Speechwriting" is the acquisition of knowledge and practical skills in writing texts and speeches, the circumstances of their proclamation, the students of the place of spiguration in the system of preparation of a specialist in advertising and public relations, definition of the role of public speeches in the process of forming the marketing positions of the subject social communications; acquaintance with the history of the formation and development of science of rhetoric and oratory; study of the laws of public broadcasting; awareness of the psychological foundations of the activities of the speaker and speaker; familiarization with the main means of persuasion and verbal influence on the audience, with the main means of implementing non-verbal influence on the audience, with the composition of speech, with the specifics of the preparation of various types of speeches in the circumstances of the speech, the specifics of the preparation of various types of speeches on their psychological motives; with the specifics of the preparation of various types of speeches in the sphere and the target direction; analysis of public speeches.

Brand management. The main role of brand management is to integrate the processes of creation, management and evaluation of brands aimed at increasing their value to consumers. The aim of the discipline is to provide students with theoretical knowledge and practical skills in brand creation and management, brand strategy realization in order to achieve the maximum business efficiency. The objective is to form competencies in the following areas: the nature and principles of brand management at an enterprise, the purpose and prerequisites for effective brand management; to teach students to create their own brands, manage brand assets, develop and support the brand strategy. The subject of the discipline covers methods and processes which the enterprise applies to create brands and manage their assets.

Optional Block 2. "Trade marketing"

Organizing and technology of wholesale and retailing. The aim of the discipline is to develop knowledge and skills in sustainable construction of commercial enterprises, the ability to design commercial and technological processes, to introduce scientific and technological progress into trade. The task of the course is to understand and study the

complex of issues that reveal the content and peculiarities of retailing. Particular attention is focused on the principles of trade, the factors that influence the effectiveness of trade and technological processes, methods of retail sale. The discipline covers peculiarities of organization and planning of direct sales, the sequence of operations in the process of direct selling, methods and algorithms for decision making as to personal selling process in any form of economy. The aim of the course is to provide students with knowledge of efficient sales and service, up-to-date genuine industrial, institutional and scientific decision-making. The objectives of the course are to introduce students to the relevant categories of direct selling, the requirements for sales representatives, peculiarities of successful product presentation; the use practical skills in direct selling; instilling a desire to creatively improve the process of product selling in the current market conditions in Ukraine.

Electronic commerce. The discipline provides the essence, content and role of e-commerce in the modern sector of world and national economy. E-commerce tools, its scope and the main principles are considered regarding the global Internet. Special attention is focused on characteristics of basic forms and e-commerce projects (including electronic shopping, electronic auctions, electronic trading platforms) electronic payments, the specifics of providing individual services. The effectiveness of e-commerce and its legal support are analyzed.

Merchandising. The discipline provides coverage of such issues as: control of inventory in retail trade; effective product placement in stores; marketing communications at points of sale; the effectiveness of the sales staff. The aim of the discipline is to provide students with knowledge and skills on modern techniques, mechanisms and instruments of merchandising. The tasks of the course are aimed at developing students' competence as to: display of goods on the exposition equipment, distribution of promotional materials in retail locations, the possibility of presenting the maximum possible range of goods.

Commercial activities of intermediary companies. The discipline studies modern approaches to the possibility of commercial management of intermediary enterprises in order to transfer to modern technologies, strategies, purchase and sale tactics; the use and application of modern forms, methods of commercial transactions for the effective operation of business intermediary companies.

AGROBIOLOGY FACULTY

Dean – Oksana Tonha, Doctor of Agricultural Sciences, Associate professor

Tel.: (044) 527-82-13,

E-mail: tonkha.o@nubip.edu.ua

Location: Building № 4, room 41^a

Faculty organizes and coordinates educational process of master training in educations programs within specialties:

Specialty 201 “Agronomy”

Educational program “Agronomy”

Guarantor of the educational and professional program - Doctor of Agricultural Sciences, professor, academician Svitlana Kalenska

Departments in charge of graduate training:

Plant Growing

Tel.: (044) 527-86-26

E-mail: dep.plant@gmail.com

Head of department – Doctor of Agricultural Sciences, Professor Svitlana Kalenska

Agriculture and Herbology

Tel.:(044)527-82-14

E-mail: zemlerob1@ukr.net

Head of department – Doctor of Agricultural Sciences, Professor Semen Tanchyk

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

Tel.: (044) 527-86-66

E-mail: save_tech_chair@nubip.edu.ua

Head of department –Candidate of Agricultural Sciences, Professor Gregory Podpriatov

Educational program “Agrochemistry and Soil Science”

Guarantor of the educational and professional program - Doctor of Agricultural Sciences, Professor Victor Zabaluev.

Graduating departments:

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 Anatoly 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 Victor Zabaluev

Educational program “Selection and genetics of agricultural crops”

Guarantor of the educational and professional program - Candidate of Agricultural Sciences, Associate professor Oleksandr Makarchuk

Department in charge of graduate training:

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 Oleksandr Makarchuk

Educational program “Agrohimservice in precision agricultural production”

Guarantor of the educational and professional program - Doctor of Agricultural Sciences, Professor Anatoly Bykin

Department in charge of graduate training:

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

Tel.: (044) 527-88-17

E-mail: agrochemistry_nules@ukr.net

Head of department – Doctor of Agricultural Sciences, Professor Anatoly Bykin

Specialty 203 “Horticulture, fruit growing and viticulture”

Educational program “Horticulture, fruit growing and viticulture”

Guarantor of the educational and professional program - Candidate of Agricultural Sciences, Associate professor Boris Mazur

Departments in charge of graduate training:

Gardening named after Professor V. L. Symyrenko

Tel.: (044) 527-85-59

E-mail: hortdep@gmail.com

Head of department – Candidate of Agricultural Sciences, Associate professor Boris Mazur

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 Ivan Fedosiy

**Training of masters of sciences
in branch of knowledge "Agricultural science and food"
in specialty 201 "AGRONOMY"
educational program "AGRONOMY"**

Form of Training:	Licensed number of persons:
– Full-time EPP	94
– Part-time	57
Duration of Training:	
– Full-time educational and professional program	1 year and 4 months
– Part-time	1 year and 4 months
Credits ECTS:	
– educational and professional program	90
Language of Teaching	Ukrainian, English
Qualification	Master of Agronomy

The concept of training

The base of masters educational programs forming in specialty is according exist and perspective of branch and plants growing, supplying variation in system masers educational program for fast adaptation to actually national and international labor needs, integration educational, scientific-researches and innovation activities as example as leadings worlds universities.

Masters' educational program in specialty focus on effective personnel students' educational, which can use adaptive technology agriculture plants growing and supply it's economical, agrarian, energetic and ecology effectiveness. After graduation from university, master can create and realize some actions for improving effectiveness of biological sorts' potential using; forming of harvests productivity and quality depends from soil and climate conditions and elements of plants growing technologies, decision modern industrial and scientific targets in growing technologies. Decision of modern industrial and scientific problems linked with growing technologies, harvest processing and storage plants production.

Areas of employment of graduates

Agricultural enterprises of different ownership, regional and district administration, advanced farms, companies, holdings and corporations, scientific-research establishments of NAAS of Ukraine.

Practical training

Students have the main course a practical educational in scientific-researches farms of NULES of Ukraine: SD of NULES of Ukraine "Agronomy research station", "Velikosnitinske scientific-research farm named aster O. Musichenka" and leading agricultures firms different forms, educational-scientific laboratories of NULES departments and some scientific-research organization of NAAS and NAS of Ukraine.

Proposed Topics of Master's qualification Theses

1. Features of formation of species composition and patterns of germination of weeds in crops agrocenoses.
2. Change in soil fertility and efficiency of growing crops under different farming systems.
3. Analysis and improvement items intensive farming systems at the farm.

4. Optimization measures to protect crops from weeds.
5. Features of agricultural cultivation crops for farms of different ownership forms and soil and climatic conditions.
6. The adaptive potential of the agricultural crops in the northern steppes of Ukraine.
7. Technological and biochemical properties of grain different purpose depending on the ways, regimes of post harvest handling and storage.
8. Chemical and technological evaluation suitability raw materials of fruit and vegetables (technical crops) for storage and processing.
9. Biochemical and commercial value of fresh and canned fruits and vegetables, depending on the factors of post harvest handling, storage and processing.
10. Evaluation of performance pilyaukisnoho growing forage crops depending on their species composition in certain languages economy.

**Curriculum of Master training
in educational program "Agronomy"
(educational and professional program of master's training)**

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
GENERAL TRAINING CYCLE			
Compulsory components of EPP			
CC 1	Methodology and organization of scientific research with the basics of intellectual property	4	exam
CC 2	Biometry	6	exam
CC 3	Management of risk factors in agriculture	5	exam
CC 4	Pedagogy and psychology	4	test
Total		19	
Optional components of EPP			
Free choice according to the preferences of students from the list of disciplines			
OCP 1	Choice from the catalog 1	4	test
OCP 2	Choice from the catalog 2	4	test
Total		8	
SPECIAL (PROFESSIONAL) TRAINING CYCLE			
Compulsory components of EPP			
CC 5	Modern systems of agriculture	6	exam
CC 6	Innovative technologies in crop production	6	exam
CC 7	Technological audit of storage and processing of crop products	6	exam
CC 8	Modeling of productivity of forage crops	4	exam
CC 9	Logistics and innovations of handling, storage and processing of plant products	5	exam
CC 10	Energy-saving technologies in fodder production	6	exam
CC 11	Production Practice	10	differentiated test
CC 12	Preparation and defense of master's qualification thesis	4	
Total		47	
Optional components of EPP			
Free choice according to specialty			
OC 1.1	Integrated control of harmful organisms in modern farming systems	4	exam
OC 1.2	Agriculture and food security		exam
OC 1.3	Scientific basis of ecological systems of agriculture		exam
OC 1.4	Modeling of crop rotation under the conditions of climate change		exam

MASTER CURRICULA AND TRAINING PROGRAMS

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
OC 1.5	Modeling of soil tillage systems under climate change conditions		exam
OC 2.1	Adaptive technologies in crop production	4	exam
OC 2.2	Features of cultivation technologies of crops under modern agricultural systems		exam
OC 2.3	Energy plant resources		exam
OC 2.4	Technologies of seed production and planting material of agricultural crops		exam
OC 2.5	Simulation of crops of field cultures		exam
OC 3.1	Quality and logistics of crop products in modern farming systems	4	exam
OC 3.2	Certification and commodity of crop-growing products		exam
OC 3.3	Technology and chemical control of crop production		exam
OC 3.4	Material and technical base of logistics of crop production		exam
OC 3.5	Energy-saving technologies in the branch of storage and processing of plant products		exam
OC 4.1	Intensive cultivation technologies of fodder crops for seeds	4	exam
OC 4.2	Modern technologies of cultivation the non-traditional forage crops		exam
OC 4.3	Innovative technologies in fodder production		exam
OC 4.4	Intensive cultivation technologies of new fodder crops for seeds		exam
OC 4.5	Effective use of pasture lands		exam
Total		16	
The total amount of compulsory components		66	
The total amount of optional components		24	
THE TOTAL AMOUNT OF EPP		90	

Annotations of subjects in the curriculum

GENERAL TRAINING CYCLE

Compulsory components of EPP

Methodology and organization of scientific research with the basics of intellectual property. The discipline is aimed at acquiring in-depth knowledge of scientific research on the problems of agronomy. Methods of agronomic research and observation of phenomena are studied. The methods and organization of research in various parts of the field of agriculture – crop production, vegetable production, horticulture, onion production – are considered. Importance is attached to the methods and techniques of the organization of research work in the conditions of soil erosion and reclamation agriculture, the use of statistical methods of interpretation of research data with the use of modern computer programs. Along with this, this discipline provides knowledge and understanding of the normative legal framework for the protection of copyrights on intellectual property.

Biometry. The discipline is aimed at mastering the methods and techniques of planning, organization of research, numerical description and mathematical modeling of objects and phenomena of mass observations, the ability to draw scientifically based conclusions on their basis, and the evaluation of hypotheses arising from the use of quantitative methods in the field of production plant industry.

Management of risk factors in agriculture. The discipline is aimed at forming students' ability to apply modern technological measures and management methods to avoid risks in modern farming systems; use knowledge from the theory and practice of making production, organizational, technological and social decisions taking into account economic risk, the implementation of which requires improvement or revision of the

strategy and technology of growing agricultural crops; mastering the knowledge of risk assessment methods that make it possible to determine the probability of a specific type of risk and the level of its possible negative impact on the functioning and development of the agricultural sector in the economy. To be able to develop economically feasible and ecologically acceptable ways of reducing the negative impact of modern risks, as well as on the acquisition of skills and readiness to change technologies in agriculture in the event of the appearance of circumstances that precede the occurrence of risky situations.

Pedagogy and psychology. The purpose of teaching the discipline is the formation of psychological and pedagogical competence of students in matters related to psychological and pedagogical features in the field of agronomy, equipping them with modern educational technologies, methods of creative search for future professionals; formation of interest and readiness for independent knowledge of the problems of didactics, theory and methods of vocational education. The main objectives of the discipline are to acquire practical skills of pedagogy and psychology, necessary for further activities in the field of agronomy, namely: rational planning and organization, the ability to demonstrate basic skills of pedagogical knowledge, generate new ideas, use knowledge of psychology and pedagogy in organizing production activities.

SPECIAL (PROFESSIONAL) TRAINING CYCLE **Compulsory components of EPP**

Modern Systems of agriculture. Development and implementation of ecologically safe modern farming systems is a development perspective of the agricultural industry. This discipline forms in students a set of scientifically based knowledge on organizational, economic, technological, melioration and environmental measures, which ensure obtaining the maximum quantity and high quality of agricultural products with the least expenditure of labor and money, rational use of land and increasing soil fertility. According to the degree of intensity, the following modern farming systems are distinguished: industrial, organic, ecological, soil protection based on the contour and melioration organization of the territory, No-till, Mini-till, Strip-till. The essence of such systems is to use the laws of ecological and economic compatibility of agriculture with natural processes.

Innovative technologies in crop production. The discipline is aimed at the formation of knowledge on the optimization of elements of technologies for growing agricultural crops due to the management of the production process, using innovative agrotechnological measures. Innovation is based on the principles of differentiation of cultivation technologies according to specific soil and climatic conditions; greening of production; adaptation to different levels of production and resource potential of agricultural production.

Technological audit of storage and processing of crop products. The discipline examines ways of checking the technological state of enterprises with postharvest handling, storage and processing of plant products, technologies which using and production facilities by complex of specific criteria, that allows to identify strengths and weaknesses sides, identify dangerous factors, establish corrective actions and develop perspective plans of their progress. Also, the discipline involves a detailed mastery of the methods of development and implementation of the HACCP system on the enterprises for storage and processing of plant products, that allows obtain safe products and promotes international trade. Studying the discipline will allow students to carry out analysis of hazard and control (regulation) in the critical points of production, to identify, evaluate and control biological, chemical, physical factors, materials or products that may be adversely affect on the human health.

Modeling of productivity of forage crops. The program of the discipline is disclosure of the concept of the productivity of forage crops and the process of its

modeling, which is a qualitatively higher stage of the development of technologies for growing field forage crops, as it allows to assess the impact of the environment on growth processes and control the levels of plant productivity. A model that reflects the response of plants to the supply of moisture using an optimal balance, using a small amount of inputs, taking into account biophysical processes in the soil and modeling in the "plant-soil-moisture-yield" system.

Logistics and innovations of handling, storage and processing of plant products. Master's training in this discipline is aimed at effective individual training of a specialist that capable of applying adaptive technologies and deeper studding of the students of innovative technologies of postharvest handling, storage and processing of the main types of grains, fruits and vegetables, raw materials of the technical crops; to studying of the peculiarities of the technology of handling, storage and processing of each type of crop production at a high scientific level, that will ensure the completion of work on handling, storage and processing of crop production with the least losses and obtain of competitive and environmentally safe products. The educational discipline provides for the study of logistics questions, namely the management of resource provision of economic activity of various forms of ownership and commodity flows directed from producers to consumers, that include information, financial and service (warehousing, transportation, etc.) support of these processes. In the modern market conditions of production, the training of professionals in logistics and innovations in post-harvest handling, processing, storage and quality of crop production will contribute to ensuring the food security of the country and allow solving the problem of ensuring the production by high-quality products with a guaranteed degree of safety for humans, animals and the environment, with minimal costs of raw materials, and also energy resources, uninterrupted operation of many types of industry: food, light, perfumery, energy and others.

Energy-saving technologies in fodder production. The program of the discipline is intended to develop the professional ability to solve the issue of intensification of the work of the industry in future specialists, subject to the introduction of alternative energy- and resource-saving technologies for the cultivation and preservation of fodder crops and the production of high-quality, balanced fodder without harming the environment.

Optional components of EPP

Free choice according to specialty

Integrated control of harmful organisms in modern farming systems. As a result of studying this discipline, future specialists will have a system of knowledge about the scientific bases, principles, and rules of modern measures to control harmful organisms in agriculture, as well as practical skills in developing integrated systems for the protection of agrophytocenoses both within a specific culture and crop rotation, based on from the requirements and possibilities of the agricultural system adopted in the economy. Such a system should provide effective control not only of populations of individual biological risk factors, but also of their associations in agrophytocenoses of various groups of agricultural crops. The discipline is designed to teach future specialists to create an economically effective, economically feasible and ecologically sound integrated system of control of harmful organisms in accordance with the level of their probable damage in modern farming systems.

Agriculture and food security. The discipline studies the causes, factors, features and regularities of food security as a component of an international economic problem. The essence and content and methods of solving food security in Ukraine and the world are studied. Modern approaches in diversifying the production of high-quality and ecologically safe food products, including alternative farming systems, are considered, and systematized.

Scientific basis of ecological systems of agriculture. The growth of the planet's population, climate change and energy shortages require a significant increase in the production of high-quality and ecologically safe agricultural products. To solve these problems, in-depth theoretical and practical knowledge of agriculture is necessary. Based on this, the priority of this discipline is the laws of biology, agronomy, and agriculture. Based on these laws, the student forms in-depth knowledge and skills on the structure of cultivated areas on the basis of market relations; resource-possible application of organic fertilizers of a new generation; implementation of conservation tillage systems; provision of an ecologically regulated and economically justified system of protection of cultivated crops from harmful organisms; use of microbiological preparations based on new isolated strains of producers.

Modeling of crop rotation under the conditions of climate change. The discipline is aimed at the formation of a master's degree in the specialty «Agronomy» of the necessary set of theoretical knowledge, acquisition of practical skills and skills of modeling crop rotations under the existing challenges – global climate changes, the need for expanded reproduction of soil fertility, considering ecological and economic goals. The task of the course is the ability to develop crop rotation models aimed at reducing the risk and degree of sensitivity to the consequences of climate change while increasing the stability of agrocenoses. Creating crop rotations to increase the natural biological advantage of agricultural crops. Application of crop diversification practices to increase productivity and reduce the risk of crop loss due to adverse conditions by improving soil fertility, improving beneficial soil biota, and reducing the accumulation of weeds, pests and diseases. Development and implementation of extended cultivation of annual crops in crop rotation (stacking method). Management of cover crops.

Modeling of soil tillage systems under climate change conditions. In today's conditions, it is necessary to till the soil considering the consequences of climate change, which are already felt and will only intensify in the future. This discipline examines the main theoretical and practical foundations of soil tillage, considering changes in the thermal regime, spatial and seasonal distribution of precipitation, dangerous weather phenomena, manifestations of water and wind erosion. As a result of studying this discipline, the student will be able to develop and implement cost-effective models of conservation primary, pre-sowing, and post-sowing tillage, considering unstable conditions caused by climate change.

Adaptive technologies in crop production. The discipline studies the conceptual, theoretical and methodological foundations of adaptive crop production, problems of adaptation and stability in solving the theory and practice of stable production of crop production in conditions of worsening ecological situation, global warming and climate aridization, mechanisms and stages of plant adaptation, types of adaptation, biotic and abiotic factors of formation the productivity of agricultural crops, the relationship between adaptation and plant resistance, the peculiarities of metabolic processes in plants and the adaptation of agricultural crops to environmental factors, risks in crop production, ways to prevent them and reduce the negative impact due to elements of cultivation technologies.

Features of cultivation technologies of crops under modern agricultural systems. The study of the discipline is aimed at optimizing the elements of technologies for growing agricultural crops under different farming systems and is based on the maximum realization of the biological potential of modern varieties and hybrids, adaptation to specific growing conditions and improvement of traditional growing technologies through management production process, using innovative agrotechnological measures.

Energy plant resources. The study of the discipline is aimed at forming knowledge about: prospective directions of production and use of renewable energy raw materials for various types of biofuels of the first and second generation; assessments of

the resource potential and gene pool (specific, varietal diversity) of energy plants; features of their growth, development, production processes; the relationship of plants to environmental factors; agrobiological, biochemical features, yield potential, plant productivity; new technologies for growing and harvesting high yields of energy plants; reduction of the material and resource burden on agrophytocenoses; increasing the energy efficiency of the technology.

Technologies of seed production and planting material of agricultural crops.

The discipline involves the study of modern technologies of cultivation, harvesting, cleaning and storage of high-quality seeds and planting material of agricultural crops; state and international legislative and regulatory framework for the production, sale and use of seeds of agricultural crops; intra-farm and state control of the production of seeds and planting material at all its stages, sale and use of seeds.

Simulation of crops of field cultures. The discipline is aimed at familiarizing and revealing the essence of the impact of various biological phenomena, developing methods for modeling the structure and productivity of field crops, which make it possible to adjust the processes of crop formation and product quality; for the student to master the methods of complex agronomic assessment of specific soil and climatic conditions, biological features of the culture, practical development of the agrotechnical system and organizational measures capable of ensuring the maximum realization of the genetic potential of crops.

Quality and logistics of crop products in modern farming systems. The course teaches methods of monitoring and evaluation of quality of plant products, innovative scientifically justified logistic schemes of handling, that providing high quality processes (cleaning, drying) - minimum injuries, high vitality of food grain and seed destination. It teaches scientifically logistic schemes of handling the harvest of potatoes, vegetables, pomes fruits, which provide them high commodity value at realization. The course teaches scientifically technologies of handling, storing all kinds of raw materials of industrial crops, which will provide a maximum output of finished products - sugar, starch, oil and others. The course teaches research ways and regimes of storage and processing, which taking into account the growing conditions, harvesting, post harvest handling and transportation of grain mass, consignment of juicy products and other plant materials. The discipline is studying at the final stage of Master's training, that allows considering of questions of quality and logistics in a complex and in accordance to the requirements of various branches of the food and other types of processing industry.

Certification and commodity of crop-growing products. The discipline studies the commodity science characteristics of plant products, focusing on quality and safety indicators of raw materials and finished products, detection of possible counterfeit products, etc. The discipline provides for the establishment of compliance of plant raw materials and finished products with the requirements of regulatory documentation, quality indicators that are taken into account during certification and the procedure for certification of plant products. The study of the discipline will allow students at a professional level to determine the suitability of a batch of crop raw materials for a certain target use, to evaluate and prepare a batch of crop products for the certification procedure.

Technology and chemical control of crop production. In the course Masters study the biochemical significance yield of major crops and tasks of techno-chemical control on the stages of primary processing, industrial processing and storage of basic types different crops (flour, cereals and oilseeds), fruit and vegetable, potato, industrial raw materials (flax-fibred, hops, tobacco, sugar beet and grapes). The course used knowledge of physiology, microbiology, plant pathology, fruit growing, vegetable growing, standardization, plant growing, and technology of storage and processing of crop production. Discipline teaches modern methods of control of crop production based on a

comprehensive knowledge of the properties of products, taking into account their change depending on factors that may act on it during transport, post harvest handling, storage and processing.

Material and technical base of logistics of crop production. A special discipline that studies equipment and buildings that used for storage and processing of plant products, technological characteristics of granaries, vegetable stores, freezers, refrigerators and buildings for storing finished canned products, equipment for processing plant products (cereals, leguminous, oils, technical crops) and raw materials of fruits and vegetables.

Energy-saving technologies in the branch of storage and processing of plant products. In recent years, in connection with military aggression and damage to critical infrastructure facilities, the use of energy-saving technologies in all spheres of production activity is relevant. Ukraine is a producer and exporter of a significant amount of grain of various crops, potato tubers, fruit and vegetable products, raw materials of industrial crops. Proper organization of post-harvest processing of the grown crop, its storage with minimal losses for a certain period of time, and effective processing are important for the uniform supply of food products to consumers and obtaining competitive products. Technological operations of post-harvest processing, storage and processing of plant products are quite energy-intensive. The discipline teaches future specialists to develop and apply resource-saving schemes for finishing the grown crop, to use energy-saving technologies to maintain optimal storage conditions in various types of storage facilities. Optimum methods of processing grain of various crops, potato tubers, fruit and vegetable products and raw materials of industrial crops are being studied, which will ensure the production of finished products with minimal energy consumption and quantitative and qualitative losses. Possible ways to reduce the loss of energy resources during post-harvest processing, storage or processing of plant products, identification of dangerous factors that can negatively affect the quality and safety of fresh or processed products, rules for controlling all technological operations in accordance with the requirements of international standards. is considered.

Intensive cultivation technologies of fodder crops for seeds. Adaptive economically beneficial and ecologically safe technologies for growing fodder crops for seeds are studied in the course of the discipline. It includes the peculiarities of technological measures of soil cultivation, sowing technology, care for seed crops, harvesting, post-harvest treatment and seed storage. The program envisages consideration of issues related to the influence of certain technological measures on the sowing quality of seeds and methods of their determination, study of the economic efficiency of forage seed production, work of the main centers for the production and sale of seeds of perennial grasses, development of domestic and foreign experience of seed farms.

Modern technologies of cultivation the non-traditional forage crops. The program of the discipline envisages revealing the essence of adaptive economically beneficial, ecologically safe technologies for cultivation non-traditional fodder crops with the aim of spreading them in agriculture. Methods of programming the yield of non-traditional fodder crops, measures to create highly productive fodder areas on field lands, conveyor production of fodder and organization and methods of increasing the productivity of fodder crop rotations are studied.

Innovative technologies in fodder production. Innovations are one of the key factors that determine the improvement of its efficiency in the modern conditions of the development of fodder production,. The discipline has an important theoretical and production value, as it teaches the student to use a complex, systematic approach to the

cultivation of fodder crops with improved specific elements of technology to provide livestock with complete feed.

Intensive cultivation technologies of new fodder crops for seeds. New fodder crops are characterized by a high coefficient of seed reproduction, which, as is known, contributes to the acceleration of the introduction of such crops into fodder production. However, there is a significant drawback in their seed production - the absence of regional varieties in most crops, which makes it impossible to study them in the state variety testing system and organize seed production on an industrial basis. Perennial non-traditional fodder crops in terms of economic value prevail over annual and biennial ones, because they are used for several years in a row with high productivity of grass stands, as a result of which money for seeds is significantly saved and the cost of production is reduced. The main task of seed production of non-traditional fodder crops is to ensure sufficient production of high-quality seeds for expanding their sown areas and optimizing the structure of the sown areas of these crops in field fodder production.

Effective use of pasture lands. Pasture lands occupy large areas in Ukraine, and the directions of their use are growing today. First of all, grasslands are an important reserve for increasing the production of livestock products and a significant factor in the growth of its economic efficiency. Therefore, in the course of the discipline, technological ways of effective use of pasture systems are considered, taking into account natural and territorial conditions, legal norms and climatic changes, innovative approaches to the organization of pasture lands capable of maintaining the long productive longevity of perennial grass stands and their high productivity are studied, skills are formed regarding the peculiarities of monitoring the state of pasture systems of natural lands, which allows to control the quality and safety of fodder from them and influence the degree of technological and ecological load on pasture systems. The program of the discipline introduces other promising directions of using grasslands: as a significant recreational resource and a source of primary biomass for renewable energy technologies.

**Training of masters of sciences
in branch of knowledge "Agricultural science and food"
in specialty 201 "AGRONOMY"
educational program "AGROCHEMISTRY AND SOIL SCIENCE"**

Form of Training:	Licensed number of persons:
– Full-time EPP	31
– Part-time	18
Duration of Training:	
– Full-time educational and professional program	1 year and 4 months
– Part-time	1 year and 4 months
Credits ECTS:	
– educational and professional program	90
Language of Teaching	Ukrainian, English
Qualification	Master of Agronomy

The concept of training

The modern agricultural industry needs high qualified specialists in agrochemistry and soil science. The program of the magister mastering is directed to formation of the knowledge and skills in methodological and agrotechnical fields of the agrosoil science and agrochemical service of the agricultural organizations, elements of the precision agriculture and energy save crop production systems, analytical and practical using of the modern methods of the soil fertility control, crops nutritive conditions and formation of the quality of the crop products, the elaboration of the conceptual and practical basics of the crop fertilization systems and agrochemical documents, development of technologies and measures to improve soil quality, soil quality monitoring, prevention of soil degradation, optimizing of biodiversity in soil, implementing of soil conservation technology.

Areas of employment of graduates

The industrial sector field crop agriculture, agribusiness, public health agencies soil fertility and crop agrochemical service. Graduates can be employed in the system of regional branches of the Agency of Land Resources Research Institute "Ukrzemproekt" in the system design and exploration centers "Oblderzhrodyuchist" in any agricultural enterprise in positions agronomist, agronomist-ohrohimika in System Security Service of soils as an engineer, soil scientists; In the banking sector in positions of experts to assess the soil; system of quarantine and customs services of Ukraine for positions related to the assessment of soil quality and ecological condition of the environment; in commercial and public establishments that manufacture and sell chemicals (fertilizers, pesticides), make agrochemical services, conduct a comprehensive agrochemical diagnosis and diagnosis of plant nutrition as a manager (professionals, specialists) with sales and scientific support, specialists in agricultural chemistry, managers, promoters, agrochemists analysts, logisticians to ensure fertilizer plant nutrition consultants; in environmental inspections, system service protection soil inspection in rational use and protection of land in positions to control the environmental state of the environment assessment of soil quality.

Practical training

Students receive practical training in research farms of NULES of Ukraine: separated subdivisions "Agronomic Research Station" and "Velykosnytynske Education and Research Farm named after O. Muzychenko", at research institutions of Academy of

Agricultural Sciences and Academy of Sciences of Ukraine, National Centre of soil fertility conservation, the State Committee for Land Resources, educational and scientific laboratories of NULES of Ukraine.

Proposed Topics of Master's qualification Theses

1. Agrochemical performance management of crops.
2. Integrated agrochemical diagnosis
3. Development of the use of chemical fertilizers and meliorants in agribusiness.
4. Agrochemical providing resource-saving technologies of cultivation of crops.
5. Change the properties of soil for implementing resource saving technologies and precision farming.
6. Agroecological efficiency technologies No-till.
7. The mechanisms of formation of microaggregates agrocenosis and performance under different tillage systems and crop fertilization.
8. Impact of lithological factor in soil formation tehnzemiv on reclaimed lands.
9. Play in typical black soil fertility in terms of field and vegetable crop rotations.
10. Change the water-physical and physical-chemical properties of typical chernozem minimizing tillage and biologization agriculture.

**Curriculum of Master training
in educational program “Agrochemistry and Soil Science”
(educational and professional program of master's training)**

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
GENERAL TRAINING CYCLE			
Compulsory components of EPP			
CC 1	Methodology and organization of scientific research in agrochemistry and soil science with the basics of intellectual property	6	exam
CC 2	Land resources of Ukraine and the world	5	exam
CC 3	Logistics of growing and sale of crop products	8	exam
CC 4	Pedagogy and psychology	4	test
Total		23	
Optional components of EPP			
Free choice according to the preferences of students from the list of disciplines			
OCP 1	Choice from the catalog 1	4	test
OCP 2	Choice from the catalog 2	4	test
Total		8	
SPECIAL (PROFESSIONAL) TRAINING CYCLE			
Compulsory components of EPP			
CC 5	Assessment and management of soil quality	6	exam
CC 6	Technological agroservice for lands usage	12	exam
CC 7	Reclamation and reclamation of disturbed lands	5	exam
CC 8	Soil degradation and soil fertility restoration technologies	6	exam
CC 9	Production Practice	10	differentiated test
CC 10	Preparation and defense of master's qualification thesis	4	
Total		43	
Optional components of EPP			
Free choice according to specialty			
OC 1	GIS technologies in agrochemistry and soil science	4	exam
OC 2	System of application of special agrochemical products	4	exam
OC 3	Phytomelioration and phytoremediation of degraded soils	4	exam

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
OC 4	Soil chemistry and biology	4	exam
OC 5	Monitoring and certification of soil resources	4	exam
OC 6	Regulation of conditions of nutrition of agricultural plants in closed soil and under fertigation	4	exam
OC 7	Drones in agronomy	4	exam
OC 8	Smart-management of plant nutrition	4	exam
OC 9	Field agrochemical scouting	4	exam
OC 10	Laboratory diagnostics of soils and lands	4	exam
OC 11	Soil risks in agricultural production	4	exam
OC 12	Qualitative assessment of soils and lands	4	exam
Total		16	
The total amount of compulsory components		66	
The total amount of optional components		24	
THE TOTAL AMOUNT OF EPP			90

Annotations of subjects in the curriculum

GENERAL TRAINING CYCLE

Compulsory components of EPP

Methodology and organization of scientific research in agrochemistry and soil science with the basics of intellectual property. The course program allows you to master the basics of the methodology of scientific research and to know the purpose and features of different levels of scientific knowledge. The program of the discipline is designed to form in future specialists essential competencies in the organization and conduct of scientific research and to provide skills in obtaining accurate and reliable scientific data. It provides an opportunity to master the basic skills of posing a problem, developing a hypothesis, and determines possible ways of creating a scientific theory. During the course, at the scientific level, issues of the stages of preparation and conducting scientific research work on the selected research topic and formalizing their results in accordance with the requirements that are put forward for works of this level are covered. Masters acquire practical skills in statistical processing and mathematical analysis of research results.

Land resources of Ukraine and the world. The discipline is devoted to the study of patterns of spatial distribution of soils - the basis of their accounting and evaluation as a natural resource. Methodical material provides an opportunity to understand the essence and significance of the main factors of soil formation, soil regimes and processes in the formation of soils, the formation of their profile, properties and fertility; basic principles of genetic soil classification and new approaches to soil classification on an ecological and substance basis; main criteria for selection of taxonomic units of genetic classification and diagnosis of soils; units of soil-geographic zoning and principles of their selection; geographical aspects, genesis and patterns of distribution of the main soil types of Ukraine and the world.

Logistics of growing and sale of crop products. The aim of the study is the formation of theoretical knowledge and practical skills in the master of agronomy to organize the process of selecting machine units and calculate the need for resources, as well as their workload to ensure the efficient operation of agricultural enterprises. The ability to assess climatic, territorial, and organizational risks during the planning and implementation of technological operations for the application of agrochemicals in crop production, as well as the effective management and marketing of agrochemical resources allows to contribute to the achievement of optimal productivity of agrophytocenoses and

post-harvest primary finishing of crop production with the aim of its successful implementation. The discipline consists of two modules: "General principles of the functioning of logistics systems in the agricultural sector" and "Logistic support for the cultivation and sale of plant products", which consider general and special issues of the peculiarities of material and resource flows in the channels of the logistics chain of the agricultural sector.

Pedagogy and psychology. The purpose of teaching the discipline is the formation of psychological and pedagogical competence of students in matters related to psychological and pedagogical features in the field of agronomy, equipping them with modern educational technologies, methods of creative search for future professionals; formation of interest and readiness for independent knowledge of the problems of didactics, theory and methods of vocational education. The main objectives of the discipline are to acquire practical skills of pedagogy and psychology, necessary for further activities in the field of agronomy, namely: rational planning and organization, the ability to demonstrate basic skills of pedagogical knowledge, generate new ideas, use knowledge of psychology and pedagogy in organizing production activities.

SPECIAL (PROFESSIONAL) TRAINING CYCLE

Compulsory components of EPP

Assessment and management of soil quality. The discipline acquaints students with the history of the development of areas of soil quality assessment, a comparative analysis of modern methods of soil assessment as the main means of crop production, and the main indicators of soil quality assessment are determined. The relationship between soil quality and the value of land plots during regulatory and expert evaluation of land is highlighted, water, heat, air, toxic, biological and nutritional regimes are described in detail, their indicators and evaluation, the influence of each soil regime on soil fertility, growth, development and the yield of agricultural crops, the peculiarities of soil processes and the formation of soil regimes have been revealed, ways of determining the optimum of soil properties and managing soil regimes to improve the quality of soils have been developed

Technological agroservice for lands usage. The goal of the studying of the theoretical materials and laboratory classes are mastering for master into theoretical knowledge and practical skills into methods and practice agrochemical supplying and service for plantgrowing, planning and organization of the agrochemical service, etc. Future specialist takes skills in control, realization and application of the chemical preparation in agriculture and organize effective relationship between the producer and organizations different ownership and determine the efficiency of agrochemical service in agroorganizations.

Reclamation and reclamation of disturbed lands. The educational discipline is aimed at the formation of modern ideas about the scale of destruction of soil resources, the ecological consequences of technogenesis, the problem of reclamation of disturbed territories using the latest land reclamation technologies and other methods of their restoration. The study of the discipline contributes to mastering the scientific foundations of creating sustainable, productive, socially and economically valuable landscapes on the land disturbed by industry, the main component of which is the formation of artificially created soil structures - various models of technozems depending on the further intended use. As a result of studying the discipline, the acquirer must know the consequences of technogenic disturbance of natural and cultural landscapes, principles of classification of technogenically disturbed territories; to be able to evaluate the removed soil mass and overburden rocks as substrates for the formation of technozems in different directions of reclamation; to be able to develop a set of measures for land reclamation and rational use

of reclaimed land in agricultural production, to develop technological schemes for the biological stage of reclamation with the introduction of land reclamation phytocenoses and crop rotation.

Soil degradation and soil fertility restoration technologies. The main task of the educational discipline is to acquire theoretical, methodological knowledge and practical skills in assessing and forecasting the state of soil cover, rational use of soils, preservation and reproduction of their fertility. The study of the academic discipline will help future specialists-soil scientists to promote the harmonization of relations between the agrosphere and the natural environment, to develop new approaches and principles of soil-saving agricultural technologies taking into account soil and climatic conditions, to minimize the expenditure of energy and material resources, to carry out soil protection and soil restoration measures, their forecasting, planning, implementation and monitoring for the purpose of rational use and protection of land, regardless of the forms of ownership and management. The educational discipline is a logical continuation of the deepening of knowledge in soil science, agriculture, ecology, reclamation, agrochemistry and other natural and agronomic disciplines, equips future soil scientists with knowledge not only about the exploitation of soil as the main means of agricultural production, but also to timely diagnose the initial stages of degradation processes, predict possible consequences, develop and implement measures to prevent them.

Optional components of EPP

Free choice according to specialty

GIS technologies in agrochemistry and soil science. GIS technologies in agrochemistry and soil science is an integrated discipline teaching students to apply knowledge of agronomy, horticulture, soil science and agrochemistry in GIS package programs. The discipline introduces students to the basics of cartography, different types of maps, the principles of GIS organization and functioning, GPS positioning, methods of obtaining and processing of geospatial data. Students will learn to digitize images, build a digital model of the relief, highlight soil contours and create the digital soil maps and agrochemical cartograms. Special attention of this discipline is devoted to such GIS packages as: GIS map Panorama, MapInfo, ArcGIS, GIS-IDRISI, etc.

System of application of special agrochemical products. The course involves the generalization of professional knowledge and skills and the acquisition of new ones. In the section of the discipline, fertilizers of the new generation and the peculiarities of their application are considered with the aim of reducing anthropogenic pressure on agroecosystems, leveling external stresses and more fully revealing the genetic potential of modern varieties and hybrids of agricultural plants. The goal of the course is to provide specialists with high professional knowledge on the effective use of modern agrochemical products.

Phytomelioration and phytoremediation of degraded soils. The educational discipline covers the issue of restoring the productivity of degraded soils with the use of phytoremedial plants, which will allow future soil scientists to develop and implement new approaches to the biological treatment of chemically polluted and physically destroyed soils through the use of agricultural technologies based on the phytoremediation and phytoremediation effect of an assortment of plants with specific restorative and purifying properties. Such technologies will also make it possible to minimize the expenditure of energy and material resources to restore the fertility of eroded, polluted and degraded soils. The educational discipline is a logical continuation of the deepening of knowledge in soil science, agriculture, crop production, land reclamation and reclamation, agrochemistry and other natural and agronomic disciplines, which will allow not only to diagnose degradation processes and predict possible negative consequences, but also to

develop and implement phytoremediation and phytoremediation measures for their prevention and recovery of productivity.

Soil chemistry and biology. The discipline of chemical, physico-chemical and biological processes that shape soil fertility and the productivity of agrocenoses. It is the knowledge of the essence of these processes with the participation of individual chemical elements, colloidal systems and groups of organisms, together with the methods of their regulation, that makes it possible to maintain a high level of soil fertility. The specified processes are also the basis for forecasting the evolution of soils and their rational use. The discipline forms the master's knowledge about the soil as a special natural body - a complex biomineral (biomeat) dynamic system, which is a complex function of rock, organisms, climate, relief, time and which is characterized by fertility. Transformation of plant residues. Microbiological formation of humus. The process of soil formation and the formation of soil microbial coenoses. Influence of anthropogenic factors on soil microflora. Enzymes, biological indications and soil diagnostics. Based on this knowledge, the discipline allows you to manage the physical, chemical and biological properties of soils.

Monitoring and certification of soil resources. Soil quality monitoring is a system of observations, quantitative assessment and control over the use of soils and lands in order to organize the management of their productivity. To diagnose the condition of soils it is necessary to possess and be able to interpret the following complex informative indicators: change in soil structure, land transformation, assessment of rates of change of basic soil properties, assessment of erosion intensity, reclamation status indicators, assessment of effective soil fertility. The purpose of this discipline is to teach methods for monitoring soil quality in order to control and prevent the negative development of soil formation processes.

Regulation of conditions of nutrition of agricultural plants in closed soil and under fertigation. The course program allows you to master the basics of managing conditions for the nutrition of agricultural plants in cultivation facilities and during fertigation. It provides the training of a specialist who will have the knowledge and skills that will allow creating optimal models of feeding regimes in closed soil and managing them in accordance with the biological requirements of the crop.

Drones in agronomy. The purpose of studying the discipline is the formation of theoretical knowledge in master's students regarding the understanding of the possibilities of using drones in modern technologies of growing agricultural crops (monitoring of the condition of soils, plants, application of agrochemicals, sowing of sideral crops, application of trichogram, etc.) and practical skills in organizing the effective operation of drones in the field for various purposes with the observance of the necessary logistical measures, as well as the acquisition of practical skills in the management of drones.

Smart-management of plant nutrition. Studying the course students use the knowledge of chemical disciplines, agrochemistry, fertilizer application system, crop production and others, accumulated in the previous years of study at the university. The program is intended to provide students with theoretical knowledge and practical skills in managing the productivity of agricultural crops, taking into account the intra-field variability of the field and optimizing the use of consumables. Knowledge of the technical and software of Smart plant nutrition management, which allows you to create the best conditions for plants, taking into account the properties of different types and forms of fertilizers, the peculiarities of their interaction with the soil, determining the most effective forms, methods, and terms of fertilizer application.

Field agrochemical scouting. The goal of the theoretical and practical study of the discipline is the formation of theoretical knowledge and practical skills in the master's degree in the organization and implementation of complex agrochemical diagnostics of the

nutrition of agricultural crops with the help of modern portable tools, systems and software, as well as maintaining the functional state of devices.

Laboratory diagnostics of soils and lands. Quantitative data on the properties and regimes of the soil are necessarily required to carry out a qualitative assessment of soils, lands, or the development of fertilization systems. The discipline "Laboratory diagnosis of soils and lands" introduces the rules of soil sample selection, laboratory methods of determining the main indicators of physical, physicochemical, water and agrochemical regimes, as well as the organic part of the soil. After mastering the course of the discipline, students will be able to independently select the methods.

Soil risks in agricultural production. Based on the study of agrophysical, physicochemical and agrochemical indicators of the soil, the discipline will allow to quantitatively assess the potential productivity of soil changes and land plots as a whole, to determine soil risks and crisis indicators of soils regardless of the nature and certain type of their use. The assessment of soil risks will be carried out for different types of rural areas, enterprises and their sizes regarding the most rational use (management) of land plots. The discipline will allow you to familiarize yourself with the assessment of the suitability of land (soil) for the production of organic products and the risks involved in its cultivation. Methods of assessing the ecological and reclamation state of irrigated lands and methods of assessing soils and risks of agricultural production in the USA and Europe will also be considered.

Qualitative assessment of soils and lands. Qualitative assessment of soils and lands is a quantitative assessment of their potential productivity, the basis for qualitative and economic assessment of lands and land cadastre, without which effective use of land in Ukraine is impossible. The certification of land plots must be based on the results of soil assessment. The discipline is aimed at teaching the student to quantitatively evaluate the potential productivity of soil changes and land plots as a whole (regardless of the nature of their use) and with certain special use (growing specific crops, perennial plantations); the ability to draw maps of soil quality for crop yield programming, assessment of the activities of farms (farms) on certain land plots; provide recommendations for consumers-land owners regarding the most rational use (management) of land plots.

**Training of masters of sciences
in branch of knowledge "Agricultural science and food"
in specialty 201 "AGRONOMY"
educational program "SELECTION AND GENETICS OF AGRICULTURAL CROPS"**

Form of Training: – Full-time EPP	Licensed number of persons: 20
Duration of Training: – Full-time educational and professional program	1 year and 4 months
Credits ECTS: – educational and professional program	90
Language of Teaching	Ukrainian, English
Qualification	Master of Agronomy

The concept of training

Graduates of this program master modern methods of identification of plant varieties, methods of molecular genetic research, scientific and legal principles of state registration of varieties and their rights, which will positively influence the decision on their employment and provide qualified personnel of the field of protection of plant protection rights. Preparation of masters in specialization is focused on the formation of students' knowledge, skills and practical skills in the scientific bases of selection and genetics of field crops, the organization and conduct of state scientific and technical examination of varieties and hybrids in Ukraine, theoretical foundations and organization of seed production, development of resource-saving technologies for cultivation crop and state control of varietal and sowing qualities of seeds for further growth and stabilization of volume Plant production in Ukraine.

Areas of employment of graduates

Research institutions NAAS of Ukraine, Ukrainian Institute of Plant Expertise, advanced agro-industrial companies, holdings and corporations, agricultural production enterprises of various forms of ownership, agricultural enterprises of different forms of ownership.

Practical training

Students undergo practical training in education and research farm NULES of Ukraine: Separated subdivision of NULES of Ukraine "Velykosnytynske Education and Research Farm named after O. Muzychenka" and Separated subdivision of NULES of Ukraine "Agronomic Research Station", at the research institutes of NAAS and NAS of Ukraine: National Scientific Center "Institute of Agriculture of NAAS", THE V.M. Remeslo myronivka institute of wheat NAAS, Institute of Bioenergy Crops and Sugar Beet NAAS and Institute of Plant Physiology and Genetics NAS of Ukraine, research centers of the Ukrainian Institute for Plant Varieties Examination, enterprises of different forms of ownership for the cultivation, preparation and sale of pure-bred seeds and planting material.

Proposed Topics of Master's qualification Theses

1. Peculiarities of selection of maize initial material for breeding for cold resistance under the conditions of the Agronomic Research Station of NULES of Ukraine.
2. Features of breeding of soft winter wheat varieties universal type of IFPG.
3. The initial material of purple echinacea with a high level of decorative.

4. Improvement of haploid production technology in spring barley culture in vitro.
5. Mutational effect of artificial media components in microclonal reproduction of blackberry «Rubus eubatus Focke».
6. Vegetative hybridization in the Solanaceae family.
7. Characteristics of winter wheat collection specimens by economically valuable features.
8. Use of the world gene pool in winter wheat breeding.
 - a. Biochemical and bioenergy evaluation of maize feedstock.
9. Use of apozygotic lines in sugar beet breeding.
10. Features of potato seed production by in vitro method.
11. Modification of the 5-enolpyruvylshikimate-3phosphate synthase (EPSPS) gene and creation of vectors to reduce the sensitivity of plants *Zea mays*., *L.* and *Brassica napus*., *L.* to phosphonomethylglycine.

**Curriculum of Master training
in educational program “Selection and genetics of agricultural crops”
(educational and professional program of master's training)**

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
GENERAL TRAINING CYCLE			
Compulsory components of EPP			
CC 1	Methodology of breeding experiment	6	exam
CC 2	Genetic resources of plants	5	exam
CC 3	Agrochemical service in crop production	5	exam
CC 4	Pedagogy and psychology	4	test
Optional components of EPP			
<i>Free choice according to the preferences of students from the list of disciplines</i>			
OCP 1	Choice from the catalog 1	4	test
OCP 2	Choice from the catalog 2	4	test
Total		8	
SPECIAL (PROFESSIONAL) TRAINING CYCLE			
Compulsory components of EPP			
CC 5	Special genetics of agricultural crops	8	exam
CC 6	Genetics immunity against diseases and pests	6	exam
CC 7	Special breeding of crops	4	exam
CC 8	State qualification examination with the basics of intellectual property	4	exam
CC 9	Market of varieties and seeds	4	exam
CC 10	DNA technology and biosafety	6	exam
CC 11	Production Practice	10	differentiated test
CC 12	Preparation and defense of master's qualification thesis	4	
Total		46	
Optional components of EPP			
<i>Free choice according to specialty</i>			
OC 1.1	Adaptive plant breeding	4	exam
OC 1.2	Genetics of quantitative traits		exam
OC 1.3	Ecological genetics		exam
OC 2.1	Breeding and seed production of bioenergy crops	4	exam
OC 2.2	Breeding and seed production of vegetable, fruit and berry crops		exam
OC 2.3	Breeding and seed production of fodder crops		exam
OC 3.1	Seed certification and standardization	4	exam
OC 3.2	Formation of varietal resources		exam

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
OC 3.3	Inspection supervision and control		exam
OC 4.1	Technical support of genetic research	4	exam
OC 4.2	Cytology		exam
OC 4.3	Biochemistry in plant breeding		exam
Total			16
The total amount of compulsory components		66	
The total amount of optional components		24	
THE TOTAL AMOUNT OF EPP			90

Annotations of disciplines in the curriculum

GENERAL TRAINING CYCLE Compulsory components of EPP

Methodology of breeding experiment. The main provisions of the discipline are aimed at the formation of professional competences necessary for innovative activities and the introduction of modern research technologies in agronomy, using methods and techniques of genetic, biotechnological, selection, laboratory, field, vegetation research. Methods of mathematical statistics, which are used to evaluate and interpret the results of field, vegetation and laboratory experiments conducted during selection and genetic experiments, are presented. Using the results of the analysis in practical activities, the student must find optimal solutions and give recommendations regarding the creation and cultivation of varieties of agricultural crops depending on specific conditions.

Genetic resources of plants. Tasks and role of plant biodiversity in ensuring sustainable development of crop production, national and global food security. Their creation and preservation. The main forms of conservation of plant genetic resources. In situ conservation – in natural ecosystems. Preservation of the local gene pool on farm – in farms with a traditional way of life. Ex situ preservation – in gene banks and on collection plantations. UN Convention on Plant Biodiversity. International Institute of Plant Genetic Resources, its functions. International Centers for Agricultural Research. Scientific and technical program of Ukraine "Genetic resources of plants", its purpose, main tasks. Establishment of the National Center for Plant Genetic Resources of Ukraine. System of genetic resources of plants of Ukraine. Theoretical and practical bases of introduction. Forms of introduction: naturalization, acclimatization, domestication. The doctrine of the source material, the centers of origin of cultivated plants. Methodological bases of formation, maintenance and use of collections of genetic resources of plants. Seed storage technology and its regeneration. Biological bases of preservation. The concept of source and donor traits. Genetic donors of valuable traits among wild plant species. Certification of plant gene pool samples. Inventory of collections. National catalog. Classifiers-reference books, their use for creation of characteristic databases of agricultural plants.

Agrochemical service in crop production. The purpose of theoretical study of the material and laboratory classes is the formation of a master's theoretical knowledge on agrochemical support and maintenance of agricultural enterprises, the formation of skills of monitoring and application of chemicals in the technological processes of crop production. During the study of the discipline masters, acquire practical skills in controlling the production and use of mineral fertilizers, their transportation and application, the possibility of production and use of organic fertilizers and ameliorants, the peculiarities of the use of chemicals in precision farming. Much attention is paid to the study of technologies for storage and application of mineral fertilizers under extreme conditions of growing crops.

Masters acquire knowledge in management and marketing in agrochemical service, the use of agrochemicals and services in the field of agricultural production service, control of soil condition and the results of the use of chemicals.

Pedagogy and psychology. The purpose of teaching the discipline is the formation of psychological and pedagogical competence of students in matters related to psychological and pedagogical features in the field of agronomy, equipping them with modern educational technologies, methods of creative search for future professionals; formation of interest and readiness for independent knowledge of the problems of didactics, theory and methods of vocational education. The main objectives of the discipline are to acquire practical skills of pedagogy and psychology, necessary for further activities in the field of agronomy, namely: rational planning and organization, the ability to demonstrate basic skills of pedagogical knowledge, generate new ideas, use knowledge of psychology and pedagogy in organizing production activities.

SPECIAL (PROFESSIONAL) TRAINING CYCLE

Compulsory components of EPP

Special genetics of agricultural crops. Planned scientific selection of crops is closely related to a special genetic form, which determines the basis of methods of breeding work. This is because all stages of breeding – obtaining the source material, selection of pairs and selections in breeding, methods and types of hybridization, ways to stabilize the variety and other sections are based on genetically regulated processes. Special genetics is the genetics of individual species and genera, it systematizes knowledge of genomic and karyological analysis, genetics of traits, mutagenesis, polyploidy, inbreeding and heterosis, population genetics (natural and varietal) and other issues of genetics of this species. The course includes genetic determination and mechanisms of inheritance of plant traits (cereals, legumes, cereals, and fodder, vegetables, and fruit crops). Genetic centers of origin, taxonomy and karyology of species. Genetics of morphological, physiological and biochemical traits. Features of reproductive systems, the presence of a polyploid series among species of the genus. Genetic mechanisms of plant resistance control against major pathogens and pests. The study of plant genetics in plants goes in two directions: the analysis of individual genetics and the study of population genetics.

Genetics immunity against diseases and pests. Introducing disease-resistant varieties into practice is the most effective method of plant protection. However, a number of varieties with a significant degree of resistance have been created without understanding the mechanisms of this resistance. One of the means of achieving an understanding of the mechanisms of plant resistance is the accumulation of fundamental knowledge about the defense mechanisms of host plants and the tactics used by the pathogen to overcome these barriers, as well as the application of this knowledge for practical protection against diseases. Therefore, the use in breeding for immunity of the latest achievements of science, which concerns the relationship between the plant and the pathogen both at the biochemical level and at the level of the relationship between the host plant and the pathogen in environmental conditions, is a priority task that will allow solving the problem of creating complex immune varieties against harmful organisms. The use of the methodology of creating artificial infectious backgrounds to evaluate the resistance of plants against the main pathogens and invasive backgrounds against pests will speed up the process of creating new, complex-resistant varieties and hybrids of agricultural crops.

Special breeding of crops. The discipline covers the main issues of special selection of crops grown in Ukraine: cereals (wheat, rye, barley, oats, triticale and corn), legumes (peas, soybeans), cereals (buckwheat, millet), technical (sugar beets), oilseeds

(sunflower, rapeseed), spinning (flax), tubers (potatoes), etc. For each culture, general information about the origin and achievements, tasks and directions of selection, source material, models of varieties, selection methods (intraspecific hybridization and work with hybrid offspring, interspecific hybridization, methods and techniques of crosses, use of mutagenesis and polyploidy, methods and schemes of selection from mutant and polyploid populations), schemes of selection process and their methods and techniques, evaluation of selection material (productivity, length of vegetation period, product quality, etc.), selection technology of individual crops taking into account their biological and genetic features, as well as the existing gene pool.

State qualification examination with the basics of intellectual property. The discipline provides an introduction to the international and domestic legal regulation mechanism for the protection of rights to plant varieties, which will allow students to familiarize themselves with the process of acquisition, registration and implementation of plant variety rights in Ukraine and in the member countries of the International UPOV Convention. The theoretical and practical course of the discipline will make it possible to master the diagnosis of quantitative and qualitative morphological features and physiological properties of varieties, productivity, resistance to diseases, pests, environmental stress factors; general and special legislation of Ukraine in the field of protection of rights to plant varieties; general bases, provisions, principles and procedure for acquiring rights to plant varieties; the scope of intellectual property rights for the variety; exclusion from the breeder's rights; validity period of legal protection of plant varieties, conditions for shortening the protection period; approaches to the registration of varieties created with the use of GM structures in the EU and USA.

Market of varieties and seeds. The quality and cost of seeds largely determines the overall efficiency of crop production due to the rather high share of cost in the cost structure of growing agricultural crops. The export of seed material is about 10% of the global domestic markets. There are 71 seed-exporting countries and 111 seed-importing countries, whose monetary receipts and expenditures on seed material amount to more than 1 million dollars. Currently, the Annual List of Varieties, published under the auspices of the Organization for Economic Cooperation and Development (OECD), includes about 45,000 varieties and hybrids representing 197 species. In this regard, there is a need for high-quality and rapid reproduction of productive and heterozygous seeds and their sale in market conditions. The main task of the discipline is: training specialists for independent work in agricultural enterprises, companies and firms that reproduce seed material, grow it, bring it to sowing conditions, deal with its implementation, marketing, packaging, drawing up relevant documents, have their own factories and calibration lines, packaging and services for the sale of seeds.

DNA technology and biosafety. The subject of the discipline is molecular phenomena and processes that allow at the genetic level to identify, modify organisms, diagnose their genetic changes and purposefully transform the genome to create new high yielding, high-quality varieties and hybrids of crops. The discipline develops knowledge on the methodology of obtaining recombinant DNA, cloning of DNA fragments, creation of new genotypes of varieties, hybridization, transgenesis, gene identification, molecular diagnostics, study of genetic diversity and genotyping of varieties and hybrids using DNA markers. Along with the wide possibilities of DNA technologies, there is a threat of negative impact of biological factors on the population and the environment, the possibility of threats of biological origin associated with the development of modern biotechnology and the lack of a clear procedure for genetic engineering.

Optional components of EPP

Free choice according to specialty

Adaptive plant breeding. The main goal of studying the discipline is to provide students with knowledge of the basics of the formation of the phenotype of plants as a result of the influence of environmental factors and the inheritance of traits. How patterns of inheritance change, deviations occur in organisms under the influence of various abiotic factors of the environment. What changes occur under the action of mutagenic factors. Consolidate theoretical knowledge by forming practical skills in the field of studying the mechanisms of action of environmental factors in populations. The discipline forms knowledge of the theoretical foundations of adaptive selection, mechanisms of plant adaptation (ontogenetic, morphoanatomical), ecological stability of plants. Peculiarities of plant adaptation to the main environmental factors (temperature, water stress, light, edaphic factors). The role of source material in selection for adaptability. Creation of genetic collections of adaptive traits. Creating a collection of marker genes.

Genetics of quantitative traits. The course provides knowledge of the scientific foundations of the theory of genetics of inheritance and selection of utilitarian breeding traits of cultivated plants. The main task is an in-depth theoretical and practical study of the theory of genetic improvement of cultivated plants on quantitative grounds. Having studied the discipline the student will know: statistical regularities of probability; dynamic processes of inheritance patterns; stochastics of the mutation process; genetic structure of populations; laws of change of genetic structure of populations and their determining factors; statistical characteristics of populations with continuous variation; inheritance; selection by quantitative characteristics, its mechanism and results; the influence of different crossing systems on the structure of populations, inbreeding and crossbreeding; genotypic and phenotypic correlations; how to use statistical reference books and reference tables.

Ecological genetics. The introduction into practice of varieties resistant to abiotic and biotic factors of the environment is the most effective method of increasing the productivity of varieties. The explanation of the mechanisms of this resistance is the accumulation of fundamental knowledge about the genetics of plant defense mechanisms. Studying the genetics of physiological and biochemical mechanisms that ensure the morphological resistance of plants to stresses, methods of evaluation and creation of source material adaptable to extreme environmental conditions is the main task of the discipline. Therefore, the use of the latest achievements of genetic science in selection for resistance to abiotic stresses and biotic factors, both at the biochemical and genetic levels, is a priority task that will allow solving the problem of creating varieties of agricultural varieties that are adaptable to stressful environmental conditions.

Breeding and seed production of bioenergy crops. Study of genetic, biotechnological and physiological-biochemical methods of creating new starting materials for selection of bioenergy crops (miscanthus, candlegrass, sugar sorghum, sugar and fodder beets, etc.). Features of selection of bioenergy crops for the production of different types of biofuels: liquid (bioethanol, biobutanol), gaseous (methane, synthesis gas) and solid (fuel pellets, briquettes, wood chips). Creation of competitive, highly productive, resistant to a complex of adverse environmental factors varieties and hybrids suitable for mechanized production technologies. Development of fundamentally new resource- and energy-saving technological processes and technologies for growing and harvesting bioenergy crops and their seeds, adapted to soil and climatic zones, in order to achieve maximum genetic potential of crop productivity and high reproduction rate of planting material.

Breeding and seed production of vegetable, fruit and berry crops. The course provides knowledge on the methods of selection of vegetable, fruit and berry crops with

the improvement of quality yields with the receipt of environmentally friendly products. Establishing optimal methods for obtaining the source material. Formation and development of selection programs for obtaining and introduction into production of improved varieties and hybrids. Identification and prompt search for the most economical way to transform the natural initial genotype into the desired one. Application of genetic methods in breeding practice to create new synthetic cultures. Obtaining in practice new varieties with signs of high anthropoadaptability. A study of the combination of high productivity and endurance of plants. Installation for fruit and vegetable crops to accelerate the rate of selection with greenhouses to accelerate the onset of fruiting seedlings of perennial breeds. Mastering the methods of intraspecific and remote hybridization. Ability to make schemes of arrangement of standards and grades in repetitions of selection nurseries and varietal tests. Mastering the organization and technology of seed production, varietal quality control of seeds and crops and documentation of varietal seeds. Solving the issue of advertising new varieties and hybrids for the implementation of varietal replacement of fruit and vegetable crops.

Breeding and seed production of fodder crops. Breeding and seed production of fodder crops is a set of methods for research and creation of new forms of fodder crops and maintenance of their seed production, based on modern advances in biological sciences, which allow purposeful research and forms with new features, study certain properties of new forms and give them new signs. Breeding and seed production of fodder crops is an integral part of traditional breeding and genetics, together they are able to raise the productivity of fodder crops and, thus, agriculture to a qualitatively new level. Therefore, a modern specialist must master all methods of agricultural research and effective selection of fodder crops and maintaining seed production of new varieties and hybrids. The discipline should provide students with a set of knowledge about the peculiarities of selection and seed production in perennial legumes and cereals, cereals and fodder roots. To train future specialists to plan and develop the selection process, to place breeding nurseries of forage crops, to use crop-specific methods, to conduct preliminary assessments and to use rapid methods and other measures to accelerate and effectively conduct selection research with forage crops.

Seed certification and standardization. The discipline provides disclosure of the essence of Seed Certification Schemes according to the requirements of the International Organization for Economic Cooperation and Development (OECD), which provides a set of procedures, methods and techniques to guarantee varietal and sowing qualities of seeds of all categories in the process of propagation, variety authenticity and varietal purity. The use of plant variety identification methods ensures the establishment of variety authenticity, degree of homogeneity and hybridity. Knowledge of the discipline will consolidate practical skills in the application of plant variety identification methods (morphological description, electrophoresis, DNA markers, PCR analysis, etc.) in varietal certification (field inspection and POST-control) and in subsequent morphological, biochemical, genetic certification of varieties, international varieties, commercial circulation of seeds in the mode of import-export. The breeder, the expert, the scientist and the seed producer can apply the acquired knowledge in the practical activity.

Formation of varietal resources. The discipline gives the student the opportunity to familiarize himself with the role of varietal resources in ensuring the sustainable development of crop production and food security of the state. The principles, methodical approaches, peculiarities and stages of the formation and maintenance of varietal collections in long-term storage and field storages, international agreements, legislative acts of Ukraine, according to which the transboundary movement of seeds and planting material is carried out: the Convention on Genetic Diversity, the International Agreement on Genetic Resources are outlined. plants for food production and agriculture, the Nagoya Protocol on the Regulation of Access to Genetic Resources and Shared Use; Standard

agreement on the transfer of material and national documents regulating the supply of samples for the purposes of examination, research and exhibition. Varietal resources in Ukraine, adaptation of domestic seed production to international schemes and procedures using classifiers, directories, atlases, methods of identification of plant varieties will be studied. The relationship between the owners, producers and consumers of varietal resources will be studied.

Inspection supervision and control. State supervision (control) over the state of compliance with the requirements of the legislation in the field of seed production and nursery is carried out by the State Inspectorate of Agriculture of Ukraine and its territorial bodies. Within the discipline the procedures of planning and implementation of planned and unscheduled measures of state supervision (control) on checking the state of compliance of economic entities with the legislation in the field of seed and nursery, organizational measures to be carried out before inspections, general requirements for their implementation are studied, as well as requirements for the design of materials based on the results of inspections.

Technical support of genetic research. The purpose of teaching the discipline of coverage of ideas about modern platforms for genetic analysis, basic technical means and platforms for the primary nucleotide sequence of genomes, fragment genetic analysis, modern devices for microscopy and visualization of molecular processes; provide practical skills of bioinformative analysis of sequencing data and genome analysis.

Cytology. The course gives an idea of the general laws of organization of cellular structures and intracellular processes, universal for all cells, the organization of regulatory mechanisms of the whole cell, knowledge of structural and functional organization of tissues and tissue homeostasis using modern physicochemical and histological research methods. Currently, cytology is a complex biological discipline that develops various aspects of the doctrine of the cell. The purpose of the discipline "Cytology" is to form students' ideas about the relationship between organism and cell at different levels of organization of living matter, the system of integration mechanisms that regulate the development and activity of cells in a multicellular organism; gaining knowledge about the histogenesis, structure and function of plant tissues; formation of ideas about the general principles of tissue organization and preservation of tissue homeostasis when the environment changes; determining the importance of the structural and functional level of tissue organization for understanding the basics of the organism.

Biochemistry in plant breeding. Depending on the approach to the study of living matter, biochemistry is divided into static, dynamic and functional. Static studies the chemical composition of organisms – composition, structure, quantitative content in certain biological objects. Dynamic studies the transformation of chemical compounds and interrelated energy transformations in the life of living organisms. Functional – clarifies the relationship between the structure of chemical compounds and the processes of their transformation on the one hand and the function of subcellular structures, specialized cells, tissues or organs that include these substances – on the other. The purpose of the discipline – to provide fundamental knowledge about the structure and properties of macromolecules that are part of plants, their chemical transformations and the importance of these transformations to understand the physicochemical basis of life, molecular mechanisms of heredity and adaptation of biochemical processes in organisms to changing environmental conditions; to form an understanding of the unity of metabolic processes in the body and their regulation at the molecular, cellular and organismal levels.

**Training of masters of sciences
in branch of knowledge "Agricultural science and food"
in specialty 201 "AGRONOMY"
educational program "AGROHIMSERVICE IN PRECISION
AGRICULTURAL PRODUCTION"**

Form of Training: – Full-time EPP	Licensed number of persons: 30
Duration of Training: – Full-time educational and professional program	1 year and 4 months
Credits ECTS: – educational and professional program	90
Language of Teaching	Ukrainian, English
Qualification	Master of Agronomy

The concept of training

The agrarian sector is the foundation of the national economy in Ukraine and the main consumer of personnel in the labor market. The competitiveness for domestic agricultural enterprises is determined by the international market through the innovation of agrotechnologies in crop production systems. Their basis is the introduction of modern agrochemical, agronomic and technological solutions based on the effective management of agrarian resources. Such technologies can be realized by experts in the field of Agrochemical Service for precision agriculture. Specialists in this field can carry out the following tasks of professional activity: development of technologies and use of tools of complex agrochemical monitoring, assessment of soil quality and field potential; efficient use of GIS technologies and remote sensing technologies, provision of differentiated fertilization and the use of mobile applications for effective management decisions for the rational use of agrarian resources.

Areas of employment of graduates

The industrial field of the crop production industry, agricultural enterprises, state institutions of soil fertility protection and agrochemical services of the crop industry, companies engaged in the sale and maintenance of equipment for precision agriculture.

Graduates can work in the system of regional branches of research institute "Ukrzemproekt", in the system of soil protection service on the positions of engineer-agrochemists; in the banking spheres at the positions of soil evaluation experts; in the system of quarantine services and customs control of Ukraine in positions related to the assessment of the quality of soils and the environmental state of the environment; in commercial and government agencies that carry agrochemical service agroenterprises in the conditions of precision agricultural production, conduct comprehensive agrochemical diagnostics and diagnostics of plant nutrition at the positions of managers- agrochemist, managers-promoters, agrochemists-analysts, plant nutrition consultants, specialists to provide services for precision farming.

Practical training

Students undergo practical training in leading agribusinesses: LCD "Agrilab", «IST AGRO», LCD "Biotech LTD", "Tak AGRO", "Agroregion", "Yatran", Mironivsky Hliboproduct, NAAN Research Institutes and NAS of Ukraine, educational and scientific laboratories of the NUBiP departments of Ukraine.

Proposed Topics of Master's qualification Theses

1. Management of the level of nitrogen content in the soil for the cultivation of winter crops.
2. Remote monitoring of plant condition.
3. Geo identification of problem areas of soil fertility.
4. Geo identification of heterogeneous soil fertility areas.
5. Plant productivity management for differentiated fertilization.
6. Monitoring of soil fertility level in precision agroproduction.
7. Differentiated fertilization for cultivating crops.

**Curriculum of Master training
in educational program “Agrohimservice in precision agricultural production”
(educational and professional program of master's training)**

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
GENERAL TRAINING CYCLE			
Compulsory components of EPP			
CC 1	Technological support of agrochemical service	5	exam
CC 2	Spatial heterogeneity of soil cover	6	exam
CC 3	Agrochemical service in crop production	8	exam
Total		19	
Optional components of EPP			
<i>Free choice according to the preferences of students from the list of disciplines</i>			
OCP 1	Choice from the catalog 1	4	test
OCP 2	Choice from the catalog 2	4	test
Total		8	
SPECIAL (PROFESSIONAL) TRAINING CYCLE			
Compulsory components of EPP			
CC 4	Physiology and diagnostics of plant nutrition	9	exam
CC 5	Agrochemical soil monitoring	6	exam
CC 6	Remote monitoring of agrophytocenoses	6	exam
CC 7	GIS in agrochemical service	6	exam
CC 8	Differentiated use of agrochemical resources	6	exam
CC 9	Production Practice	10	differentiated test
CC 10	Preparation and defense of master's qualification thesis	4	
Total		47	
Optional components of EPP			
<i>Free choice according to specialty</i>			
OC 1.1	Software solutions in agrochemical service	4	exam
OC 1.2	Information technology in plant nutrition		exam
OC 1.3	Digitization of agrochemical service		exam
OC 2.1	Logistics of fertilizer application	4	exam
OC 2.2	Intrasoil and foliar application of fertilizers		exam
OC 2.3	Tactics of using liquid fertilizers		exam
OC 3.1	Nutrition strategies in the area of risky agriculture	4	exam
OC 3.2	Fertigation and irrigation		exam
OC 3.3	Information technologies of moisture supply and plant nutrition		exam
OC 4.1	Fertilizer market potential	4	exam
OC 4.2	Potential risks of using counterfeit fertilizers		exam
OC 4.3	Fertilizers in precision agriculture		
Total		16	
The total amount of compulsory components		66	
The total amount of optional components		24	
THE TOTAL AMOUNT OF EPP			90

Annotations of disciplines in the curriculum

GENERAL TRAINING CYCLE Compulsory components of EPP

Technological support of agrochemical service. The goal is the formation of theoretical knowledge and practical skills of masters in the organization of the main technological cycles of agrochemical service, effective and rational selection of technical means, formation and synchronization of agricultural units with the entire logistical scheme of the use of agrochemical resources, ensuring quality control of agrochemical methods taking into account soil properties, biological features agricultural crops, physicochemical processes of interaction of agrochemical resources with soils and the surrounding environment. The final goal of the discipline is the formation of skills of future specialists in drawing up technological projects and maps of technological support for conducting techniques for the use of agrochemical resources.

Spatial heterogeneity of soil cover. The goal is to form the future specialist's theoretical knowledge about the concept of soil heterogeneity, as well as practical skills in establishing the types and causes of soil heterogeneity, soil properties that can be managed and changed in the near future, and the consequences of soil heterogeneity in crop production.

Agrochemical service in crop production. The goal is to generalize agronomic knowledge from the perspective of service and logistics components. Acquiring practical skills of organization, provision and implementation of technologies for managing the productivity of plants and soils, as a prerequisite for the successful implementation of precision agriculture. chemical land reclamation, logistical support for the use of mineral and organic fertilizers. management of plant residues and sideration in farms, implementation of services for the cultivation of main agricultural crops, including under extreme conditions (ensuring high stress resistance of plants) and crop fertilization systems for various tillage systems (plowing, mini-till, no-till, strip -till). In the course of studying the discipline, the most optimal technological solutions of techniques are considered with an emphasis on modern plant management systems in general, and precision agriculture in particular.

SPECIAL (PROFESSIONAL) TRAINING CYCLE Compulsory components of EPP

Physiology and diagnostics of plant nutrition. The purpose for the study of theoretical material and the laboratory course for discipline is the formation for a future specialist of theoretical knowledge about the physiological processes of plant nutrition, methods of its diagnostics (strategic, operational, soil, visual, biological, functional, etc.), as well as acquiring practical skills in planning, organization and realization of complex agrochemical diagnostics for crop nutrition, allocation of zones in deficit of macro-, meso- and microelements within the field, selection of the most optimal their methods and technical support for the diagnosis of various groups of agricultural crops, the use of modern tools in this area agrohimservice, the practical skills to maintain and maintain the functional activity of devices for various types of diagnosis of plant nutrition, development of professional documentation.

Agrochemical soil monitoring. By studying the lecture and laboratory course of the discipline, future specialists form theoretical knowledge and practical skills regarding the assessment of soil fertility indicators. They study and acquire skills in methods of planning and monitoring of soil conditions, namely: methods of sampling, planning of sampling routes, grid of elementary plots and their area according to soil zones, microrelief, variety of soil variations, intensity of agricultural use, fertilization system;

requirements for sampling, sampling periods, number of samples, depth, coding and binding of samples; preparation of samples for agrochemical analysis and planning and selection of laboratory techniques and methods analysis using domestic, international classical and innovative methods of determining soil fertility indicators; development of agrochemical cartograms based on the results of monitoring and planning of the potential productivity of agricultural crops, the potential of the field, the planned productivity of crops. The student acquires the ability to determine critical, limiting factors within the field, to have knowledge of the optimal content and ratio of nutrients, their effective use in accordance with the biological requirements of the culture in order to realize the genetic potential.

Remote monitoring of agrophytocenoses. The educational discipline has the goal of forming qualified theoretical knowledge, methodological understanding and practical skills of agrochemical survey of plant cover, using various methods and means of remote sensing - mobile spectral analysis devices, ground sensor equipment, unmanned aerial vehicles (UAVs), satellites. The lecture course reveals methodical and methodological approaches to remote monitoring of agrochemical parameters (mineral nutrition of plants, individual indicators of soil fertility, efficiency of application and action of fertilizers). Laboratory classes allow a master's student to work out the entire algorithm of conducting such examinations in practice, learn to rationally interpret the obtained data for practical application.

GIS in agrochemical service. By studying the lecture and practical course of the discipline, the future specialist will acquire theoretical knowledge about the possibilities and limitations of GIS and all the analytical processes associated with them, will form an understanding of the importance of scale, projection and topology in terms of the ability to visualize the world. The master will master practical skills in obtaining geospatial data, determining the polygon area, building buffer, raster and vector overlays, calculating landscape indicators, creating maps and using them. To perform these and other functions, learn how to work with software: Manifols GIS, Global Mapper, Agrilab webportal.

Differentiated use of agrochemical resources. This discipline is the final course of the educational program. Mastering it allows the student to acquire theoretical knowledge and practical skills in the implementation of task cards, which are developed in accordance with the results of expertise and complex agrochemical diagnostics, with the aim of managing the productivity of crops, taking into account the intra-field variability of places where plants are grown and optimizing the use of consumables. Modern agricultural machinery controlled by an on-board computer and capable of differentially carrying out agrotechnical operations, devices for precise positioning on the terrain (GPS receivers), technical systems that help to detect the heterogeneity of the field (automatic samplers, various sensors and measuring complexes, harvesting machines with automatic accounting harvest, remote sensing devices for agricultural crops, detailed GIS maps, etc.).

Optional components of EPP

Free choice according to specialty

Software solutions in agrochemical service. The purpose of the educational discipline is for students to acquire the necessary knowledge and skills in the selection and adjustment of software (software), which makes it possible to form a database for each separate field of the economy, analyze them, and obtain information for making decisions with technological implementation. The task of the discipline is to form in students: an understanding of the algorithm of creation and operation of the corresponding software, the ability to create and maintain an electronic log of fields, to form a database for analysis

and prognostic decisions, in order to make timely and effective management decisions - from local to strategic format; practical skills in using up-to-date software, which helps to carry out operational monitoring and tactical management of agricultural production, in particular, assessment of the state of plants during the growing season, detection of signs of nutrient deficiency, establishment of various types of damage, phytosanitary state of phytocenoses etc.

Information technology in plant nutrition. The goal of the educational discipline is for students to acquire the necessary knowledge and skills regarding the system of collecting, storing, and processing data on the supply of plants of a specific culture with nutrients, the correspondence of the onset and passage of phases of growth and development (stages of organogenesis), analysis and use of data for timely, effective management and prognostic decisions. The task of the discipline is to form in students: the ability to use satellite data, with the help of unmanned systems and ground monitoring of phytocenoses, with interpretation in the assessment of providing plants with nutrients; correctly select data from operational and transactional systems; conduct an objective analysis of data, with the formation of reliable conclusions, on the basis of which technological decisions can be made in matters of plant nutrition.

Digitization of agrochemical service. The goal of the educational discipline is for students to acquire the necessary knowledge and skills regarding the use of digital technologies in the field of agrochemical service of agricultural production, for the prompt acquisition of data on the basis of which reliable technological decisions can be made. The task of the discipline is to form in students: the ability to organize the collection of information directly in the field (weather data, indicators of soil condition, plant condition, etc.) in digital format; skills of database filling, storage, selection and analysis in digital format of information of the agrochemical production service system; practical skills in using current tools in digital technologies (gadgets, devices); understanding of the algorithm of selection and processing of information for decision-making in agrochemical service.

Logistics of fertilizer application. The purpose of studying the discipline is the formation of future specialists' understanding of the organizational and logistical processes of applying fertilizers, which are based on knowledge of the mechanisms of transformation of compounds in the soil containing nutrients, changes in the needs of plants in the process of growth and development, the reasons and sequence of assimilation of nutrients. Masters will gain knowledge on the methodology of organizing the introduction of sharp types and forms of fertilizers in the most optimal ways, on operating at different times and ways of using them to optimize plant nutrition.

Intrasoil and foliar application of fertilizers. The goal is the formation of theoretical knowledge and practical skills of masters about the meaning, tasks, methods and peculiarities of the organization of root, in-soil and foliar fertilization. In the course of studying the discipline, theoretical and practical attention is paid to innovative technologies of applying liquid mineral fertilizers by the injection method and using plant-rooting applicators. Students learn the requirements for sprayers, the selection of sprayers and the technique of preparing working solutions. The result of the course is the master's ability to develop technical and technological documentation and build a logistical scheme for root, in-soil and foliar fertilization.

Tactics of using liquid fertilizers. The goal of studying the discipline is the formation of future specialists' understanding of the advantages and features of the use of liquid mineral fertilizers, the chemistry of the interaction of liquid fertilizers with the soil and in solutions or suspensions. Master's students will acquire skills in the organization of the logistics chain from procurement to application to crops according to the phases of growth and development (BBCH), will master the ways of possible losses of nutrients and ways to

overcome them. In addition, they study and select the most optimal methods of their introduction, taking into account the coefficients of the use of power elements and the economic factor of the use process.

Nutrition strategies in the area of risky agriculture. The discipline provides for the formation of masters' understanding of the processes, their intensity in soils and plants under the optimal supply of moisture and its deficiency. In addition, students will acquire practical skills in the use of technologies of effective natural moisture supply, preservation of moisture in the soil and its rational use in the process of growth and development of agricultural plants. In the course of training, masters will gain knowledge on the organization of various methods of artificial optimization of plant moisture supply, their functional capabilities and the combined use of mineral fertilizers with irrigation water, taking into account the biological and varietal needs of agricultural crops.

Fertigation and irrigation. The goal of studying the discipline is the formation of masters' understanding of the processes that occur in soils and plants under changes in the conditions of moistening and nutrition of plants compared to rain. In addition, students will gain knowledge on managing the productivity of agricultural crops through mastering the features of water consumption in the main critical phases of their growth and development and providing them with moisture and nutrients in the most rational ways. Master's students will acquire skills in creating fertilizer solutions, managing their supply schemes to irrigation machines and systems in terms of required doses and ratios depending on the biological needs of agricultural crops, and mastering techniques for maintaining soil fertility indicators in the planned range.

Information technologies of moisture supply and plant nutrition. The purpose of the discipline is to form the masters' understanding of the patterns of distribution and differentiation of soil fertility indicators in the wetting zone and beyond, which have developed under the influence of irrigation, fertilization and technologies for growing agricultural crops in general, the mechanisms of forming plant productivity in conditions of regulated moisture supply. Master's students will acquire skills in collecting, storing, and processing data on the technologies of rational moisture supply and integrated control of irrigation water consumption, intensity and frequency of watering, application of fertilizers and pesticides. In addition, separate modules are aimed at forming the ability to use innovative sprinkler control tools (remote control technologies for irrigation parameters, precise control of irrigation equipment, etc.).

Fertilizer market potential. The purpose of the educational discipline is for students to acquire theoretical knowledge and practical skills regarding the main trends of the fertilizer market in Ukraine and the world, trends in its development, characteristics of the capacity of the fertilizer market, its segmentation and structuring, the dynamics of fertilizer production, the main operators of the fertilizer market, the concept of competitiveness, market risks, peculiarities of pricing and consumption of fertilizers in Ukraine.

Potential risks of using counterfeit fertilizers. The purpose of the course is for students to acquire theoretical knowledge and practical skills regarding possible directions and methods of falsifying fertilizers, as well as the main risks associated with the use of such fertilizers.

Fertilizers in precision agriculture. The goal of the educational discipline is for students to acquire theoretical knowledge and practical skills regarding the requirements for the quality of fertilizers suitable for precision agriculture, the main characteristics of fertilizers, the assortment of such fertilizers, the selection of forms, methods and terms of their application in the technologies of precision agriculture.

**Training of masters of sciences
in branch of knowledge "Agricultural science and food"
in specialty 203 "HORTICULTURE, FRUIT GROWING AND VITICULTURE "
educational program "HORTICULTURE, FRUIT GROWING AND VITICULTURE"**

Form of Training:	Licensed number of persons:
– Full-time EPP	55
– Part-time	20
Duration of Training:	
– Full-time educational and professional program	1 year and 4 months
– Part-time	1 year and 4 months
Credits ECTS:	
– educational and professional program	90
Language of Teaching	Ukrainian, English
Qualification	Master of Horticulture and Viticulture

The concept of training

Training of master's degree students in specialty is oriented at modern and perspective directions of development in horticulture and viticulture. Training of master degree students on specialty foresees the deep specialized training in the sphere of fruit-growing, vegetable-growing in the opened and protected soil. Such specialists, after acquiring special abilities and knowledge of innovative character in this sphere are able to satisfy modern requirements of the society in assortment and production of necessary amount of high-quality fruits and vegetables for internal consumption and to the export, capable to organize and to ensure use of the most progressive modern technologies, both in scientific researches and production.

A graduate in this specialty theoretically and practically trained, has knowledges and skills of modern technologies in the field of horticulture and viticulture.

Areas of employment of graduates

Agricultural enterprises of different ownership, farms, greenhouse complexes, structures engaged in landscape gardening, delivery of equipment, seeds, planting material, crop protection chemicals and materials for orchards, vineyards, greenhouses and research institutions.

Practical training

Students undergo practical training in educational farms of the NULESU: "Agronomy Research Station", "Velika Snitinka Training and Research Farmstead named after O.V. Muzychenko" as well as advanced agricultural enterprises of different ownership forms, University Training Lab "Fruit and Vegetable Garden", Research Institutions of Academy of Agricultural Sciences and National Academy of Sciences of Ukraine, State Pomology and Ampelography Inspections.

Proposed Topics of Master's qualification Theses

1. The selection of varieties for establishment intensive orchards and vineyards by studying their compliance with the requirements of modern horticulture.
2. Analysis of market prospects and growing of niche horticultural crops.
3. Improving rapid technological elements of growing fruits, small fruits, nuts, and vines in nurseries.

4. Rationale and study the stability of varieties to adverse environmental factors.
5. Research reasonable selection of varieties (heterosis or hybrid) different types of vegetables in order to highlight the most suitable for growing conditions in certain areas.
6. Research 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 .
7. Learning new types of vegetables in order to introduce them into production for different areas of use.
8. Improving the technology of growing vegetables in greenhouses.
9. The use of new technologies in greenhouse horticulture.
10. Improve elements of technology of cultivation of edible mushrooms.

**Curriculum of Master training
in educational program “Horticulture, fruit growing and viticulture”
(educational and professional program of master's training)**

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
GENERAL TRAINING CYCLE			
Compulsory components of EPP			
CC 1	Agribusiness and marketing in horticulture, vegetable growing and viticulture	5	exam
CC 2	Methodology and organization of scientific research with the basics of intellectual property	5	exam
CC 3	Quality and logistics at the storage and processing of fruits and vegetables	4	exam
Total		14	
Optional components of EPP			
Free choice according to the preferences of students from the list of disciplines			
OCP 1	Choice from the catalog 1	4	test
OCP 2	Choice from the catalog 2	4	test
Total		8	
SPECIAL (PROFESSIONAL) TRAINING CYCLE			
Compulsory components of EPP			
CC 4	Sustainable horticultural production in the face of global environmental change	10	exam
CC 5	Niche fruit crops	7	exam
CC 6	Rare vegetable and exotic plants of open and closed grounds	10	exam
CC 7	Post-harvest processing of fruits, vegetables and grapes	5	exam
CC 8	Floriculture of open and closed ground	6	exam
CC 9	Production Practice	10	differentiated test
CC 10	Preparation and defense of master's qualification thesis	4	
Total		52	
Optional components of EPP			
Free choice according to specialty			
OC 1.1	Organic fruit growing	4	exam
OC 1.2	Production and certification of planting material		exam
OC 1.3	Special cultivar science		exam
OC 2.1	Hydroponics	4	exam
OC 2.2	Progressive technologies of greenhouses horticulture		exam
OC 2.3	Roseology		exam

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
OC 3.1	Medicinal gardening	4	exam
OC 3.2	Ampelography and grape breeding		exam
OC 3.3	Nut growing		exam
OC 4.1	Mycology and mycorrhization	4	exam
OC 4.2	Programming and forecasting of vegetable crop harvests		exam
OC 4.3	Organic vegetable growing in open and closed soil		exam
Total		16	
The total amount of compulsory components		66	
The total amount of optional components		24	
THE TOTAL AMOUNT OF EPP			90

Annotations of subjects in the curriculum

GENERAL TRAINING CYCLE Compulsory components of EPP

Agribusiness and marketing in horticulture, vegetable growing and viticulture. The course is devoted to commercial activities and marketing strategy in the fruit and vegetable market. Theoretical and practical aspects of commercial activity in the fruit and vegetable market are considered. The methodological and practical issues of marketing support of commercial activities of fruit and vegetable market players are studied. Commercial activity in the fruit and vegetable sector involves a whole chain of operations, such as justification of the need for resources for the production of each type of product, selection of a sales channel, consumers and establishment of economic relations between them, control over the fulfilment of contractual obligations, organisation of sales of fruit and vegetable products and their promotion. The course also focuses on commercial strategies for business entities to improve production efficiency and market competitiveness. In practical classes, masters get acquainted with the development of a business plan as a specific planning document that reflects the organisational and financial income to ensure the production of certain types of goods, works and services. They analyse the production of basic and new types of fruit and vegetables using SWOT analysis as a basis for formulating marketing strategies.

Methodology and organization of scientific research with the basics of intellectual property. The educational discipline is designed to promote the development of rational creative thinking, solving scientific problems that arise in the process of scientific research, at a high methodological level, which is a guarantee of obtaining objective, complete and scientifically based results. Mastering the discipline provides in-depth study and systematic mastering of the main methodological, organizational and technological principles of conducting scientific research, obtaining answers to questions related to the problems of modern science, the organization of scientific research work, the methodology and sequence of writing scientific papers, the rules of their design.

Quality and logistics at the storage and processing of fruits and vegetables. Fruit and vegetable products are important for full nutrition and providing the human body with biologically valuable compounds. However, in order for consumers to receive truly high-quality and safe food products from fruits and vegetables, it is necessary to take into account many factors not only during their cultivation, but also to be able to correctly and efficiently organize logistics, short-term or long-term storage, and apply appropriate processing schemes. The purpose of studying the discipline is the formation of knowledge and skills of future specialists in drawing up logistics schemes during transportation, storage and processing of fruits and vegetables, identifying dangerous factors, critical

control points at all stages of their promotion through the logistics chain, which can affect the quality and safety of fresh or processed fruit and vegetable products in accordance with the HACCP system. The discipline studies a complex of factors that will ensure obtaining high-quality fresh and processed fruit and vegetable products; peculiarities of transport logistics; effective, justified regimes, methods of short-term or long-term storage of fruits and vegetables, optimal ways of their processing with minimal losses in quantity and quality; rules for controlling all technological operations of storage and processing of fresh and processed fruits and vegetables to guarantee their safety for end consumers.

SPECIAL (PROFESSIONAL) TRAINING CYCLE **Compulsory components of EPP**

Sustainable horticultural production in the face of global environmental change. The discipline is one of the newest courses that will provide master's students with a knowledge base on the principles and practices of sustainable (resilient) horticultural production in different regions of the world. The goal of sustainable horticulture is to meet the needs of the current generation for vitamin products while maintaining a balance of economic, social and environmental conditions, without jeopardizing the ability of future generations to meet similar needs. The efforts of modern horticultural farmers on a regional and global scale are aimed at ensuring that the safety and quality of their products meet the highest expectations of the food industry and consumers. Moreover, sustainable crop production practices are aimed at reducing the ecological footprint, minimizing losses in the supply chain, maximizing recycling of production waste, etc. The course also focuses on how climate change will affect the future of fruit production and how Ukrainian horticulturalists can best adapt their operations in the face of increasing water scarcity, further soil degradation, and destabilizing environmental changes. Writing a real-life applied project will allow students to implement their newly acquired practical knowledge.

Niche fruit crops. Features and importance of rare fruit crops for modern horticulture. Systematics and nomenclature fruit plants. Origin and value of niche fruits. Biological features and biochemical composition of fruits. Assortment of niche fruits. Features of reproduction, agricultural technology, harvesting, and fruit processing. Pome crops (quince, chokeberry, hawthorn, Japanese quince, mountain ash, nashi, medlar, serviceberry, etc.). Stone crops (Cornelian cherry, jujube, cranberry bush, elder, bird cherry, black apricot, Nanking cherry, etc.). Small fruit crops (pawpaw, kiwi and hardy kiwis, honeysuckle, magnolia vine, blueberry, seabuckthorn, blackberries, persimmons, barberry, cranberries, golden currants, etc.). Walnuts (precocious walnut with lateral fruiting, hazelnut, almond, chestnut, and other nut crops).

Rare vegetable and exotic plants of open and closed grounds. A specialist in the specialty should be familiar with and oriented in the variety of fruit and vegetable products, which are the main food and export products for tropical and subtropical countries, but little known to the domestic consumer. The discipline studies modern trends in the cultivation of rare vegetable and exotic crops in cultivation facilities, reveals species and varietal composition, features of their cultivation and care, methods of propagation, agrotechnical measures and use of products. The requirements of rare plants for microclimatic parameters and ways to ensure optimal conditions for growing certain crops in open ground, greenhouses and closed rooms are studied.

Post-harvest processing of fruits, vegetables and grapes. Ukrainian marketing systems of fresh fruit and vegetable products in modern conditions have reached the world level and have become complex, structured and dynamic. Requirements for its quality continue to grow. Post-harvest processing is of great importance in the schemes for the supply of fruit and vegetable products from "field to table". The discipline covers questions

on the biological basis of fruit and vegetable crops, which affect quality indicators, its criteria and components. Methods of determining quality are of great importance. Factors that affect quality - variety, time and method of harvesting, technological methods of post-harvest processing. Determination of ripening periods of fruit and vegetable crops. Biochemical changes during ripening and post-harvest processing of fruits and vegetables. Harvesting technology, post-harvest processing of the crop for sale on the example of various types of fruit and vegetable crops. Stages of harvesting and its post-harvest finishing - sorting, washing, cooling, storage, logistics, marketing. Standards of requirements for technologies of post-harvest processing of fruits, vegetables and grapes.

Floriculture of open and closed ground. The history of open and closed ground floriculture are studding. The modern trends in floriculture in Ukraine and in the world. Types of flowering and ornamental plants suitable for cultivation in the open and closed ground, their economic and biological characteristics. Requirements for flowering plants to micro-climatic conditions in greenhouses. Cultivation techniques major industrial flower crops on soil and artificial substrates. Methods reproduction of flowering and decorative foliage plants. Distillation and pots culture floral ornamental plants. The use of growth regulators to improve the decorative flowers, methods prolong life of cut flowers.

Optional components of EPP

Free choice according to specialty

Organic fruit growing. Students will acquire theoretical knowledge and professional skills in horticulture management in accordance with the system of organic fruit growing. The level of development of organic production and its prospects in the regional and global dimension are considered. The leading countries in terms of consumption of organic products are presented. The most common logos of the European, American, and Japanese organic certification systems are presented. The technologies for growing organic products of the main garden crops that ensure environmental friendliness and meet international product quality standards are studied.

Production and certification of planting material. The discipline studies modern intensive and profitable technologies to produce planting material on the example of the achievements of scientific institutions in horticulture in Ukraine and the best foreign technologies. The basis of the course is the study of the system of production of certified healthy planting material for fruit and berry crops to prevent the spread of viral and other intracellular diseases. Students study intensive technologies for growing seed and vegetative rootstocks, modern ways of obtaining planting material for pome, stone fruit, nut and berry crops. The course curriculum also includes the study of standardization of planting material and modern storage technologies.

Special cultivar science. Special cultivar science is an agronomic scientific discipline that comprehensively studies the cultivars of fruit and berry crops with the aim of determining the biological and economic and selection potential of the world's varietal diversity of each crop and developing ways to effectively implement this potential to meet human needs. The study of this discipline will allow future masters-researchers to correctly evaluate non-traditional cultivars, select the best ones for mass reproduction in nurseries and growing in industrial and amateur plantations in different regions of Ukraine, maintain varieties and improve them with the help of clonal selection, purposefully use their products, determine donor varieties and sources of valuable traits for use in the selection process, to know the basics of creating genetic collections of resources and be able to use them in the implementation of selection programs, to know the methodology of monitoring the fruit and berry market. The task of studying the discipline consists in providing master researchers with theoretical and practical knowledge on the biology of non-traditional cultivars of fruit and berry crops, maintenance of existing cultivars in their type and further

improvement through clonal selection; zoning on the basis of production and biological study in a specific region and determination of the intended purpose of products, creation of genetic collections, selection of varieties for use in selection, monitoring of the fruit market.

Hydroponics. Vegetable crop cultivation without soil, methods, nutrient solutions, substrates, which has its own characteristics in contrast to cultivation on soil are studied in the discipline.

Progressive technologies of greenhouses horticulture. New developments and best practices in the greenhouse industry are studied.

Roseology. The discipline reveals the history of the spread of the rose and its species. Describes the largest rose gardens in the world and the mechanism of creating new varieties. The question of the rose's requirements for environmental conditions and methods of its regulation are considered. The issue of rootstocks and their compatibility with cultivated varieties, the variety of groups and forms of roses, methods of its reproduction and features of pruning are studied. The peculiarities of the cultivation of individual groups of roses in cultivation facilities by soil and hydroponic methods, as well as a potted culture, are revealed. The issue of plant care, pest protection and disease control is covered.

Medicinal gardening. Fruits are an important source of nutrients and biologically active substances necessary for human life. They are valuable not only for a balanced diet but also for therapeutic, preventive, and therapeutic purposes. In amateur gardens, fruit plants with a high content of biologically active substances provide gardeners with the necessary products. Industrial gardens provide raw materials for the pharmaceutical industry. Students' knowledge of the species and varietal composition of medicinal fruit crops will contribute to the development of this area of horticulture.

Ampelography and grape breeding. Studying the course will allow you to master the theoretical foundations of an ampelography and grape breeding. Students will gain practical skills in describing and identifying grape varieties and rootstocks using OIV. They will thoroughly master the biological and production properties of table and technical varieties popular in Ukraine and major grape regions of the world. The basics of genetic research on the development of new disease- and pest-resistant grape varieties and rootstocks are considered. The discipline will develop students' ability to identify, formulate and explain problems specific to the field of an ampelography and to propose and consistently interpret solutions to overcome them.

Nut growing. The discipline aims to give students knowledge of nut growing, concerning the main nut crops, primarily walnuts, as well as hazelnuts and almonds; introduce students to other nut plants. Characteristics of nut crops consist of a systematic position and classification; varietal composition; morphological, biological and ecological features; basics of reproduction; technologies for planting gardens, caring for plantations, harvesting and processing, and characteristics of the biochemical composition of nuts.

Mycology and mycorrhization. Directions of mycological research in the perspective of cultivation of edible mushrooms. Isolation of a pure culture from the fruiting body and seed mycelium. Maintenance of pure collection cultures. Study of cultural and morphological properties of mycelial colonies of edible mushrooms as an object of cultivation. Deep culture. Preparation and storage of seed mycelium. Mycorrhiza is a fundamental property of plants to exist due to symbiosis with mycological microflora. The influence of mycorrhiza on the development of agricultural crops. Types of mycorrhiza. Identification of mycorrhiza Use of arbuscular fungi for inoculation of the root system of agricultural crops. Correction of plant growth for optimal formation of mycorrhizae.

Programming and forecasting of vegetable crop harvests. The lecture course on the discipline takes a central place in the modeling of the "vegetable culture - soil -

weather - climate - yield" system. The main task of studying the discipline consists in forming the student's knowledge on programming a certain level of yield of vegetable crops. The lecture course consists of twelve topics that reveal modern approaches to this problem and aim the student at independent work with the literature and methods of growing vegetable crops with the subsequent production of products that would meet sanitary standards. In practical work, the student programs the given yield on the basis of ФАР, hydrothermal regime, chemical composition of the soil, doses of applied fertilizers and technological support.

Organic vegetable growing in open and closed soil. Teaching the discipline "Organic vegetable growing in open and closed soil" reveals the issue of organic production, the level of global development of organic production and its prospects for Ukraine. Presentation of the main technologies for growing organic products that ensure environmental cleanliness and meet international quality standards. Leaders among countries in the consumption of organic products are given. The most common logos of the European, American and Japanese organic product certification system are presented. The export potential of the sector is estimated at 50 million euros. The main consumer countries of Ukrainian "organics": Germany, Austria, Poland, Italy, France, Netherlands, Denmark, Switzerland, USA, Canada. Organic lifestyle and organic products have become one of the most powerful trends of recent decades: eat natural food, use natural cosmetics, wear clothes made of natural fabrics, use furniture made of natural materials.

FACULTY OF VETERINARY MEDICINE

Dean – Doctor in Biology, Professor, Academician of NAAS of Ukraine Mykola Tsvilikhovskyy

Tel.: (044) 527-82-31

E-mail: m_tsvilikhovsky@nubip.edu.ua

Location: Building № 12, room № 324, «G»

Faculty organizes and controls educational process of preparation for the Masters educational program to the specialties:

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Graduating departments:

Anatomy, histology and pathomorphology animal named after acad. V.G. Kasyanenko

Tel.: (044) 527-86-17.

E-mail: museum@nubip.edu.ua

Head of Department – Doctor of Veterinary Sciences, Professor Oleg Melnyk

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 Oleksandr Valchuk

Epizootiology, microbiology and virology

Tel.: (044) 527-80-10

E-mail: epizootology@nubip.edu.ua

Head of Department - Candidate of Veterinary Sciences, Associate Professor Volodymyr Melnyk.

Pharmacology, parasitology and tropical veterinary

Tel.: (044) 527-83-65

E-mail: parma@nubip.edu.ua

Head of Department - Candidate of Veterinary Sciences, Associate Professor Vadym Ishschenko

Therapy and clinical diagnosis

Tel.: (044) 527-87-92

E-mail: grushanska_ng@nubip.edu.ua

Head of Department - Doctor of Veterinary Science, Associate Professor Nataliia Grushanska

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 Mykola Malyuk

Veterinary hygiene named prof. A.K. Skorokhodko

E-mail: kucheruk_md@nubip.edu.ua

Head of Department - Candidate of Veterinary Science, Associate Professor Mariia Kucheruk

**Training of masters of sciences
in branch of knowledge "Veterinary medicine"
in specialty 211 "VETERINARY MEDICINE"
educational-professional program "VETERINARY MEDICINE"**

Form of training: – full-time	Licensed number of persons: 350 (based on secondary education)
Duration of training	6 years
Credits ECTS	360
Language of teaching	Ukrainian, English
Qualification	Doctor of veterinary medicine

The concept of training

Means training of highly qualified specialists in veterinary medicine, quality and safety of animal products in accordance to international standards. Professional herd health management, issues of quality and safety of animal products during its production, transportation, processing, storage and marketing. Elaboration and implementation in practice of innovative methods of prevention, diagnostics and treatment of animal diseases.

Educational-professional programs of master's training

***Optional Block "Preventive veterinary technologies
of Animal Health Providing"***

The program includes training of professional doctors of veterinary medicine who possess knowledge required for veterinary service of owners of productive animals and poultry, horses, small animals and who is ready to analyze the epizootic situation, carry out preventive measures and diagnostic tests, to ensure the provision of medical care the animals suffering from infectious and non-infectious pathology.

Areas of employment of graduates

The field of employment of graduates of the program can be specified professional activities in the state veterinary medicine in rural areas (hospitals veterinary medicine, paragraphs, sections), a private veterinary practice to meet the needs of owners of productive veterinary service and small animals, farms and collective farms.

Optional Block "Veterinary welfare of cattle, sheep and goats"

The program provides training of professional masters in cattle, sheep and goat farming and aimed up to the formation of veterinary knowledge and skills to implementation and using of innovative technologies in nutrition, genetics, breeding, biotechnology and ruminant reproduction and ensuring of preventive technologies from noncontagious and contagious diseases of ruminants.

Areas of employment of graduates

Professional activity of expert due to master's program means working in manufacturing sector of employment associated with modern highly technological enterprises and dairy companies, complexes with beef, lamb and sheep, production, farms that specialized on growing of goats and the production goat farming.

Optional Block "Veterinary welfare of dogs and cats"

The aim of program is to train a doctor of veterinary medicine who has knowledge of biology of dogs and cats, their housing, feeding and breeding, also to study the modern methods of diagnosis and prevention of contagious and non-contagious diseases, effective schemes of therapy for small animals.

Areas of employment of graduates

Field of graduate`s practice includes official dog breeding by Ministry of Internal Affairs and the State Border Service, kennels for dogs, dog clubs, shelters for small animals, veterinary clinics for small animals, private service for owners of small pets.

Optional Block "Veterinary laboratory diagnostic"

The aim of the program is to train of highly qualified specialists in laboratory diagnosis of infectious diseases, microbiological (bacteriological, virological) study of materials and foodstuffs, animal feed and environmental objects.

The basic task of the program is to master modern methods of detection of bacteria and viruses, the formation of future professionals in the environmental and of biological thinking, knowledge of their possible essence of phenomena caused by microorganisms (viruses) in animal organisms, raw materials, food and various environmental objects.

Areas of employment of graduates

Microbiological laboratories , providing diagnostic tests in veterinary medicine (state laboratories of veterinary medicine) and general sanitary practice, providing microbiological control of animal products, industry labs (poultry farms, incubator stations, pig farms, companies producing animal feed), laboratories of food industry.

Optional Block "Veterinary pharmacy"

In accordance to their future master's degree in veterinary pharmacy should be ready for creative and professional pharmaceutical activities in the sphere of veterinary medicinal products, providing of their research, development, production, packing, storage, transportation, state registration, certification, standardization and quality control, sale, marketing, use and disposal of medicines which came shelf life.

Areas of employment of graduates

Professional activity of Masters in Veterinary Pharmacy can be productive (pharmacy, pharmaceutical and chemical-pharmaceutical companies, etc.).organizational and managerial, supervisory (licensing, certification, registration), the total pharmaceutical practice (city and district veterinary pharmacy, pharmacy in rural areas, veterinary pharmacies in therapeutic and diagnostic centers and clinics), information and education, research.

Optional Block "Scientific-fundamental andapplied problems of veterinary medicine"

The program aims to train veterinary-scientist who has the necessary knowledge for the scientific support of fundamental and applied veterinary medicine. Future expert competence includes the knowledge and skills for obtaining, cultivation, storage and usage of cells, including stem cells to restore the abnormal animal tissue, diagnostic investigation using cell cultures and tissues; applying of acquired knowledge and skills in research and development regulations.

Areas of employment of graduates

A further study in graduate school on fundamental and applied scientific specialties of veterinary and biological profiles, professional work in veterinary oriented research institutions, veterinary, medical and biological research laboratories, Ukrainian laboratory of quality and safety of agricultural products, genetic and breeding centers, veterinary clinics for small animals and horses that use cellular technology in therapy and transplantology.

Practical training

The bases of practical training of students is educational, scientific, educational scientific industrial laboratories of university basic institution (Kiev), its separated units, primarily educational and experimental farms of the University ("Velykosnitynske educational and experimental farm named after O.V. Muzychenko, "Agronomic Research Station", Teaching and Research Farm "Vorzel" Nemishaevo Agricultural College), where there are held laboratory and practical classes, educational and industrial practice of students. In addition, the faculty has bilateral agreements with private clinics for small animals, agricultural enterprises of different ownership forms, which are used as a basic for practical training.

Curriculum of Master training in educational program "Veterinary medicine" (educational and professional program of Master's training)

Code n/a	Components of the educational-professional program (educational disciplines, course projects (paper), practice, qualification work)	Amount of credits ECTS	The final control
GENERAL TRAINING CYCLE			
Compulsory components EPP			
CC 1.	Inorganic chemistry	4	exam
CC 2.	Biophysics	4	exam
CC 3.	Latin language (terminology)	4	exam
CC 4.	Organic chemistry	4	exam
CC 5.	Genetics	4	exam
CC 6.	History of Ukrainian nationhood	4	exam
CC 7.	Ukrainian language (for professional purposes)	4	exam
CC 8.	Philosophy with the basics of logic	4	exam
CC 9	Foreign Language	4	exam
CC 10.	Work and life safety	4	exam
CC 11.	Methodology and organization of scientific research on the basics of intellectual property	4	test
Total		44	
SPECIAL (PROFESSIONAL) TRAINING CYCLE			
Compulsory components of EPP			
CC 12	History of veterinary medicine	4	test
CC 13	Ecology in veterinary medicine	4	test
CC 14	Animal anatomy	9	exam
CC 15	Cytology, histology, embryology	6	exam
CC 16	Basics of breeding animals	4	test
CC 17	Veterinary microbiology	4	exam
CC 18	Biochemistry of animals with basics of physical and colloid chemistry	6	exam
CC 19	Physiology of animals	7	exam
CC 20	Animal alimentation	4	test
CC 21	Veterinary immunology	4	test
CC 22	Veterinary virology	4	exam

MASTER CURRICULA AND TRAINING PROGRAMS

Code n/a	Components of the educational-professional program (educational disciplines, course projects (paper), practice, qualification work)	Amount of credits ECTS	The final control
CC 23	Hygiene of animals	4	exam
CC 24	Animal welfare, ethology and professional ethics	4	test
CC 25	Pathological physiology	6	exam
CC 26	Operative surgery, topographic anatomy and anesthesiology	6	exam
CC 27	Clinical diagnostic of internal diseases of animals	6	exam
CC 28.	Veterinary Pharmacology	6	exam
CC 29	Veterinary radiobiology	4	exam
CC 30	Parasitology and invasive disease	6	exam
CC 31	Pathological anatomy and forensic veterinary	8	exam
CC 32	Veterinary Clinical biochemistry	4	test
CC 33	Obstetrics, gynecology and animal reproduction biotechnology	8	exam
CC 34	General and special surgery	7	exam
CC 35	Domestic animal diseases	8	exam
CC 36	Veterinary toxicology	5	test
CC 37	Food Safety and Hygiene	5	test
CC 38	Epizootology and infectious diseases	8	exam
CC 39	Organisation of veterinary business, national and international veterinary regulations	4	exam
CC 40	Animal reproduction	4	exam
CC 41	Special propaedeutics, therapy and prevention of internal diseases of animals	4	exam
CC 42	Surgical diseases of productive animals	4	exam
CC 43	Special epizootology	4	exam
CC 44	Global parasitology	4	test
CC 45	State veterinary and sanitary examination	4	test
CC 46	Comparative morphology, special pathomorphology and forensic veterinary medicine	4	test
CC 47	Educational practice	19	test
CC 48	Production practice	14	test
CC 49	Coursework	8	test
CC 50	EDKI	3	
Total		226	
Optional components EPP			
Free choice according to specialty			
<i>Optional Block 1 (the applicant chooses 15 disciplines)</i>			
OC 1.1	Politology	4	test
OC 1.2	Conflictology	4	test
OC 1.3	Agrarian policy	4	test
OC 1.4	Etnoculturology	4	test
OC 1.5	Anatomy and physiology of fish	4	test
OC 1.6	Anatomy and physiology of wild and hunting animals	4	test
OC 1.7	Microbiology of meat	4	test
OC 1.8	Cell biochemical processes	4	test
OC 1.9	Neurophysiology with the basics of zoopsychology	4	test
OC 1.10	Sanitary Microbiology	4	test
OC 1.11	Sanitary Virology	4	test
OC 1.12	Organic animal husbandry	4	test
OC 1.13	Organization of laboratory work	4	test
OC 1.14	Fish Microbiology	4	test
OC 1.15	Medicinal plants in veterinary medicine	4	test
OC 1.16	Methods of mycological research	4	test
OC 1.17	Anesthesiology	4	test
OC 1.18	Management and marketing in veterinary medicine	4	test
OC 1.19	Fundamentals of veterinary pharmacy	4	test
OC 1.20	Veterinary hematology	4	test

MASTER CURRICULA AND TRAINING PROGRAMS

Code n/a	Components of the educational-professional program (educational disciplines, course projects (paper), practice, qualification work)	Amount of credits ECTS	The final control
OC 1.21	Diet of small pets	4	test
OC 1.22	Biotechnology in Veterinary Medicine	4	test
OC 1.23	Visual diagnosis of animal diseases	4	test
OC 1.24	Technical microbiology	4	test
OC 1.25	Dermatology and endocrinolog	4	test
OC 1.26	Veterinary nephrology and urology	4	test
OC 1.27	Biosecurity and Biosafety	4	test
OC 1.28	Biochemical analysis in the clinic (by species).	4	test
OC 1.29	Veterinary Support of Beekeeping	4	test
OC 1.30	Veterinary support in poultry	4	test
OC 1.31	Diseases of fur animals	4	test
OC 1.32	Reproductive biotechnology	4	test
OC 1.33	Zoonoses and the concept of One health	4	test
OC 1.34	Veterinary transfusiology	4	test
OC 1.35	Management of the health of the herd of animals.	4	test
OC 1.36	Veterinary oncology	4	test
OC 1.37	Clinical pharmacology	4	test
OC 1.38	Veterinary Neonatology	4	test
OC 1.39	Antibiotic resistance and rational antibiotic	4	test
OC 1.40	Diseases of aquarium fish	4	test
OC 1.41	Reproductive sonography of ruminants	4	test
OC 1.42	Diseases of dogs and cats	4	test
OC 1.43	Intensive care and resuscitation of animals.	4	test
OC 1.44	Organization of veterinary business	4	test
OC 1.45	Diseases of exotic animals.	4	test
OC 1.46	Tropical Veterinary Medicine	4	test
OC 1.47	Veterinary andrology	4	test
OC 1.48	Infectious diseases of fish and aquatic organisms	4	test
Total		60	
<i>Optional Block 2 (the applicant chooses one component)</i>			
OC 2.1	Preventive veterinary technologies of Animal Health Providing	22	exam
OC 2.2	Veterinary health support of horses	22	exam
OC 2.3	Veterinary health support of dogs and cats	22	exam
OC 2.4	Veterinary health support of pigs	22	exam
OC 2.5	Veterinary health support of sheep and goats	22	exam
OC 2.6	Veterinary health support of exotic animals and fur animals	22	exam
OC 2.7	Veterinary health support of poultry	22	exam
OC 2.8	Veterinary health support of poultry	22	exam
OC 2.9	Veterinary laboratory diagnostics	22	exam
OC 2.10	Veterinary provision of public health	22	exam
OC 2.11	Scientific research in veterinary medicine	22	work protection
Total		22	
<i>Free choice according to the preferences of students from the list of disciplines</i>			
OCP 1	Choice from the catalog 1	4	test
OCP 2	Choice from the catalog 2	4	test
Total		8	
The total amount of compulsory components		270	
The total amount of optional components		90	
THE TOTAL AMOUNT OF EPP		360	

Annotation of disciplines in the curriculum

GENERAL TRAINING CYCLE Compulsory components of EPP

Inorganic Chemistry. The 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, the basis of chemical isotopes. Volumetric analysis, acid-base titration, redoxometry, complexometry, physical and chemical analysis, photometry, chromatography.

Biophysics. Physical and physico-chemical processes occurring in biological systems, the fundamental phenomena that form the basis of nature. Physical characteristics and physical properties of farm animals body.

Latin language (terminology). Latin grammar, spelling and special terms for Veterinary Medicine.

Organic Chemistry. The structure, preparation methods, physical and chemical properties, and the use of main organic compounds classes - carbohydrates, alcohols, aldehydes, ketones, amines, acids, heterocyclic compounds. Properties of amino acids, carbohydrates, lipids, nucleic acids and proteins.

Genetics. Explore basis of heredity and variation of organisms, reveals principles of storage, transmission and realization of genetic information, including cytological and molecular basis of heredity, inheritance patterns of sex characteristics (defects, diseases), linked inheritance, foundations genetic engineering, population and clean lines, the foundations of immunogenetics.

History of Ukrainian nationhood. The study of the objective laws of the development of the Ukrainian state. The adoption of the Constitution of Ukraine, analysis of common problems of Ukraine's transition to a social market economy and integration into the world community.

Ukrainian language (for professional purposes). Scientific terminology, terms and their use, specific for veterinary specialty and restitution of previously acquired knowledge.

Philosophy. The system of philosophical knowledge of the main philosophy parts, developing the type of consciousness that is based on constructive and critical approaches to the ideals of humanism.

Foreign language. Integrated learning of language (reading, listening, speaking). Study of communication and translation.

Physical Education. Basics of maintaining a healthy lifestyle and the benefits of physical activity, perform basic elements of popular sports game, maintaining the level of physical skill and physical health.

Agrarian policy. The discipline introduces the principles of formation of policy in agrarian sphere, gives the possibility to gain proficiency in methodical and methodological principles of the development and realization of the complex of actions concerning support and provision of the development of agriculture in the system of inter-branch links in national economy as well as estimate from the theoretic position practical actions of state structures concerning regulation of the agricultural production of the country.

Both national and foreign experience is studied. In case of mastering the material students get the possibility to form their own view on professional base about processes and phenomena happening in agrarian sector of the state economy.

Life Safety. The theoretical basis of labor. The legal basis for the protection of animal husbandry and veterinary services workers. Fundamentals of industrial hygiene. Safety in livestock and poultry. Fire safety in livestock and poultry.

Methodology and organization of scientific research on the basics of intellectual property. The course examines main stages of Ukrainian science and higher education, their current state, especially degreeal reform of higher education with a focus on masters training, as well as candidates and doctors of sciences. Methods of research (historical, biological, zootechnical, veterinary, special) used in veterinary medicine, bioethics of doctor, conduct, researcher and scientist, selection of topic and forming tasks of research, invention and patent.

Business foreign language. Integrated learning of language professional activity. Types of language activity: reading, listening, speaking. Formation of dialogue and monologue speech skills preparation of students for professional communication in speech and writing in a foreign language. Study how to translate special texts as a way of presentation of adequate scientific information content. Formation of knowledge, necessary skills and abilities which ensure masters communicative ability in the field of professional communication: in particular, the ability to organize and hold a scientific conference in the specialty, to participate in the conference and make a scientific report, a business meeting or negotiations with foreign colleagues, partners.

Personal legal culture. 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.

SPECIAL (PROFESSIONAL) TRAINING CYCLE

Compulsory components of EPP

History of Veterinary Medicine. Veterinary history of primitive society; in old Russian principalities in IX-XIV century; in Russia in XVIII and XIX century. The history of veterinary medicine in the USSR. The current state of veterinary medicine in Ukraine.

Ecology in veterinary medicine. 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.

Animal anatomy. The structure of the domestic animals organism in close connection with its functions. The locomotor apparatus. Osteology. Syndesmology. Myology. Integument. Splanchnology. The digestive apparatus. Breathing apparatus. Urogenital apparatus. Angiology. Endocrine glands. The nervous system. Senses. Features poultry anatomy.

Cytology, histology, embryology. The doctrine of cell. General embryology. The doctrine of tissue. Histology of organs and systems.

Basics of breeding animals. Breeding of farm animals. Husbandry. Pig. Sheep. Poultry. Horse breeding.

Veterinary Microbiology. Systematics, morphology and physiology of microorganisms spread in nature, their role in transformation of matter in nature. Impact of environmental factors on microorganisms. Infection. Immunology. Types and features of pathogens: bacteria, bacilli, fusobacterium and actinomycetes, mycobacteria, vibrio, spirochetes, mycoplasmas, rickettsia and chlamydia, microscopic fungi.

Biochemistry of animals with basics of physical and colloid chemistry. Physical and chemical properties of organic compounds, solutions. The structure, function and metabolism of proteins, fats, carbohydrates, amino acids, nucleic acids, vitamins, enzymes, macro- and micronutrients that are foundation of body tissues biochemical processes structure, underlying functional activity of individual organs and body systems.

Physiology of animals. Physiological processes in animals, incl. 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.

Animal alimentation. Scientific bases of farm animals feeding, nurture and nutritional assessment needs of animals in full feeding factors. The physiological significance of individual nutrients of food and concept of food usefulness, alimentation and nutritional assessment of diet.

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.

Hygiene of animals. Studies hygienic and veterinary-sanitary requirements for environmental factors, livestock buildings, nutrition, water, soil, air, rules and hygienic requirements for housing, feeding and maintenance of different species and age-sex groups of animals.

Animal welfare, ethology and professional ethics. Animal welfare - a system of measures, receptions and requirements that provide a humane attitude towards them in their cultivation, maintenance, care and exploitation in the production of various types of livestock products. Ethology is a science about the behavior of animals in specific conditions of maintenance, care and exploitation. Professional ethics regulates the relationship between veterinary specialists, as well as the owner of the animal and the animal itself.

Pathological physiology. General patterns of emergence, development and completion of the disease. Nosology. Role of reactivity in pathology. Classification characteristics, of typical pathological processes; inflammation, disorders of tissue growth, 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.

Operative surgery, topographic anatomy and anesthesiology. Study of surgical operations due to the topographic anatomical features of animals' specific body parts. Anesthesiology; fixing, overthrow and medical reassurance. Technology and organization of mass operations. Prevention of infection in the doctor of veterinary medicine work. Injection and puncture. Desmurgy. Surgical operations on parts of animal bodies.

Clinical diagnostic of internal diseases of animals. Methods and clinical research of various animals, their application in the study of individual organs and systems; symptoms, syndromes and main stages of disease recognition. Special methods of individual organs and systems investigation, Detection of diseases in animals.

Pharmacology. Pharmacodynamics of drugs. Conditions affecting the action of drugs. Key features and pharmacokinetic characteristics of different groups of drugs, their dosage. Recipe and technology of dosage forms.

Pathological anatomy and forensic veterinary. Pathological anatomy and forensic veterinary medicine is a discipline that studies the material bases of pathological processes, the causes and mechanisms of its origin, development and completion, nosology, morphofunctional characteristics, and features of the pathologic anatomical diagnosis of diseases. Pathological anatomy is important for the training of doctors of

veterinary medicine with the pathoanatomical diagnosis of animal diseases, for monitoring therapeutic and preventive work, assessing the effect on the death of animals on the conditions of their feeding, housing and exploitation.

Parasitology and invasive disease. The emergence, development and extinction of invasive animal diseases. General parasitology. Veterinary Helminthology, Entomology, Arachnology, protozoology.

Veterinary radiobiology. Biological effects of ionizing radiation. Radial lesion of animals. Radioecology and toxicology of radioactive substances. Radiological and veterinary-sanitary examination of veterinary supervision objects. The use of ionizing radiation in animal husbandry and veterinary medicine.

Clinical Biochemistry. Use of various biochemical research methods of animal clinical status, especially their use in study of individual organs and systems in order to establish an accurate diagnosis and develop treatment and prevention of diseases. Biochemical tests and symptoms (syndromes), metabolic disorders and other animal diseases.

Obstetrics, gynecology and animal reproduction biotechnology. Physiological basis and technology of obtaining sperm. Physiology and biochemistry of sperm. The technology of artificial insemination of females and embryos transplantation. Andrology. Physiology and pathology of pregnancy, inception and the postpartum period. Operative Obstetrics. Obstetrical and gynecological check-ups. Disease of the newborn. Diseases of udder. Gynecology. Infertility in females and males.

Veterinary toxicology. Toxicology of mineral poisons, phosphorus and organochlorine compounds. Organic derivatives of mercury. Toxicology of phenoxy acid and phenol. Toxicology of toxic substances (plant and animal origin). Poisoning of animals with poor quality food. Chemical and toxicological analysis.

General and special surgery. Veterinary traumatology. Surgical infection. Diseases of skin, muscles, tendons, tendon sheaths and bursa, blood vessels, joints. Damage to nerves and brain. Tumors. Diseases in the area of head, neck, withers, back and chest wall, abdomen, pelvis and tail. Andrological disease. Veterinary orthopedics .

Food Safety and Hygiene. The discipline studies the basics of legislation on safety and certain quality related characteristics of food and feed, control of hygiene requirements of meat and meat products, milk and dairy products, fish and fish products, eggs, plant products and feed production chain.

Domestic animal diseases. Internal diseases of farm animals, their etiology, pathogenesis, symptoms, course, diagnosis, treatment and prevention; laboratory studies. Diseases of young animals. Diseases of poultry. Diseases of fur-bearing animals, rabbits and dogs.

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, calves, dogs and fur animals, bees and fish. Veterinary Health. Diseases, common to several species of animals and people.

Organisation of veterinary business, national and international veterinary regulations. Organisation of veterinary business, national and international veterinary regulations Legislation on veterinary medicine in Ukraine. Organization and logistics of veterinary services and veterinary control in districts, cities and farms. Planning, organization and economy of veterinary measures. Veterinary accounting, reporting and record keeping. International veterinary organizations and veterinary services in some foreign countries. Basis of EU Legislation on food and veterinary medicine. Implementation of European regulations on food and veterinary surveillance in the EU.

Optional components EPP
Free choice according to specialty

Optional Block 1 (the applicant chooses 15 disciplines)

Politology. The science of the laws of development and functioning of political life of society, the mechanisms of political power, the management of political processes.

Discipline provides research on the essence, character, laws of the sphere of politics, political reality, political life of the individual and society. Familiarizes applicants with the peculiarities and patterns of the political process, the functioning of the political system and power, the essence, forms and methods of activity of policy subjects.

Conflictology. The discipline provides applicants with a system of scientific knowledge of conflict theory, which will create an opportunity to develop the creative personality of the specialist. Promotes the formation of skills: to take into account the basic mental, socio-psychological and psycho-physiological manifestations of personality in management, constructively resolve conflicts and prevent them in professional activities; to promote the formation of the necessary professional qualities of future managers. The discipline focuses on developmental, scientific and methodological activities; its study contributes to the solution of typical tasks of the future leader.

Agrarian policy. The discipline provides an opportunity to master methodological foundations of development and implementation of a set of measures to support and ensure the development of agriculture in the system of intersectoral relations in the national economy, as well as to assess the theory of practical actions. Studying the discipline "Agrarian Policy" will increase the level of general economic training, developing their skills of scientific and analytical study of agricultural problems from the standpoint of national interests and the interests of agricultural producers, provides an opportunity to master theoretical approaches to developing and implementing, on the other hand - gives grounds to comprehend and evaluate the practical actions of government agencies at a particular historical stage of life.

The formation of a market environment in the agricultural sector requires the training of specialists with a broad economic worldview, who could quickly solve the main problems of agro-industrial production on the basis of market relations. At the same time, the role of state regulation of agricultural production and agribusiness in general is growing in Ukraine's transition economy, which is reflected in the state's agricultural policy. That's why in order to train highly qualified specialists in the field of agro-industrial complex it is necessary to give them a full understanding of agricultural policy, forming modern and deep knowledge of theoretical approaches to its formation and practical aspects of implementation.

Ethnoculturology. The discipline studies the main trends and forms of ethnocultural development of the Ukrainian people from ancient times to the present; provides raising the ethnic awareness of higher education students and their training with a view to future work in a multicultural environment; contributes to the study of the peculiarities of the Ukrainian ethnic group, the formation of a sense of ethnic identity, pride in belonging to the Ukrainian nation, instilling a deep interest in the spiritual treasury of the Ukrainian people.

Anatomy and physiology of fish. The discipline studies the anatomy of fish by the method of fish preparation develops in applicants the ability to find individual organs and their parts, both in pathological autopsies of dead fish and live fish in diagnostic and therapeutic manipulations.

The task of studying the discipline is to study the structure and shape of the body of fish and fish; structures of fish bodies on separate sections by devices or systems; ability to differentiate features in the structure of the fish skeleton (by its sections); study of the muscular system and its functions during movement and static position of fish; structure,

topography and features of the digestive system of fish and fish-like in comparative aspect; structures of the respiratory system and urogenital system of fish; study of the structure and location of the organs of the cardiovascular and nervous systems of fish; knowledge of the structure and location of the senses of fish.

Anatomy and physiology of wild and hunting animals. The discipline forms an idea of the laws, features and fundamental differences in the structure of the body of wild and hunting animals, as well as the study of the structure of their organs and systems of different species of animals based on comparisons with domestic animals. The main tasks of studying the discipline are: creating an idea of the organism as a whole; its structure is studied in the relationship of organs, their devices and systems, as well as the interdependence of structure and function against the background of development in onto- and phylogeny; the discipline studies the structure and function of the body of wild and hunting animals.

The study of the discipline develops in applicants the ability to find individual organs and their parts, both on the carcasses of dead animals and in living animals, to navigate the differences between the entrails from domestic animals, and so on.

Microbiology of meat. The purpose of studying the discipline is the formation of future specialists with deep theoretical knowledge and practical skills in taxonomy, morphology and physiology of beneficial, sanitary, opportunistic and pathogenic microorganisms that affect the quality and safety indicators of meat and meat products, as well as methods of their indication and identification; determining the role of microorganisms in various processes of processing and storage of raw meat.

The main objectives of the discipline are:

- study of the main ways and sources of microbial contamination of meat and meat products, morphological and physiological characteristics of the main groups of microorganisms that affect the quality and safety of meat and meat products;
- study of the influence of technological regimes and conditions of raw meat processing on the quantitative and qualitative composition of the microflora;
- study of the basics of microbiological and sanitary control at the enterprises of the branch and acquaintance with the safety criteria and sanitary norms of raw meat products according to the current state standards.

Cell biochemical processes. The course considers the biochemical processes of the cell (both eukaryotic and prokaryotic). Particular attention is paid to the structure of cell membranes, intracellular organelles, cytoskeleton and mitochondria and the processes of intercellular interaction, the mechanisms of intercellular and intracellular signaling.

Neurophysiology with the basics of zoopsychology. The course presents a brief historical essay on the development of neurophysiology; the structure and functions of the nervous system in the evolutionary context are considered; modern achievements in the study of neuronal functions and structural and functional organization of the central nervous system. There are presented the latest data on the structure of the membrane of neurons, electrical phenomena that occur on the membrane are presented. This course also introduces the functional characteristics of the departments of the brain of animals, the physiological basis of the processes of perception of external information, the formation of motor commands, ideas about the brain mechanisms of mental functions and behavioral reactions of animals.

Sanitary Microbiology. The purpose of the discipline "Sanitary Microbiology" is to study the microflora of the environment, in particular, soil, water, air, food, microflora of living organisms. Also, the study of the principles and methods of sanitary and microbiological research, the concept of sanitary-indicative microorganisms, the study of the microflora of various objects.

The task of the discipline: the study of the history of the development of sanitary microbiology; groups of sanitary-indicative microorganisms, the nature and causes of microbial contamination of soil, water, air, food, human exposure; methods of indication of sanitary-indicative and pathogenic microorganisms; methods of indication and identification of sanitary-indicative microorganisms; methods for detecting pathogenic microorganisms; sanitary and microbiological standards, legislative documents of Ukraine on the preservation of human health and environmental protection.

Sanitary Virology. Currently, great importance is attached to the study of environmental objects, namely: air, water, household items and food for the content of viruses, as the latter can be a source of viral diseases. Thus, one of the factors in the transmission of viral infections in the food chain is milk and dairy products, and vegetables grown on contaminated soils and used for irrigation with a large number of different pathogens directly or indirectly affect human health and the environment. The role of the air in the spread of respiratory viral infections should be singled out. Therefore, the task of sanitary virology is to study the methods of laboratory diagnosis of viral infections in animals and sanitary and virological research of the environment and food, development of non-specific preventive measures to limit the circulation of pathogenic viruses in the environment.

Organic animal husbandry. Discipline contributes to the formation of humane attitudes and principles of caring for animals, taking into account the natural needs and ethological characteristics of each animal species. Proper economic efficiency and cost-effectiveness of production, disease prevention and livestock loss require effective practical and scientific support, as organic animal husbandry is not just subsistence farming, but a combination of the latest technology and high production culture to produce the highest quality organic products.

Discipline forms logical thinking in applicants, promotes understanding of sustainable nature, conservation of the environment and biodiversity of organisms, animal welfare, the need to eat quality and safe products, the introduction of new technologies for growing and producing products.

Organization of laboratory work. The discipline involves the study of higher education students the necessary theoretical knowledge and practical skills to ensure the quality of laboratory tests based on the improvement and high reliability of research methods, as well as providing the necessary laboratory information for practical veterinary medicine; apply state and international standards for the organization of clinical diagnostic laboratories; assess the suitability of methods, traceability and uncertainty of the obtained measurement results; to teach students to create safe conditions for biological safety in the laboratory, to be familiar with laboratory utensils, equipment, analytical instruments, methods and techniques of laboratory analysis.

Fish Microbiology. The purpose of studying the discipline "Fish Microbiology" is to form in future specialists deep theoretical knowledge and practical skills in taxonomy, morphology, physiology, indication and identification of microorganisms that affect the quality and safety of fish and fish products.

The task of the discipline is to study the patterns and features of contamination of fish with microorganisms;

- acquisition of practical skills in microbiological research of fish and fish products, study of morphology, physiology of the main groups of microorganisms that affect the quality and safety of fish products, methods of indication of sanitary-indicative and pathogenic microorganisms

- study of the influence of technological regimes and conditions of fish processing on the quantitative and qualitative composition of the microflora;

- study of the system of preventive measures to prevent the occurrence of food poisoning in people when eating substandard fish products.

- study of the basics of microbiological and sanitary control at the enterprises of the branch and acquaintance with safety criteria and sanitary norms of fish products according to the current state standards.

Medicinal plants in veterinary medicine. The possibilities of using floristic stocks as medicines of natural origin in the practice of veterinary medicine for treatment of sick animals and prevention of certain diseases are address. Also materials on the technology of collection, storage and processing of medicinal plant raw materials, chemical composition, pharmacological action, assignments, indications and contraindications to the use of drugs made of it in various dosage forms are set out.

Methods of mycological research. Diseases of fungal etiology are widespread and cause significant economic damage to the livestock industry. The aim of the discipline is to deepen the knowledge of higher education students about the morphological structure of micromycetes, principles of taxonomy, features of major taxonomic groups of fungi, the role of microscopic fungi in the occurrence of chronic toxicosis in animals, methods of cultivating fungi, as well as mastering the methods of laboratory diagnosis of diseases they cause.

Anesthesiology. Different types, methods and means of general and local anesthetics of animals are studied. Modern methods of controlling the condition of an animal during anesthetic support and possible complications. Means and methods of correction of critical states of an organism of an animal during anesthetic support.

Management and marketing in veterinary medicine. Management and marketing in veterinary medicine is an optional component of the educational program "Veterinary medicine" and provides the basis for managing enterprises for the design, manufacture, sale and use of veterinary drugs in accordance with international standards and national legislation. Teaches practitioners to manage human and material resources, as well as epizootic, infectious and pathological processes in a relatively stable veterinary well-being and in the event of extreme epizootic situations. Provides an opportunity to master the basics of information and communication activities and public relations in the system of activities of veterinary enterprises.

Fundamentals of veterinary pharmacy. Theoretical foundations and practical issues of drug manufacturing in the conditions of a drugstore and their industrial production are studying, as well as requirements for wholesale and retail trade in veterinary medicaments and drugs, regulatory frameworks for the development, implementation and production of drugs in accordance with the requirements for their quality, conducting preclinical and clinical trials of new veterinary drugs.

Veterinary hematology. The discipline is designed for in-depth study of current issues of veterinary hematology, which are necessary for a veterinary practitioner to understand the mechanisms of formation of blood components in healthy animals and in various pathological disorders. Studying the materials of the discipline will allow applicants to gain skills in establishing a competent conclusion on blood tests, detecting hidden changes in tissues, organs and systems of the body, identifying complications arising from a pathological condition, differentiating similar diseases, monitoring the effectiveness of treatment of sick animals and predicting the end of diseases.

Diet of small pets. The study of the discipline involves comprehensive learning of the current state and prospects for the development of veterinary nutrition of small domestic animals, the scientific basis of rational nutrition of animals depending on their physiological characteristics, age and health.

Biotechnology in Veterinary Medicine. The task of the course is to acquaint students with the basics of modern technologies based on the use of biological processes, to obtain basic skills in the biotechnology laboratory.

During the training, students master the basics of molecular biology - the fundamental basis of modern biotechnology; elements of construction of vector constructions of genetic engineering, technologies of genetically engineered antiviral vaccines, technologies of production of antibiotics, preparations of amino acids, diagnostic preparations (PCR), vaccines, immunomodulators.

Students will gain knowledge about the achievements in embryo transplantation; study the basics of traditional technological processes in the production of biological and chemotherapeutic drugs, get an idea of the state of these industries in modern biotechnological enterprises. This knowledge will form in future professionals the idea of the possibility of using biological processes and biological objects for the diagnosis, prevention and treatment of a number of animal diseases; creation of strains of microorganisms that produce various chemical compounds, antibiotics, polymers, amino acids and enzymes, sequencing of the genome of microorganisms, etc.

In addition, attention will be paid to the creation of genetically modified organisms and the biological safety of their use; methods of regulating the sex of animals, determining the sex of early embryos, and establishing family ties between them using molecular genetic methods.

Visual diagnosis of animal diseases. The discipline studies special methods of diagnosing internal diseases of animals. Particular attention is paid to the basics of X-ray diagnostics and sonography, as well as the practical application of the acquired skills for the diagnosis of internal diseases of domestic animals. Processing the materials of the discipline will also allow applicants to gain skills in drawing up (according to standard protocols) conclusions on the results of radiographic and / or ultrasound examinations of the animal.

Technical microbiology. The purpose of studying the discipline "Technical Microbiology" is to form in future experts scientific worldview knowledge about the diversity of the world of microorganisms, the breadth of their distribution in the environment, food, industrial goods, as well as their importance as potential causative agents of food poisoning; study of scientific bases of microbiology on use of microorganisms in various production processes, including many branches of food manufactures.

The main objectives of the discipline are:

- study of morphology, physiology, ecology of microorganisms that affect the quality of food and industrial goods in their manufacture, storage, transportation and sale;
- study of the most important biochemical processes involving microorganisms, the role of microorganisms in the cycle of substances in nature and changes in the quality of food under the action of microorganisms during storage ;
- study of the impact on microorganisms of various environmental factors in order to regulate microbiological processes in the production and storage of food and industrial goods;
- development of basic methods of control of microbiological and sanitary-hygienic condition of production.

Dermatology and endocrinology. The discipline provides the formation of knowledge of the most common skin and endocrine diseases of domestic and productive animals, their clinical manifestations, species characteristics, diagnostic methods, approaches and modern treatment protocols, measures to prevent the development of these pathologies, as well as effective use of practical skills in professional activities.

Veterinary nephrology and urology. The discipline studies the physiology of urine products, pathology of the urinary system of small pets, their etiology, pathogenesis,

symptoms, diagnosis (urine analysis, ultrasound, native and contrast radiography, CT and MRI studies), treatment and prevention, and diseases related with dysfunction of these glands.

Biosecurity and Biosafety. Biosecurity in the context of sustainable livestock is one of the most important components of food, environmental and national security of Ukraine. The implementation of biosafety policy should be carried out by creating a system that will detect, predict, prevent and combat existing threats of biological origin.

The aim of the course "Biosecurity and Biosafety" is to study students' concepts of biosecurity and biological protection with elements of biological terrorism.

Tasks of the discipline: study of basic issues of biosafety and protection. The basis of the discipline is the European experience of biosafety systems in industrial enterprises and in countries. Understanding the system of formation of the problem of biological security and cases of use of biological weapons. Consideration of the use of pathogens of natural diversity. Chimera virus. Nipah virus. Ebola virus. Smallpox virus, Anthrax. As well as readiness to assess and manage biosafety crises

The technology of decontamination and felling of animals will also be studied.

In addition, the discipline will study laboratory biosecurity and biorisk assessment in different conditions (selection, transfer and transportation of biological materials, research and disposal of biomaterial).

Biochemical analysis in the clinic (by species). This course involves the formation competencies competencies at higher education graduated students in laboratory diagnostics of animal diseases of various species, namely: methodology of biochemical studies of various biological material obtained from sick animals, and comprehensive assessment of biochemical constellations to determine the degree of dysfunction of the whole organism and individual bodies and systems, the correct interpretation of the results, as well as ensuring the quality management system of biochemical laboratories.

Veterinary Support of Beekeeping. The course is an important part of knowledge in ensuring the well-being of the beekeeping industry and the ecological and social well-being of the population of Ukraine.

Beekeeping provides the population with valuable products - honey, wax, pollen, royal jelly and bee venom. Ukraine ranks fifth in the world in honey production.

However, it does not fully use its export potential of honey and bee products. One of the factors influencing the limited export of honey is the actual lack of specialized laboratories for the evaluation of bee products, and especially honey at the level of EU requirements. The production process must be considered complete if the products produced have been monitored in accordance with the appropriate production conditions, have a quality certificate and are delivered to the consumer in a form convenient for consumption or storage.

The issue of compliance with the quality of beekeeping products is quite relevant and has many factors:

1. Tracking the transparency of origin;
2. Supervision of the production process;
3. Maintenance of veterinary and sanitary condition;
4. Epizootological well-being;
5. Control of the balance of veterinary drugs and monitoring of pharmacological substances;
6. Control of pollutants of pesticide residues, herbicides;
7. Assessment of the ecological state of the state of beekeeping and beekeeping products.

Under these conditions, there is a shortage of specialists specializing in bee pathology in Ukraine. In modern conditions of farming focused on honey exports to EU countries, the veterinary specialist must be familiar with the requirements of international organizations on product safety, conditions of its production with an environmental component and of course principles, norms and rules for the use of medicines in beekeeping. The discipline is provided with the textbook "Veterinary Support of Beekeeping" for students of the faculties of Veterinary Medicine.

Veterinary support in poultry. With modern poultry farming, as industrial, homestead or individual, intensification of agricultural production and changes in housing conditions, there are circumstances that require correction of homeostasis, immunobiological reactivity and non-specific and specific immunity in birds. Laboratory-diagnostic measures in industrial poultry farming, biosafety measures and vaccine prevention of bird diseases are especially relevant.

Improving the productivity and cost-effectiveness of poultry farming requires highly qualified specialists to conduct both planned and operational monitoring of birds health at industrial sites in the environment and in laboratories with modern equipment. The specialist must have the skills to respond effectively to the epizootic situation and the ability to plan and monitor the health of birds and the quality of poultry products.

In order to expand production relations with European countries, the specialist needs skills and knowledge of the measures of the economic component of veterinary health and welfare, which reduce the cost of poultry products and improve their quality. The course is provided with a textbook "Laboratory Diagnosis and Vaccine Prevention of Bird Diseases".

Diseases of fur animals. Biology and keeping of rabbits and the main species of fur animals are considering. The most common parasitic diseases of fur animals and rabbits, features of these diseases, modern methods of their diagnosis, treatment and prevention are studying.

Reproductive biotechnology. The biological properties of germ cells and methods of manipulation with them, the processes of fertilization and development of embryos carried out in vitro are studied. The course is designed to highlight the main issues regarding the peculiarities of the basics of various embryological and cellular techniques and assisted reproductive methods in veterinary medicine and biology.

Zoonoses and the concept of One health. The aim of the discipline "Zoonoses and the concept of One health" is to study students' concept of "One Health" - cooperation between WHO, FAO and OIE on the interface "man-animal-environment" in the control of zoonoses, as well as European experience in risk management zoonoses.

Tasks of the discipline: study of zoonoses of bacterial origin (Bacterial zoonoses of productive animals, Bacterial zoonoses of domestic and exotic animals. Natural-focal and vector bacterial zoonoses), zoonoses of viral origin (Viral zoonoses of productive animals, viral and zoonoses of domestic animals). vector zoonoses and current threats of viral zoonoses in industrial livestock, risk detection and control.

As well as food zoonoses (characteristics of the most common food zoonoses (bacterial, viral, parasitic), ways of contamination of food) and investigation and analysis of outbreaks of the most common food zoonoses.

In addition, the discipline will study crisis preparedness and management (Crisis Preparedness & Management) and risk management of zoonoses. National programs for monitoring and control of biological hazards - zoonotic agents. Analysis of the epidemiological situation and monitoring of zoonoses: analysis of monitoring and final reports of the EU, jointly prepared by the European Food Safety Authority (EFSA) and the European Center for Disease Prevention and Control (ECDC).

Veterinary transfusiology. The peculiarities of blood donation and protocols of whole blood and blood components transfusion in different species of animals are studied. Methods of blood transfusion in animals at different pathological conditions. Immediate and distant reactions of the animal-recipient after blood transfusion.

Management of the health of the herd of animals. Methods of optimizing the herd management system and health problems at an early stage of the disease, reducing the losses associated with the treatment and culling of animals are studied. The discipline is designed to highlight the main issues of animal health to identify and eliminate animal health problems, optimize animal reproduction, reduce labor costs, which ultimately leads to improved overall economic performance of the farm.

Veterinary oncology. In this course the peculiarities of oncogenesis and types of tumors in animals, the main manifestations of benign and malignant tumors and their clinical signs, general principles of tumors' diagnosis in different species of animals are studied. Also describe methods of hyperplastic processes prevention in animals, surgical and medical methods of treating animals with tumors.

Clinical pharmacology. Features of action of new and traditional medicines on the body of sick animals are studying, as well as schemes of their application and doses given pharmacodynamics and pharmacokinetics depending on the peculiarities of the pathological process in animals of different species, which allows to make a reasonable choice of the necessary remedies for effective treatment of animals, disease prevention, stimulation of physiological functions.

Veterinary Neonatology. Anatomical, physiological features of newborn animals, a complex of diseases that occur in them are studied. Major diseases: umbilical sepsis, calf asphyxia, malnutrition, umbilical cord bleeding, urachus fistula, congenital absence of anus and rectum, meconium retention in newborns. Their manifestation, causes, clinical signs, general principles of diagnosis, clinical and surgical methods of treatment and prevention of neonatal pathology in animals.

Antibiotic resistance and rational antibiotic. Issues of mechanisms of action of antimicrobial drugs and mechanisms of resistance development to them are considering along with determining the sensitivity of microorganisms to antibiotics by phenotypic characteristics and molecular biological methods in order to rationally choose the optimal remedies and schemes of antibiotic therapy, as well as alternative drugs the application of which reduces the risks of antibiotic resistance developing.

Diseases of aquarium fish. Fish is a special large group of animals, which is largely related to the peculiarities of living in the aquatic environment and requires constant study. Keeping aquarium fish forms the student's idea of the aquarium as a holistic ecological system and laboratory, which is convenient to study the life and development of many aquatic organisms. It is important to expand the opportunity for students to conduct research in ichthyopathology, hydrobiology, ichthyology, embryology and breeding in indoor ponds. Students also have the opportunity to study the most common diseases of aquarium fish, both non-communicable pathologies and infectious diseases caused by bacteria, viruses and fungi. The organization of aquariums as research ichthyological laboratories forms the scientific basis for the development of aquaculture in Ukraine, the safety of aesthetic elements of comfort and coziness.

The aim of the course "Diseases of aquarium fish" is to study by students most common diseases of aquarium fish non-communicable and infectious pathology and to form an idea of the use of veterinary technologies to protect aquatic organisms in closed aquariums with freshwater and seawater.

The theoretical part of the discipline provides detailed information about the pathogens of infectious diseases of aquarium fish and mechanisms of their transmission, epidemiological data, age susceptibility, sources and reservoirs, methods of infection. This

information is structured on the characteristic clinical signs, forms of their manifestation, the most characteristic pathological changes, modern and new methods of laboratory diagnosis, treatment and prevention of diseases. The practical part of the discipline "Diseases of aquarium fish" forms an algorithm of actions of the future veterinarian in case of disease, informs about the means of treatment and measures to control and prevent aquarium aquatic organisms.

Reproductive sonography of ruminants. The discipline involves the formation of higher education students' competencies in the conduct of ultrasound examination of the reproductive system of ruminants during the sexual cycle and its synchronization, control of the postpartum period; changes that occur in the genital system in various pathological conditions; features of diagnosis of pregnancy in ruminants, sex determination and abnormalities of fetal and placental development; application of the sonography method in the reproductive biotechnology of ruminants, as well as for the control of the reproductive state of the broodstock.

Diseases of dogs and cats. The main mechanisms of occurrence, development and termination of diseases of dogs and cats and innovative approach in the diagnosis (including surgery), prevention and treatment of small animal diseases are study in this course. Also describes the summarizing the results of research on morphofunctional changes in animal body and methods of their surgical correction.

Intensive care and resuscitation of animals. The study of the discipline provides higher education students with theoretical knowledge and practical skills in the methodology of data analysis of clinical and laboratory studies, diagnosis and treatment of the most common critical conditions in animals. This course includes learning of the basic principles of initial stabilization and maintenance of vital functions of the whole animal body and a systematic approach to the most common critical conditions.

Organization of veterinary business The discipline studies the legal basis of business in Ukraine and provides practical skills in drawing up founding documents, as well as rules and procedures for obtaining licenses, printing, registration and registration of individuals and legal entities, opening bank accounts, taxation of small and medium businesses and more.

The main tasks of studying the discipline:

- to be used with the current legislative and regulatory documents on the organization of veterinary business in the country;
- to study the methods of preparation of veterinary, organizational and financial documents necessary for the creation and effective functioning of commercial veterinary organizations;
- to consider practical issues of veterinary entrepreneurship;
- to be able to have international experience in the field of veterinary business.
- teach the basic principles of marketing policy in the veterinary marketing.

Diseases of exotic animals. The discipline is aimed at deepening theoretical and practical knowledge of students on anatomical, topographical and physiological features of exotic animals; gaining of modern methods of clinical and instrumental research, diagnosis and treatment of exotic and wild animals which are kept in zoos, reserves, terrariums, special farms, the private sector and nature (even and odd-toed ungulates, tylopods, primates, predators, rodents, reptiles, ostriches, ornamental birds).

Tropical Veterinary Medicine. The discipline studies the features of the course, diagnosis, treatment and control of tropical diseases not only in the tropics but also in other countries, globalizes the problem of the likelihood of many tropical diseases in areas where they were not previously registered.

Veterinary andrology. The discipline studies the physiology and pathology of the reproductive system of males of different species. Provides for the formation of higher

education competencies in the etiology, pathogenesis and modern clinical and laboratory methods for diagnosing pathology of the male reproductive system, the effectiveness of treatment and prevention of impotence in males.

Infectious diseases of fish and aquatic organisms. Implementation of sustainable development of aquaculture in Ukraine, as a separate type of agricultural activity in the system of agro-industrial production, depends on the epizootic and anthropogenic state of reservoirs and involves the application of modern knowledge and technologies of veterinary supervision in fish farming, quarantine, etc.

The purpose of teaching the discipline "Infectious diseases of fish and aquatic organisms" is the formation of future veterinarians in-depth theoretical and practical knowledge based on modern advances in science and practice of ichthyopathology, research methods and diagnosis of fish diseases.

In the process of studying the discipline "Infectious diseases of fish and aquatic organisms" students must master a set of theoretical and practical knowledge of hydrobiology, chemistry, physiology, morphology of aquatic organisms, as well as diagnosis, treatment and prevention of infectious diseases of fish and aquatic organisms. Prevention of fish diseases is becoming mandatory and is carried out not only at the immediate threat of the epizootic, but also at all stages of fish farming. Studying the patterns of occurrence and spread of fish diseases, their prevention are important tasks of modern fish farming, as their solution depends on the effectiveness of breeding aquaculture and preservation of fish products. In this regard, the role of the veterinary service is growing, the main tasks of which are the prevention and eradication of fish diseases, as well as the protection of humans and animals from infectious diseases, the source of which is fish used in food and feed.

Optional Block 2 (the applicant chooses one component)

Veterinary health support for cattle

Veterinary preventive technologies of non-contagious diseases of cattle. The discipline studies modern approaches to preventive veterinary measures for the occurrence of non-contagious pathology in cattle in farms of various forms of ownership; diagnosis of diseases (internal non-contagious, obstetric, gynecological, andrological, breast, surgical) different etiology and laboratory methods of research of biological material.

Veterinary preventive technologies of contagious diseases of cattle. The discipline studies modern approaches to preventive veterinary measures for the occurrence of contagious pathology (infectious and invasive) in cattle in farms of various forms of ownership; planning of anti-epizootic and antiparasitic measures; diagnosis of infectious and parasitic diseases of various etiologies. Significant attention is paid to laboratory methods of research of biological material.

Hygiene of cattle maintenance. The discipline studies modern technologies of growing young cattle; the control of hygienic conditions for keeping and feeding cattle at different stages of the reproductive cycle (dry period, maternity ward, lactation); udder hygiene - as one of the components of quality and safe products.

Veterinary health support of horses

Veterinary preventive technologies of non-contagious diseases of horses. The discipline studies modern approaches to preventive veterinary measures for the occurrence of non-contagious pathology in horses; diagnosis of diseases (internal non-contagious, obstetric, gynecological, andrological, surgical) of various etiologies and laboratory studies of biological material.

Veterinary preventive technologies of contagious diseases of horses. The discipline studies modern approaches to preventive veterinary measures for the occurrence of contagious pathology (infectious and invasive) in horses in farms of various forms of ownership; planning of anti-epizootic and antiparasitic measures; diagnosis of infectious and parasitic diseases of various etiologies. Significant attention is paid to laboratory methods of research of biological material. Vaccine prophylaxis of infectious diseases of horses, the use of serums, immunoglobulins, drugs with interferonogenic effect. Prevention of helminthiasis, arachnoentomoses, diseases caused by protozoa.

Hygiene of horse maintenance. Mastering the discipline will provide an opportunity to acquire knowledge in the hygiene of feeding, maintenance, breeding, use and operation of horses.

Veterinary health support of dogs and cats

Veterinary preventive technologies of non-contagious diseases of dogs and cats. The discipline studies the preventive veterinary measures for the occurrence of pathology associated with metabolic disorders, hormonal disorders, vitamin and mineral nutrition in dogs and cats. Prevention of obstetric, gynecological pathology and impotence in dogs and cats, methods of hormonal regulation of the sexual cycle in bitches and cats. Traumatology, dentistry, orthopedics, microsurgery. Prevention of surgical pathology and modern technologies in veterinary surgery.

Veterinary preventive technologies of contagious diseases of dogs and cats. Discipline is aimed at studying modern methods of diagnostic research and preventive measures for infectious and invasive diseases of dogs and cats. In the process of studying, students will learn morphological features and the cycle of development of pathogens of diseases, their systematic position, etiology, pathogenesis and immunity in dogs and cats. Prevention of helminthiasis, arachnoentomoses, diseases caused by protozoa.

Hygiene of dogs and cats maintenance. Mastering the discipline will provide an opportunity to acquire knowledge in the hygiene of feeding and keeping dogs and cats.

Veterinary health support of pigs

Veterinary preventive technologies of non-contagious diseases of pigs. The discipline studies modern approaches to preventive veterinary measures for the occurrence of non-contagious pathology in pigs in farms of various forms of ownership; diagnosis of diseases (internal non-contagious, obstetric, gynecological, andrological, surgical) of various etiologies and laboratory studies of biological material.

Veterinary preventive technologies of contagious diseases of pigs. The discipline studies modern approaches to preventive veterinary measures for the occurrence of contagious pathology (infectious and invasive) in pigs; planning of anti-epizootic and antiparasitic measures; diagnosis of infectious and parasitic diseases of various etiologies. Significant attention is paid to laboratory methods of research of biological material.

Hygiene of pigs maintenance. The discipline studies modern technologies of pig breeding; control of hygienic conditions for keeping and feeding pigs.

Veterinary health support of sheep and goats

Veterinary preventive technologies of non-contagious diseases of sheep and goats. The discipline studies preventive veterinary measures for the occurrence of pathology associated with metabolic disorders, hormonal disorders, vitamin and mineral nutrition in sheep and goats. Prevention of infertility and obstetric pathology in sheep and goats, as well as the use of modern methods of correcting their reproductive capacity.

Prevention of impotence in sheep and goats. Prevention of surgical pathology and modern technologies in veterinary surgery.

Veterinary preventive technologies of contagious diseases of sheep and goats. Discipline studies modern technological schemes of diagnostic studies and prevention of infectious and invasive diseases of sheep and goats.

Vaccine prophylaxis of infectious diseases of sheep and goats, the use of serums, immunoglobulins, preparations possessing interferonogenesis. Prevention of helminthiasis, arachnoethomosis, diseases caused by the simplest.

Hygiene of sheep and goats maintenance. Discipline studies modern systems of sheep and goats; control of hygienic conditions of retention and feeding; Features of maintenance and arrangement of stables in a dairy body; Hygiene of milk milking; Hygienic requirements for growing lambs and goats.

Veterinary health support of exotic animals and fur animals

Veterinary preventive technologies of non-contagious diseases of exotic animals and fur animals. Discipline studies preventive measures for the occurrence of pathology related to metabolic disorders, hormonal disorders, vitamin and mineral nutrition in exotic animals and fur animals. Prevention of obstetric, gynecological and andrological pathology, methods of hormonal regulation of sexual cycle in exotic animals and fur animals. Traumatology, dentistry, orthopedics, microsurgery. Prevention of surgical pathology.

Veterinary preventive technologies of contagious diseases of exotic animals and fur animals. The study of discipline ensures the acquisition of higher education of theoretical and practical knowledge of the diagnosis, treatment and prevention of contagious (infectious and invasive) diseases of exotic animals and fur animals, obtaining practical skills in conducting anti-epizootic and antiparasitic measures.

Hygiene of exotic animals and fur animals maintenance. Mastering the discipline will provide an opportunity to acquire knowledge in the hygiene of feeding and keeping exotic animals and fur animals.

Veterinary health support of poultry

Veterinary preventive technologies of non-contagious diseases of poultry. Discipline studies preventive measures for the emergence of pathology related to metabolic disorders, vitamin and mineral nutrition.

Veterinary preventive technologies of contagious diseases of poultry. The study of discipline provides acquisitions for higher education of theoretical and practical knowledge of diagnosis, treatment and prevention of contagious (infectious and invasive) poultry diseases, obtaining practical skills in conducting anti-epizootic and antiparasitic measures.

Hygiene of poultry maintenance. Discipline provides higher education benefits to theoretical and practical knowledge of modern hygiene and sanitation in poultry farming for the complex of veterinary and sanitary measures aimed at maintaining health, increasing the productivity of birds and receiving high-quality products safe to consume.

Veterinary pharmacy

Pharmacy and pharmaceutical technology. Pharmacy, discipline aimed at deepening theoretical knowledge, familiarization with normative-legislative documents regulating the development, production, sale and use of veterinary drugs, to obtain practical skills and prepare a graduate to independent work. The subject of discipline is a system of pharmaceutical support by veterinary medicines, in particular licensing conditions for pharmacies of economic activity, retail rules, regulations regulating state

control and supervision of veterinary preparations and substances, rules for transportation and storage of veterinary drugs. Pharmaceutical technology - science of theoretical bases and production processes of processing of medicinal products in ready-made medicines, storage and leave. The tasks of discipline are the study of theoretical bases and practical issues of manufacturing of medicinal products in conditions of pharmacy and industrial production; Familiarity with equipment and equipment used in pharmacies and pharmaceutical enterprises; determining the correct type of packaging; Familiarity with the normative documentation in the production of finished medicines.

Clinical veterinary pharmacology and clinical pharmacy. Clinical Pharmacology and Pharmacy - Integrated Applied Science, which combines the pharmaceutical and clinical aspects of liqueur. The main task is to create theoretical bases and methodological approaches of rational use of medicines. In the course of studying the discipline, students will be acquainted with the basic principles of medical and veterinary deontology, the main types of normative documentation, mastering the main methods of laboratory and instrumental examination of patients, assimilation of general syndromology and clinical sympathology of the most common internal diseases of animals, assimilation of the general methodology and principles of choice of medicinal products for effective pharmacotherapy, studying clinical manifestations of side effects of medicinal products.

Pre-clinical and clinical studies of medicinal products. The purpose of pre-clinical research is to determine the toxic influence and therapeutic effectiveness of the future medicinal product, its influence on the basic systems of the organism, as well as the establishment of possible side effects on laboratory animals and test objects. Implementation of proper laboratory practice (GLP), which guarantees the quality of newly created medicines, their high therapeutic efficiency; GLP is a system of rules that encompass the organizational process and conditions for preclinical research are planned, their monitoring is provided, registration and storage of data is provided, a report on test results is provided. Clinical studies are carried out in order to detect or confirm clinical, pharmacodynamic effects of the investigated medicinal product or detecting all adverse reactions to it, as well as to study absorption, distribution, biotransformation and removal of the drug. Such studies should be carried out in accordance with the requirements of proper clinical practice (GCP), which are regulated by modern clinical trials.

Veterinary laboratory diagnostics

Laboratory quality management. The discipline studies state and international standards for the organization of chemical analytical laboratories, assessment of the suitability of methods, traceability and uncertainty of the results. The knowledge gained by specialists will allow a sufficient understanding of the laboratory system and reliably perform analytical measurement techniques.

Clinical laboratory diagnostics. The curriculum of the discipline provides: formation of theoretical knowledge and practical skills of master's students of the Faculty of Veterinary Medicine on various clinical and laboratory studies and comprehensive assessment of laboratory parameters of various biological material obtained from sick animals to determine the functional state of their bodies and laboratory diagnosis of various diseases. systems and organs. This discipline is based on knowledge of such training courses as biochemistry with the basics of physical and colloid chemistry, veterinary clinical biochemistry, clinical diagnostics, pharmacology, toxicology, animal nutrition and others. special disciplines. At the end of this discipline the master's student must know and be able to obtain various biological material from sick animals, have modern methods and techniques of laboratory research, give a correct interpretation of the results, predict possible complications and disease, be able to conduct preclinical studies

of veterinary drugs in the laboratory animals in compliance with the requirements of good laboratory practice.

Laboratory diagnosis of infectious diseases. The purpose of studying the discipline is to increase practical skills in laboratory work, namely the features of sampling for research, their transportation, research and further interpretation.

Pathomorphological diagnosis. The discipline research the organization of histological laboratory, histopathological techniques, methods of histochemical and immunohistochemical diagnostics, as well as pays attention to practical skills of pathological autopsy, analysis of sections, selection of pathological material, construction of pathological and anatomical diagnosis and conclusion. Applicants for higher education study the diagnostic criteria and the main prognostic features of infectious and non-infectious diseases, which are most often registered in the practice of veterinary medicine. In particular, with pathomorphological diagnosis of animal tumors.

Veterinary provision of public health

Laboratory analysis of food products. The discipline studies the requirements of regulatory legal acts of Ukraine to ensure the quality of research in accredited laboratories. Applicants master the requirements for testing and calibration laboratories.

Risk analysis of food and feed. Discipline provides preparation for higher education for competent issues of analysis of microbiological risks in foods and feeds during their production, processing, storage, transportation and implementation. The applicants master the main approaches to the analysis of microbiological risks, a qualitative and quantitative risk assessment and are qualified to summarize the process of analyzing microbiological risks.

Biosafety and biosecurity in veterinary medicine. The discipline studies the basic requirements for biosafety and biosecurity in veterinary medicine, the principles and principles of the system in relation to the risks of occurrence and spread of infectious diseases. The role of international and public organizations in the creation and development of biosafety standards in veterinary laboratories and bio-industrial facilities is shown, as well as the need to create a State Biosafety Program to control animal infections and create effective protection.

**Training of masters of sciences
in branch of knowledge "Veterinary Medicine"
in specialty 211 "VETERINARY MEDICINE"
educational-professional program "VETERINARY MEDICINE"**

Form of training: – full-time	Licensed number of persons: 350 (based on secondary education)
Duration of training	5 years
Credits ECTS	300
Language of teaching	Ukrainian, English
Qualification	Doctor of veterinary medicine

The concept of training

Means training of highly qualified specialists in veterinary medicine, quality and safety of animal products in accordance to international standards. Professional herd health management, issues of quality and safety of animal products during its production, transportation, processing, storage and marketing. Elaboration and implementation in practice of innovative methods of prevention, diagnostics and treatment of animal diseases.

Educational-professional programs of master's training

***Optional Block "Preventive veterinary technologies
of Animal Health Providing"***

The program includes training of professional doctors of veterinary medicine who possess knowledge required for veterinary service of owners of productive animals and poultry, horses, small animals and who is ready to analyze the epizootic situation, carry out preventive measures and diagnostic tests, to ensure the provision of medical care the animals suffering from infectious and non-infectious pathology.

Areas of employment of graduates

The field of employment of graduates of the program can be specified professional activities in the state veterinary medicine in rural areas (hospitals veterinary medicine, paragraphs, sections), a private veterinary practice to meet the needs of owners of productive veterinary service and small animals, farms and collective farms.

Optional Block "Veterinary welfare of cattle, sheep and goats"

The program provides training of professional masters in cattle, sheep and goat farming and aimed up to the formation of veterinary knowledge and skills to implementation and using of innovative technologies in nutrition, genetics, breeding, biotechnology and ruminant reproduction and ensuring of preventive technologies from noncontagious and contagious diseases of ruminants.

Areas of employment of graduates

Professional activity of expert due to master's program means working in manufacturing sector of employment associated with modern highly technological enterprises and dairy companies, complexes with beef, lamb and sheep, production, farms that specialized on growing of goats and the production goat farming.

Optional Block "Veterinary welfare of dogs and cats"

The aim of program is to train a doctor of veterinary medicine who has knowledge of biology of dogs and cats, their housing, feeding and breeding, also to study the modern methods of diagnosis and prevention of contagious and non-contagious diseases , effective schemes of therapy for small animals.

Areas of employment of graduates

Field of graduate`s practice includes official dog breeding by Ministry of Internal Affairs and the State Border Service, kennels for dogs, dog clubs, shelters for small animals, veterinary clinics for small animals, private service for owners of small pets.

Optional Block "Veterinary laboratory diagnostic"

The aim of the program is to train of highly qualified specialists in laboratory diagnosis of infectious diseases, microbiological (bacteriological, virological) study of materials and foodstuffs, animal feed and environmental objects.

The basic task of the program is to master modern methods of detection of bacteria and viruses, the formation of future professionals in the environmental and of biological thinking, knowledge of their possible essence of phenomena caused by microorganisms (viruses) in animal organisms, raw materials, food and various environmental objects.

Areas of employment of graduates

Microbiological laboratories , providing diagnostic tests in veterinary medicine (state laboratories of veterinary medicine) and general sanitary practice, providing microbiological control of animal products, industry labs (poultry farms, incubator stations, pig farms, companies producing animal feed), laboratories of food industry.

Optional Block "Veterinary pharmacy"

In accordance to their future master's degree in veterinary pharmacy should be ready for creative and professional pharmaceutical activities in the sphere of veterinary medicinal products, providing of their research, development, production, packing, storage, transportation, state registration, certification, standardization and quality control, sale, marketing, use and disposal of medicines which came shelf life.

Areas of employment of graduates

Professional activity of Masters in Veterinary Pharmacy can be productive (pharmacy, pharmaceutical and chemical-pharmaceutical companies, etc.).organizational and managerial, supervisory (licensing, certification, registration), the total pharmaceutical practice (city and district veterinary pharmacy, pharmacy in rural areas, veterinary pharmacies in therapeutic and diagnostic centers and clinics), information and education, research.

Optional Block "Scientific-fundamental and applied problems of veterinary medicine"

The program aims to train veterinary-scientist who has the necessary knowledge for the scientific support of fundamental and applied veterinary medicine. Future expert competence includes the knowledge and skills for obtaining, cultivation, storage and usage of cells, including stem cells to restore the abnormal animal tissue, diagnostic investigation using cell cultures and tissues; applying of acquired knowledge and skills in research and development regulations.

Areas of employment of graduates

A further study in graduate school on fundamental and applied scientific specialties of veterinary and biological profiles, professional work in veterinary oriented research institutions, veterinary, medical and biological research laboratories, Ukrainian laboratory of quality and safety of agricultural products, genetic and breeding centers, veterinary clinics for small animals and horses that use cellular technology in therapy and transplantology.

Practical training

The bases of practical training of students is educational, scientific, educational scientific industrial laboratories of university basic institution (Kiev), its separated units, primarily educational and experimental farms of the University ("Velykosnitynske educational and experimental farm named after O.V. Muzychenko, "Agronomic Research Station", Teaching and Research Farm "Vorzel" Nemishaevo Agricultural College), where there are held laboratory and practical classes, educational and industrial practice of students. In addition, the faculty has bilateral agreements with private clinics for small animals, agricultural enterprises of different ownership forms, which are used as a basic for practical training.

Curriculum of Master training in educational program "Veterinary medicine" (educational and professional program of Master's training)

Code n/a	Components of the educational-professional program (educational disciplines, course projects (paper), practice, qualification work)	Amount of credits ECTS	The final control
GENERAL TRAINING CYCLE			
Compulsory components EPP			
CC 1.	Latin language (terminology)	4	exam
CC 2.	Inorganic chemistry	4	exam
CC 3.	Biophysics	4	exam
CC 4.	Organic chemistry	4	exam
CC 5.	Genetics	4	exam
CC 6.	History of Ukrainian nationhood	4	exam
CC 7.	Ukrainian language (for professional purposes)	4	exam
CC 8.	Philosophy with the basics of logic	4	exam
CC 9.	Foreign Language	4	exam
CC 10.	Life safety	4	exam
CC 11.	Methodology and organization of scientific research on the basics of intellectual property	4	test
Total		44	
SPECIAL (PROFESSIONAL) TRAINING CYCLE			
Compulsory components of EPP			
CC 12.	Ecology in veterinary medicine	3	test
CC 13.	Animal anatomy	4	exam
CC 14.	Cytology, histology, embryology	4	exam
CC 15.	Basics of breeding animals	4	test
CC 16.	Veterinary microbiology	4	exam
CC 17.	Biochemistry of animals with basics of physical and colloid chemistry	4	exam
CC 18.	Physiology of animals	5	exam
CC 19.	Animal alimentation	4	test
CC 20.	Veterinary immunology	4	test
CC 21.	Veterinary virology	4	exam
CC 22.	Hygiene of animals	4	exam

MASTER CURRICULA AND TRAINING PROGRAMS

Code n/a	Components of the educational-professional program (educational disciplines, course projects (paper), practice, qualification work)	Amount of credits ECTS	The final control
CC 23.	Pathological physiology	4	exam
CC 24.	Operative surgery, topographic anatomy and anesthesiology	4	exam
CC 25.	Clinical diagnostic of internal diseases of animals	5	exam
CC 26.	Veterinary Pharmacology	5	exam
CC 27.	Veterinary radiobiology	4	exam
CC 28.	Parasitology and invasive disease	5	exam
CC 29.	Pathological anatomy and forensic veterinary	4	exam
CC 30.	Veterinary Clinical biochemistry	4	test
CC 31.	Obstetrics, gynecology and animal reproduction biotechnology	5	exam
CC 32.	General and special surgery	4	exam
CC 33.	Domestic animal diseases	5	exam
CC 34.	Veterinary toxicology	4	exam
CC 35.	Food Safety and Hygiene	4	exam
CC 36.	Epizootology and infectious diseases	5	exam
CC 37.	Organisation of veterinary business, national and international veterinary regulations	4	exam
CC 38	Animal reproduction	4	exam
CC 39	Special propaedeutics, therapy and prevention of internal diseases of animals	4	exam
CC 40	Surgical diseases of productive animals	4	exam
CC 41	Special epizootology	4	exam
CC 42	Global parasitology	4	test
CC 43	State veterinary and sanitary examination	4	test
CC 44	Comparative morphology, special pathomorphology and forensic veterinary medicine	4	test
CC 45	Educational practice	19	test
CC 46	Vrobnycha praktyka	13	Protection of work
CC 47	EDKI	3	exam
Total		173	
Optional components EPP			
Free choice according to specialty			
<i>Optional Block 1 (the applicant chooses 11 disciplines)</i>			
OC 1.1	Agricultural policy	4	test
OC 1.2	Conflictology	4	test
OC 1.3	Etnoculturology	4	test
OC 1.4	Personal legal culture	4	test
OC 1.5.	History of veterinary medicine	4	test
OC 1.6	Medicinal plants in veterinary medicine	4	test
OC 1.7	Anatomy and physiology of wild and hunting animals	4	test
OC 1.8	Veterinary and Sanitary Microbiology	4	test
OC 1.9	Neurophysiology with the basics of zoopsychology	4	test
OC 1.10	Methods of mycological research	4	test
OC 1.11	Organic animal husbandry	4	test
OC 1.12	Organization of laboratory work	4	test
OC 1.13	Biotechnology in Veterinary Medicine	4	test
OC 1.14	Anesthesiology	4	test
OC 1.15	Veterinary cardiology	4	test
OC 1.16	Management and Marketing in Veterinary Medicine	4	test
OC 1.17	Diet of small pets	4	test
OC 1.18	Visual diagnosis of animal diseases	4	test
OC 1.19	Reproductive biotechnology	4	test
OC 1.20	Veterinary Transfusiology	4	test
OC 1.21	Diseases of fur animals	4	test
OC 1.22	Dermatology and endocrinolog	4	test

Code n/a	Components of the educational-professional program (educational disciplines, course projects (paper), practice, qualification work)	Amount of credits ECTS	The final control
OC 1.23	Biosecurity and Biosafety	4	test
OC 1.24	Management of the health of the herd of animals.	4	test
OC 1.25	Veterinary Neonatology	4	test
OC 1.26	Veterinary Nephrology and urology	4	test
OC 1.27	Veterinary business organization	4	test
OC 1.28	Veterinary support in poultry	4	test
OC 1.29	Diseases of exotic animals.	4	test
OC 1.30	Intensive care and resuscitation of animals	4	test
OC 1.31	Zoonoses and the concept of one health	4	test
Total		44	
<i>Optional Block 2 (the applicant chooses one component)</i>			
OC 2.1	Preventive veterinary technologies of Animal Health Providing	23	exam
OC 2.2	Veterinary health support of dogs and cats	23	exam
OC 2.3	Veterinary health support of pigs	23	exam
Total		23	
<i>Free choice according to the preferences of students from the list of disciplines</i>			
OCP 1	Choice from the catalog 1	4	test
OCP 2	Choice from the catalog 2	4	test
Total		8	
The total amount of compulsory components		225	
The total amount of optional components		75	
THE TOTAL AMOUNT OF EPP		300	

Annotation of disciplines in the curriculum

GENERAL TRAINING CYCLE Compulsory components of EPP

Latin language (terminology). Latin grammar, spelling and special terms for Veterinary Medicine.

Inorganic Chemistry. The 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, the basis of chemical isotopes. Volumetric analysis, acid-base titration, redoxometry, complexometry, physical and chemical analysis, photometry, chromatography.

Biophysics. Physical and physico-chemical processes occurring in biological systems, the fundamental phenomena that form the basis of nature. Physical characteristics and physical properties of farm animals body.

Organic Chemistry. The structure, preparation methods, physical and chemical properties, and the use of main organic compounds classes - carbohydrates, alcohols, aldehydes, ketones, amines, acids, heterocyclic compounds. Properties of amino acids, carbohydrates, lipids, nucleic acids and proteins.

Genetics. Explore basis of heredity and variation of organisms, reveals principles of storage, transmission and realization of genetic information, including cytological and molecular basis of heredity, inheritance patterns of sex characteristics (defects, diseases), linked inheritance, foundations genetic engineering, population and clean lines, the foundations of immunogenetics.

History of Ukrainian nationhood. The study of the objective laws of the development of the Ukrainian state. The adoption of the Constitution of Ukraine, analysis of common problems of Ukraine's transition to a social market economy and integration into the world community.

Ukrainian language (for professional purposes). Scientific terminology, terms and their use, specific for veterinary specialty and restitution of previously acquired knowledge.

Philosophy with the basics of logic. The system of philosophical knowledge of the main philosophy parts, developing the type of consciousness that is based on constructive and critical approaches to the ideals of humanism.

Foreign language. Integrated learning of language (reading, listening, speaking). Study of communication and translation.

Physical Education. Basics of maintaining a healthy lifestyle and the benefits of physical activity, perform basic elements of popular sports game, maintaining the level of physical skill and physical health.

Life Safety. The theoretical basis of labor. The legal basis for the protection of animal husbandry and veterinary services workers. Fundamentals of industrial hygiene. Safety in livestock and poultry. Fire safety in livestock and poultry.

Methodology and organization of scientific research on the basics of intellectual property. The course examines main stages of Ukrainian science and higher education, their current state, especially degreeal reform of higher education with a focus on masters training, as well as candidates and doctors of sciences. Methods of research (historical, biological, zootechnical, veterinary, special) used in veterinary medicine, bioethics of doctor, conduct, researcher and scientist, selection of topic and forming tasks of research, invention and patent.

SPECIAL (PROFESSIONAL) TRAINING CYCLE

Compulsory components of EPP

Ecology in veterinary medicine. 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.

Animal anatomy. The structure of the domestic animals organism in close connection with its functions. The locomotor apparatus. Osteology. Syndesmology. Myology. Integument. Splanchnology. The digestive apparatus. Breathing apparatus. Urogenital apparatus. Angiology. Endocrine glands. The nervous system. Senses. Features poultry anatomy.

Cytology, histology, embryology. The doctrine of cell. General embryology. The doctrine of tissue. Histology of organs and systems.

Basics of breeding animals. Breeding of farm animals. Husbandry. Pig. Sheep. Poultry. Horse breeding.

Veterinary Microbiology. Systematics, morphology and physiology of microorganisms spread in nature, their role in transformation of matter in nature. Impact of environmental factors on microorganisms. Infection. Immunology. Types and features of pathogens: bacteria, bacilli, fusobacterium and actinomycetes, mycobacteria, vibrio, spirochetes, mycoplasmas, rickettsia and chlamydia, microscopic fungi.

Biochemistry of animals with basics of physical and colloid chemistry. Physical and chemical properties of organic compounds, solutions. The structure, function and metabolism of proteins, fats, carbohydrates, amino acids, nucleic acids, vitamins, enzymes, macro- and micronutrients that are foundation of body tissues biochemical processes structure, underlying functional activity of individual organs and body systems.

Physiology of animals. Physiological processes in animals, incl. 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.

Animal alimentation. Scientific bases of farm animals feeding, nurture and nutritional assessment needs of animals in full feeding factors. The physiological significance of individual nutrients of food and concept of food usefulness, alimentation and nutritional assessment of diet.

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.

Hygiene of animals. Studies hygienic and veterinary-sanitary requirements for environmental factors, livestock buildings, nutrition, water, soil, air, rules and hygienic requirements for housing, feeding and maintenance of different species and age-sex groups of animals.

Pathological physiology. General patterns of emergence, development and completion of the disease. Nosology. Role of reactivity in pathology. Classification characteristics, of typical pathological processes; inflammation, disorders of tissue growth, 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.

Operative surgery, topographic anatomy and anesthesiology. Study of surgical operations due to the topographic anatomical features of animals' specific body parts. Anesthesiology; fixing, overthrow and medical reassurance. Technology and organization of mass operations. Prevention of infection in the doctor of veterinary medicine work. Injection and puncture. Desmurgy. Surgical operations on parts of animal bodies.

Clinical diagnostic of internal diseases of animals. Methods and clinical research of various animals, their application in the study of individual organs and systems; symptoms, syndromes and main stages of disease recognition. Special methods of individual organs and systems investigation, Detection of diseases in animals.

Veterinary Pharmacology. Pharmacodynamics of drugs. Conditions affecting the action of drugs. Key features and pharmacokinetic characteristics of different groups of drugs, their dosage. Recipe and technology of dosage forms.

Veterinary radiobiology. Biological effects of ionizing radiation. Radial lesion of animals. Radioecology and toxicology of radioactive substances. Radiological and veterinary-sanitary examination of veterinary supervision objects. The use of ionizing radiation in animal husbandry and veterinary medicine.

Parasitology and invasive disease. The emergence, development and extinction of invasive animal diseases. General parasitology. Veterinary Helminthology, Entomology, Arachnology, protozoology.

Pathological anatomy and forensic veterinary. Pathological anatomy and forensic veterinary medicine is a discipline that studies the material bases of pathological processes, the causes and mechanisms of its origin, development and completion, nosology, morphofunctional characteristics, and features of the pathologic anatomical diagnosis of diseases. Pathological anatomy is important for the training of doctors of veterinary medicine with the pathoanatomical diagnosis of animal diseases, for monitoring therapeutic and preventive work, assessing the effect on the death of animals on the conditions of their feeding, housing and exploitation.

Veterinary Clinical Biochemistry. Use of various biochemical research methods of animal clinical status, especially their use in study of individual organs and systems in order to establish an accurate diagnosis and develop treatment and prevention of diseases. Biochemical tests and symptoms (syndromes), metabolic disorders and other animal diseases.

Obstetrics, gynecology and animal reproduction biotechnology. Physiological basis and technology of obtaining sperm. Physiology and biochemistry of sperm. The technology of artificial insemination of females and embryos transplantation. Andrology. Physiology and pathology of pregnancy, inception and the postpartum period. Operative Obstetrics. Obstetrical and gynecological check-ups. Disease of the newborn. Diseases of udder. Gynecology. Infertility in females and males.

General and special surgery. Veterinary traumatology. Surgical infection. Diseases of skin, muscles, tendons, tendon sheaths and bursa, blood vessels, joints. Damage to nerves and brain. Tumors. Diseases in the area of head, neck, withers, back and chest wall, abdomen, pelvis and tail. Andrological disease. Veterinary orthopedics .

Domestic animal diseases. Internal diseases of farm animals, their etiology, pathogenesis, symptoms, course, diagnosis, treatment and prevention; laboratory studies. Diseases of young animals. Diseases of poultry. Diseases of fur-bearing animals, rabbits and dogs.

Veterinary toxicology. Toxicology of mineral poisons, phosphorus and organochlorine compounds. Organic derivatives of mercury. Toxicology of phenoxy acid and phenol. Toxicology of toxic substances (plant and animal origin). Poisoning of animals with poor quality food. Chemical and toxicological analysis.

Food Safety and Hygiene. The discipline studies the basics of legislation on safety and certain quality related characteristics of food and feed, control of hygiene requirements of meat and meat products, milk and dairy products, fish and fish products, eggs, plant products and feed production chain.

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, calves, dogs and fur animals, bees and fish. Veterinary Health. Diseases, common to several species of animals and people.

Organisation of veterinary business, national and international veterinary regulations. Organisation of veterinary business, national and international veterinary regulations Legislation on veterinary medicine in Ukraine. Organization and logistics of veterinary services and veterinary control in districts, cities and farms. Planning, organization and economy of veterinary measures. Veterinary accounting, reporting and record keeping. International veterinary organizations and veterinary services in some foreign countries. Basis of EU Legislation on food and veterinary medicine. Implementation of European regulations on food and veterinary surveillance in the EU.

Animal reproduction Physiological basis and technology of obtaining sperm. Physiology and biochemistry of sperm. The technology of artificial insemination of females and embryos transplantation. Andrology. Physiology and pathology of pregnancy, inception and the postpartum period. Operative Obstetrics. Obstetrical and gynecological check-ups. Disease of the newborn. Diseases of udder. Gynecology. Infertility in females and males.

Special propaedeutics, therapy and prevention of internal animal diseases. The discipline studies the issues of special propaedeutic at organs and systems diseases of animal organism of non-contagious features. Peculiarities of the application of modern methods, treatment scheme, the latest approaches to diagnosis and preventive measures for the most spread internal diseases of animals are studied.

Surgical diseases with anesthesiology investigates surgical diseases of domestic animals, causes of their occurrence, pathogenesis, clinical signs, diagnostics, treatment and preventive measures. The basis of anesthesiology and typical surgical interventions in different parts of the body of animals for this surgical pathology are highlighted

Special epizootology studies the emergent, transboundary, factor and especially dangerous infectious diseases of animals, namely the study of the characteristics of the pathogen, pathogenesis, prevalence, post mortem findings, methods of diagnosis and differential diagnosis, treatment, economic losses, elimination and prevention measures, as well as risk analysis of disease outbreak.

Epidemiologists rely on other scientific disciplines like biology to better understand disease processes, statistics to make efficient use of the data and draw appropriate conclusions, social sciences to better understand proximate and distal causes, and engineering for exposure assessment.

Global parasitology. The purpose of the study of the discipline "Global parasitology" is to deepen the theoretical knowledge of masters on the diagnosis, treatment and prevention of global animal infection diseases, their practical skills in the laboratory, as well as the diagnosis knowledge and preparation for independent scientific and practical work.

State Veterinary and Sanitary Expertise. State Veterinary and Sanitary Expertise is a discipline of a special cycle for veterinarian students training. The objectives of the discipline is to provide the competencies necessary for veterinary graduate being able to control the hygiene requirements of food, in particular of animal origin at all stages of production, processing technology (meat, milk processing facilities, poultry processing plants, fish processing plants, etc.), as well as during transportation, storage and retail, while complying with applicable regulations

Comparative morphology, special pathomorphology and forensic veterinary medicine. Comparative morphology, special pathomorphology and forensic veterinary medicine - a discipline that consists of two parts. Comparative morphology studies the external form of the body of animals, their organs, the topography of the latter, as well as the external and internal structure of organs, their systems and apparatuses. Special pathomorphology and forensic veterinary medicine is a complex science that studies and solves the issue of veterinary-biological and criminalistic character in order to obtain objective evidence in pre-trial investigation and in the judicial process in conducting an analysis of the circumstances associated with the emergence of criminal, civil, economic, administrative and arbitration cases. These sciences are united in one discipline, because they are close to each other methodologically.

Comparative morphology, special pathomorphology and forensic veterinary medicine are intended for the preparation of doctors of veterinary medicine on the decision of the involvement of certain persons or circumstances in the facts of the death or harm to animals and the conduct of forensic veterinary examinations.

Optional components EPP

Free choice according to specialty

Optional Block 1 (the applicant chooses 11 disciplines)

Agrarian policy. The discipline introduces the principles of formation of policy in agrarian sphere, gives the possibility to gain proficiency in methodical and methodological principles of the development and realization of the complex of actions concerning support and provision of the development of agriculture in the system of inter-branch links in national economy as well as estimate from the theoretic position practical actions of state structures concerning regulation of the agricultural production of the country.

Both national and foreign experience is studied. In case of mastering the material

students get the possibility to form their own view on professional base about processes and phenomena happening in agrarian sector of the state economy.

Conflictology. The discipline provides applicants with a system of scientific knowledge of conflict theory, which will create an opportunity to develop the creative personality of the specialist. Promotes the formation of skills: to take into account the basic mental, socio-psychological and psycho-physiological manifestations of personality in management, constructively resolve conflicts and prevent them in professional activities; to promote the formation of the necessary professional qualities of future managers. The discipline focuses on developmental, scientific and methodological activities; its study contributes to the solution of typical tasks of the future leader.

Etnocultorology. Ukrainian spiritual culture as part of world cultural process. The role of culture in shaping the personality and life of the Ukrainian people. Objective and subjective factors increase standards of culture at the present stage of Ukraine

Personal legal culture. 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.

History of Veterinary Medicine. Veterinary history of primitive society; in old Russian principalities in IX-XIV century; in Russia in XVIII and XIX century. The history of veterinary medicine in the USSR. The current state of veterinary medicine in Ukraine.

Medicinal plants in veterinary medicine. The possibilities of using floristic stocks as medicines of natural origin in the practice of veterinary medicine for treatment of sick animals and prevention of certain diseases are address. Also materials on the technology of collection, storage and processing of medicinal plant raw materials, chemical composition, pharmacological action, assignments, indications and contraindications to the use of drugs made of it in various dosage forms are set out.

Anatomy and physiology of wild and hunting animals. The discipline forms an idea of the laws, features and fundamental differences in the structure of the body of wild and hunting animals, as well as the study of the structure of their organs and systems of different species of animals based on comparisons with domestic animals. The main tasks of studying the discipline are: creating an idea of the organism as a whole; its structure is studied in the relationship of organs, their devices and systems, as well as the interdependence of structure and function against the background of development in onto- and phylogeny; the discipline studies the structure and function of the body of wild and hunting animals.

The study of the discipline develops in applicants the ability to find individual organs and their parts, both on the carcasses of dead animals and in living animals, to navigate the differences between the entrails from domestic animals, and so on.

Sanitary Microbiology. The purpose of the discipline "Sanitary Microbiology" is to study the microflora of the environment, in particular, soil, water, air, food, microflora of living organisms. Also, the study of the principles and methods of sanitary and microbiological research, the concept of sanitary-indicative microorganisms, the study of the microflora of various objects.

The task of the discipline: the study of the history of the development of sanitary microbiology; groups of sanitary-indicative microorganisms, the nature and causes of microbial contamination of soil, water, air, food, human exposure; methods of indication of sanitary-indicative and pathogenic microorganisms; methods of indication and identification of sanitary-indicative microorganisms; methods for detecting pathogenic

microorganisms; sanitary and microbiological standards, legislative documents of Ukraine on the preservation of human health and environmental protection.

Neurophysiology with the basics of zoopsychology. Discipline that studies physiological processes in the nervous system as a substrate of mental activity; the functioning of the nervous system and its main structural unit - the neuron; membrane potential, action potential, biocurrents of the brain; membrane and cytoplasmic proteins; interaction of neurons; properties of the cortex of the cerebral hemisphere; reflex activity of the nervous system; properties of nerve centers; coordination of reflex processes; neural mechanisms of convergence, divergence, irradiation of excitement; positive and negative sequential induction; physiology of sensory systems; higher nervous activity of animals; classification and significance of conditioned reflexes, methods of their formation, physiological mechanism of the formation of conditioned reflexes, inhibition of conditioned reflex activity, analytical and synthetic activity of the cortex of the cerebral hemispheres, types of higher nervous activity, dynamic stereotype, signaling systems, motives of behavior, emotions and memory, classification of biological forms of animal behavior, physiological mechanisms of mental activity.

Methods of mycological research. Diseases of fungal etiology are widespread and cause significant economic damage to the livestock industry. The aim of the discipline is to deepen the knowledge of higher education students about the morphological structure of micromycetes, principles of taxonomy, features of major taxonomic groups of fungi, the role of microscopic fungi in the occurrence of chronic toxicosis in animals, methods of cultivating fungi, as well as mastering the methods of laboratory diagnosis of diseases they cause.

Organic animal husbandry. Discipline contributes to the formation of humane attitudes and principles of caring for animals, taking into account the natural needs and ethological characteristics of each animal species. Proper economic efficiency and cost-effectiveness of production, disease prevention and livestock loss require effective practical and scientific support, as organic animal husbandry is not just subsistence farming, but a combination of the latest technology and high production culture to produce the highest quality organic products.

Discipline forms logical thinking in applicants, promotes understanding of sustainable nature, conservation of the environment and biodiversity of organisms, animal welfare, the need to eat quality and safe products, the introduction of new technologies for growing and producing products.

Organization of laboratory work. The discipline involves the study of higher education students the necessary theoretical knowledge and practical skills to ensure the quality of laboratory tests based on the improvement and high reliability of research methods, as well as providing the necessary laboratory information for practical veterinary medicine; apply state and international standards for the organization of clinical diagnostic laboratories; assess the suitability of methods, traceability and uncertainty of the obtained measurement results; to teach students to create safe conditions for biological safety in the laboratory, to be familiar with laboratory utensils, equipment, analytical instruments, methods and techniques of laboratory analysis.

Biotechnology in Veterinary Medicine. The task of the course is to acquaint students with the basics of modern technologies based on the use of biological processes, to obtain basic skills in the biotechnology laboratory.

During the training, students master the basics of molecular biology - the fundamental basis of modern biotechnology; elements of construction of vector constructions of genetic engineering, technologies of genetically engineered antiviral vaccines, technologies of production of antibiotics, preparations of amino acids, diagnostic preparations (PCR), vaccines, immunomodulators.

Students will gain knowledge about the achievements in embryo transplantation; study the basics of traditional technological processes in the production of biological and chemotherapeutic drugs, get an idea of the state of these industries in modern biotechnological enterprises. This knowledge will form in future professionals the idea of the possibility of using biological processes and biological objects for the diagnosis, prevention and treatment of a number of animal diseases; creation of strains of microorganisms that produce various chemical compounds, antibiotics, polymers, amino acids and enzymes, sequencing of the genome of microorganisms, etc.

In addition, attention will be paid to the creation of genetically modified organisms and the biological safety of their use; methods of regulating the sex of animals, determining the sex of early embryos, and establishing family ties between them using molecular genetic methods.

Anesthesiology. Anesthesiology studies various types, methods and means of general and local anesthetics of animals, modern methods of controlling the condition of animals during anesthetic support and possible complications, means and methods of correction of critical states of an animal organism during anesthetic.

Veterinary haematology. The course is aimed at better understanding of blood in different animal species. The study of this discipline is an integral early diagnosis, treatment and prevention of diseases of various body systems.

Management of the health of the herd of animals. Methods of optimizing the herd management system and health problems at an early stage of the disease, reducing the losses associated with the treatment and culling of animals are studied. The discipline is designed to highlight the main issues of animal health to identify and eliminate animal health problems, optimize animal reproduction, reduce labor costs, which ultimately leads to improved overall economic performance of the farm.

Diet of small pets. The study of the discipline involves comprehensive learning of the current state and prospects for the development of veterinary nutrition of small domestic animals, the scientific basis of rational nutrition of animals depending on their physiological characteristics, age and health.

Visual diagnosis of animal diseases. The discipline studies special methods of diagnosing internal diseases of animals. Particular attention is paid to the basics of X-ray diagnostics and sonography, as well as the practical application of the acquired skills for the diagnosis of internal diseases of domestic animals. Processing the materials of the discipline will also allow applicants to gain skills in drawing up (according to standard protocols) conclusions on the results of radiographic and / or ultrasound examinations of the animal.

Reproductive biotechnology. The biological properties of germ cells and methods of manipulation with them, the processes of fertilization and development of embryos carried out in vitro are studied. The course is designed to highlight the main issues regarding the peculiarities of the basics of various embryological and cellular techniques and assisted reproductive methods in veterinary medicine and biology.

Veterinary transfusiology. The peculiarities of blood donation and protocols of whole blood and blood components transfusion in different species of animals are studied. Methods of blood transfusion in animals at different pathological conditions. Immediate and distant reactions of the animal-recipient after blood transfusion.

Diseases of fur animals. Biology and keeping of rabbits and the main species of fur animals are considering. The most common parasitic diseases of fur animals and rabbits, features of these diseases, modern methods of their diagnosis, treatment and prevention are studying.

Dermatology and endocrinology. The discipline provides the formation of knowledge of the most common skin and endocrine diseases of domestic and productive

animals, their clinical manifestations, species characteristics, diagnostic methods, approaches and modern treatment protocols, measures to prevent the development of these pathologies, as well as effective use of practical skills in professional activities.

Biosecurity and Biosafety. Biosecurity in the context of sustainable livestock is one of the most important components of food, environmental and national security of Ukraine. The implementation of biosafety policy should be carried out by creating a system that will detect, predict, prevent and combat existing threats of biological origin.

The aim of the course "Biosecurity and Biosafety" is to study students' concepts of biosecurity and biological protection with elements of biological terrorism.

Tasks of the discipline: study of basic issues of biosafety and protection. The basis of the discipline is the European experience of biosafety systems in industrial enterprises and in countries. Understanding the system of formation of the problem of biological security and cases of use of biological weapons. Consideration of the use of pathogens of natural diversity. Chimera virus. Nipah virus. Ebola virus. Smallpox virus, Anthrax. As well as readiness to assess and manage biosafety crises

The technology of decontamination and felling of animals will also be studied.

In addition, the discipline will study laboratory biosecurity and biorisk assessment in different conditions (selection, transfer and transportation of biological materials, research and disposal of biomaterial).

Management of the health of the herd of animals. Methods of optimizing the herd management system and health problems at an early stage of the disease, reducing the losses associated with the treatment and culling of animals are studied. The discipline is designed to highlight the main issues of animal health to identify and eliminate animal health problems, optimize animal reproduction, reduce labor costs, which ultimately leads to improved overall economic performance of the farm.

Veterinary Neonatology. Anatomical, physiological features of newborn animals, a complex of diseases that occur in them are studied. Major diseases: umbilical sepsis, calf asphyxia, malnutrition, umbilical cord bleeding, urachus fistula, congenital absence of anus and rectum, meconium retention in newborns. Their manifestation, causes, clinical signs, general principles of diagnosis, clinical and surgical methods of treatment and prevention of neonatal pathology in animals.

Veterinary nephrology and urology. The discipline studies the physiology of urine products, pathology of the urinary system of small pets, their etiology, pathogenesis, symptoms, diagnosis (urine analysis, ultrasound, native and contrast radiography, CT and MRI studies), treatment and prevention, and diseases related with dysfunction of these glands.

Organization of veterinary business The discipline studies the legal basis of business in Ukraine and provides practical skills in drawing up founding documents, as well as rules and procedures for obtaining licenses, printing, registration and registration of individuals and legal entities, opening bank accounts, taxation of small and medium businesses and more.

The main tasks of studying the discipline:

- to be used with the current legislative and regulatory documents on the organization of veterinary business in the country;
- to study the methods of preparation of veterinary, organizational and financial documents necessary for the creation and effective functioning of commercial veterinary organizations;
- to consider practical issues of veterinary entrepreneurship;
- to be able to have international experience in the field of veterinary business.
- teach the basic principles of marketing policy in the veterinary marketing.

Veterinary support in poultry. With modern poultry farming, as industrial, homestead or individual, intensification of agricultural production and changes in housing conditions, there are circumstances that require correction of homeostasis, immunobiological reactivity and non-specific and specific immunity in birds. Laboratory-diagnostic measures in industrial poultry farming, biosafety measures and vaccine prevention of bird diseases are especially relevant.

Improving the productivity and cost-effectiveness of poultry farming requires highly qualified specialists to conduct both planned and operational monitoring of birds health at industrial sites in the environment and in laboratories with modern equipment. The specialist must have the skills to respond effectively to the epizootic situation and the ability to plan and monitor the health of birds and the quality of poultry products. In order to expand production relations with European countries, the specialist needs skills and knowledge of the measures of the economic component of veterinary health and welfare, which reduce the cost of poultry products and improve their quality. The course is provided with a textbook "Laboratory Diagnosis and Vaccine Prevention of Bird Diseases".

Diseases of exotic animals. The discipline is aimed at deepening theoretical and practical knowledge of students on anatomical, topographical and physiological features of exotic animals; gaining of modern methods of clinical and instrumental research, diagnosis and treatment of exotic and wild animals which are kept in zoos, reserves, terrariums, special farms, the private sector and nature (even and odd-toed ungulates, tylopods, primates, predators, rodents, reptiles, ostriches, ornamental birds).

Intensive care and resuscitation of animals. The study of the discipline provides higher education students with theoretical knowledge and practical skills in the methodology of data analysis of clinical and laboratory studies, diagnosis and treatment of the most common critical conditions in animals. This course includes learning of the basic principles of initial stabilization and maintenance of vital functions of the whole animal body and a systematic approach to the most common critical conditions.

Zoonoses and the concept of One health. The aim of the discipline "Zoonoses and the concept of One health" is to study students' concept of "One Health" - cooperation between WHO, FAO and OIE on the interface "man-animal-environment" in the control of zoonoses, as well as European experience in risk management zoonoses.

Tasks of the discipline: study of zoonoses of bacterial origin (Bacterial zoonoses of productive animals, Bacterial zoonoses of domestic and exotic animals. Natural-focal and vector bacterial zoonoses), zoonoses of viral origin (Viral zoonoses of productive animals, viral and zoonoses of domestic animals). vector zoonoses and current threats of viral zoonoses in industrial livestock, risk detection and control.

As well as food zoonoses (characteristics of the most common food zoonoses (bacterial, viral, parasitic), ways of contamination of food) and investigation and analysis of outbreaks of the most common food zoonoses.

In addition, the discipline will study crisis preparedness and management (Crisis Preparedness & Management) and risk management of zoonoses. National programs for monitoring and control of biological hazards - zoonotic agents. Analysis of the epidemiological situation and monitoring of zoonoses: analysis of monitoring and final reports of the EU, jointly prepared by the European Food Safety Authority (EFSA) and the European Center for Disease Prevention and Control (ECDC).

Optional Block 2 (the applicant chooses one component)

Optional Block 2.1 "Preventive veterinary technologies of Animal Health Providing"

Preventive technologies to ensure the health of productive animals. Discipline studies preventive veterinary measures for the emergence of non-contagious and contagious diseases in productive livestock and poultry farms of different ownership,

planning epidemic measures, diagnosis of diseases of different etiology, clinical and laboratory studies of biological material, modern technology of growing animals and birds, monitoring the conditions of detention and animal feed and poultry.

Preventive technologies to ensure the health of horses. Mastering the disciplines will give the opportunity to acquire knowledge on feeding, housing, breeding, use and maintenance of horses, modern methods of reproduction, including the prevention of non-contagious obstetric and surgical pathology. Modern methods of diagnosis of infectious and parasitic diseases of horses and their means of prevention.

Preventive technologies to ensure the health of small animals. Discipline studies preventive veterinary measures for the emergence of non-contagious and contagious diseases in small domestic and exotic animals including their feeding and maintenance. Contemporary instrumental and laboratory methods for diagnosis of infectious and noninfectious diseases. Tools and schemes specific prevention of infectious and parasitic diseases. Providing professional assistance and medicines used for the treatment of small domestic and exotic animals.

Optional Block 2.2 "Veterinary welfare of dogs and cats"

Innovative technologies nutrition, genetics and dogs and cats breeding. Discipline aims to provide future professionals in-depth knowledge of innovative character of the need for nutrient feed composition feed control full feeding dogs and cats. Dog breeds, Dog breeding business and domestic breeds of cats. Application of inbreeding in the breeding of small animals, methods preserve the gene pool of dogs and cats. Veterinary Genetics.

Preventive veterinary technology non-communicable diseases of dogs and cats. Discipline studies preventive veterinary measures for the emergence of diseases associated with metabolic disorders, hormonal disorders, vitamin and mineral nutrition in dogs and cats. Prevention of obstetric pathology in dogs and cats, methods of hormonal regulation of the sexual cycle in dogs and cats. Traumatology, dentistry, orthopedics, microsurgery. Prevention of surgical pathology and modern technology in veterinary surgery.

Preventive veterinary technology contagious diseases of dogs and cats. Discipline aims to study modern methods of diagnostic tests and preventive measures for infectious and parasitic diseases of dogs and cats. In the course of study students will learn morphological features and life cycle of pathogens and their systematic position, etiology, pathogenesis and formation of immunity in dogs and cats. Prevention helminthoses, acaroses, entomoses, diseases caused by protozoa.

Optional Block 2.3 "Veterinary health support of pigs"

Veterinary preventive technologies of non-contagious diseases of pigs. The discipline studies modern approaches to preventive veterinary measures for the occurrence of non-contagious pathology in pigs in farms of various forms of ownership; diagnosis of diseases (internal non-contagious, obstetric, gynecological, andrological, surgical) of various etiologies and laboratory studies of biological material.

Veterinary preventive technologies of contagious diseases of pigs. The discipline studies modern approaches to preventive veterinary measures for the occurrence of contagious pathology (infectious and invasive) in pigs; planning of anti-epizootic and antiparasitic measures; diagnosis of infectious and parasitic diseases of various etiologies. Significant attention is paid to laboratory methods of research of biological material.

Hygiene of pigs maintenance. The discipline studies modern technologies of pig breeding; control of hygienic conditions for keeping and feeding pigs.

FACULTY OF HUMANITIES AND PEDAGOGY

Dean – Associate professor Inna Savytska, Candidate of Philosophical Science

Tel.: (044) 527-80-83

E-mail: pedagogy_dean@twin.nubip.edu.ua

Location: Academic Building 3, Room 101

The faculty organizes and coordinates the educational and training process for Master of Science students of the following specialties:

Speciality 011 “Educational science”

Educational program “Pedagogy of higher school”

Guarantor of the educational and professional program – senior lecturer of the university Lidia Cherednyk, Candidate of Pedagogical Sciences

Graduate Department of:

Pedagogy

Tel: (044) 527-83-55

E-mail: pedagogic@ukr.net

Head of Department – docent Ruslan Sopivnyk, Doctor of Pedagogical Science.

Educational program “Information and communication technologies in education”

Guarantor of the educational and professional program – Associate professor Oleksandr Kuchai, Doctor of Pedagogical Science

Graduate Department of:

Pedagogy

Tel: (044) 527-83-55

E-mail: pedagogic@ukr.net

Head of Department – Associate professor Ruslan Sopivnyk, Doctor of Pedagogical Science

Specialty 035 “Philology”

Specialization 035.041 “Philology (German Languages and Literature) (Including Translation), first – English)”

Educational program “English and other foreign language”

Guarantor of the educational and professional program – doctor of philological sciences, professor Lychuk Mariia Ivanivna

Departments in charge of graduate training:

Romance and Germanic Languages and Translation

Tel.: (044) 527 – 85 – 65

E-mail: krgm@ukr.net

Head of department – Doctor of Philological Science, professor Lychuk Mariia Ivanivna

Specialization 035.043 “Philology (German Languages and Literature) (Including Translation), first – German)

Educational program “German and other foreign language”

Guarantor of the educational and professional program – PhD in Philology, Associate professor N. Olkhovska

Departments in charge of graduate training:

Foreign Philology and Translation

Tel.: (044) 527-80-83

E-mail: kifip@ukr.net

Head of department – Doctor of Pedagogy, Professor S. Amelina

Specialty 053 “Psychology”

Educational program “Psychology”

Guarantor of the educational and professional program – Vitaliy Shmargun, Doctor of psychological sciences, professor

Departments in charge of graduate training:

Psychology

Tel.: (044) 527-83-54

E-mail: martirene@nubip.edu.ua

Head of department – PhD in psychology, docent Iryna Martyniuk

Specialty 061 “Journalism”

Educational program “Journalism”

Guarantor of the educational and professional program – doctor of philological sciences, professor Navalna Maryna Ivanivna

Departments in charge of graduate training:

Journalism and verbal communication

Tel.: (044) 527 – 83 – 63

E-mail: zhur_kaf@ukr.net

Head of department – doctor of pedagogical sciences, professor Kostrytsia Nataliia Mykolaivna

Specialty 073 “Management”

Educational program “Management of education institution”

The guarantor of the educational and professional program is the Candidate of Pedagogical Sciences, Associate Professor Bazeliuk Vasyl Hryhorovych.

Graduation Department:

Management and Educational Technologies

Tel.: (044) 527-83-56

E-mail: metod_dep@nubip.edu.ua

The head of the department is the Candidate of Pedagogical Sciences, Professor Kubitskyi Serhii Olehovych.

Educational program "Human Resources Management"

Guarantor of the educational and professional program the Candidate of Pedagogical Sciences, Professor Kubitskyi Serhii Olehovych.

Graduation Department:

Management and Educational Technologies

Tel: (044) 527-83-56

E-mail: metod_dep@nubip.edu.ua

Head of department is the Candidate of Pedagogical Sciences, Professor Kubitskyi Serhii Olehovych.

Specialty 231 "Social work"

Educational-professional Program "Social and psychological rehabilitation"

Head of educational program – Doctor of Pedagogical Sciences, Associate Professor I. Sopivnyk.

Graduation department:

Social Work and Rehabilitation

Tel.: (044) 527-80-73

E-mail: socpedagogy@ukr.net

Acting Head of the Department Doctor of Pedagogical Sciences, Associate Professor I. Sopivnyk.

Specialty 291 "International relations, public communications and regional studios"

Educational-professional Program "International relations, public communications and regional studios"

Guarantor of the program – Liliia Makarenko, Doctor of Political Sciences, Associate Professor

Graduating departments:

International Relations and Social Sciences

Tel.: (044) 527-81-16

E-mail: kaf_ist_pol@ukr.net

Head of Department – Alexander V. Shevchuk, Doctor of Political Sciences, Professor

**Training of masters of sciences
in branch of knowledge "Education/Pedagogy"
in speciality 011 "EDUCATIONAL AND PEDAGOGICAL SCIENCES"
in educational program "PEDAGOGY OF HIGHER SCHOOL"**

Form of Training	Licensed number of persons
– Full-time EPP	35
– Part-time EPP	30
Duration of Training:	
– full-time educational and professional program	1 year and 4 months
– Part-time	1 year and 4 months
Credits ECTS:	
– educational and professional program	90
Language of teaching	Ukrainian
Qualification of graduates	Master of Educational, Pedagogical Sciences. Higher education teacher

The Concept of Training

The training of masters of educational and pedagogical sciences, teachers of higher education institutions is determined by the need of our state for specialists who are able to carry out work related to the organization of the educational process, methodical and scientific work in institutions of professional pre-higher and higher education, carry out activities of various directions that contribute to the social development of young people, who studies in institutions of higher education.

Presupposes the mastery of general and professional competences sufficient for the complex solution of problems in the professional-pedagogical and innovative activities of an educational institution; training of teachers of vocational training, mentors of academic groups, business and life coaches, capable of effectively solving the tasks of education and comprehensive development, professional development of the personality of students of higher education institutions in general and agricultural and environmental protection institutions in particular, capable of forming a corporate culture, increasing professional qualifications, teaching personnel of enterprises, organizations, companies in the agricultural sector of the economy of Ukraine.

Areas of employment of graduates

A graduate with the qualification "Higher education teacher" can work in the following positions: assistant, methodologist, lecturer, teacher-organizer, researcher in the field of education, researcher-consultant (teaching methods), teacher in higher education institutions, vocational and technical educational institutions, institutions of professional higher education in the field of physical, mathematical, technical, biological, agronomic, medical or humanities.

Optional Block 1

The selective unit provides for the future specialist to master such a set of disciplines of special (professional) training as "Electronic pedagogy in the context of digitalization of vocational education", "Smart digital technologies".

The purpose of the components of free choice of the student of Selective block 1 is mastering of bases of a technique of introduction in system of education of perspective advanced technologies for the organization of modern educational interaction; formation of skills of creation of electronic training courses; awareness of the peculiarities of the

organization of the educational process, the role of the tutor and the success factors of e-learning.

The study of disciplines also involves mastering the basics of development and programming of devices, which are considered as a set of technical, informational and software tools designed to solve a wide range of problems in various fields of education, economics, industry and more.

Optional Block 2

The selective unit provides for the future specialist to master the component of free choice from the proposed disciplines of special (professional) training ("Pedagogy of tolerance", "Pedagogical skills and ethics of a high school teacher").

Mastering the theoretical foundations and practical skills in the disciplines involves mastering the practical principles of solving professional pedagogical problems related to problems of conflict, tolerant consciousness and behavior in a multicultural educational environment based on interdisciplinary scientific knowledge and modern humanitarian technologies; awareness of the content and components of pedagogical skills of a teacher, tolerant professional communication, principles and norms of scientific and pedagogical ethics of a specialist (teacher and head of a higher education institution), creative nature of pedagogical work, requirements for professionally significant qualities of teachers; formation of a humane position in the process of active communication with various subjects of pedagogical activity; mastering the mechanisms of creative self-realization in professional activities and ways of professional self-improvement; mastering the norms and principles of scientific and professional ethics.

Optional Block 3

The selective unit provides for the future specialist to master the components of such a set of disciplines of special (professional) training as "Methods of work of a group mentor", "Health-preserving technologies in the educational process".

Mastering the disciplines involves solving a number of tasks of fundamental professional training, in particular: the disclosure of modern scientific concepts of health technologies in the educational process of educational institutions, which will contribute to the formation, preservation and strengthening of health of students and teachers; mastering the method of work of the group mentor to create moral, psychological and organizational conditions for self-development of students, the formation of student body, organization and conduct of educational activities.

Optional Block 4

The selective unit provides for the mastering by a future specialist of components from a complex of educational disciplines of special (professional) training ("Business coaching", "Retrospective analysis of ideas of personality education").

The purpose of studying the educational components of list 4 is to master the basic technologies and tools of business coaching, to get acquainted with the best practices and models of life and business coaching; retrospective analysis and generalization of philosophical, psychological, economic and pedagogical ideas of personality education outlining approaches to improving the educational process, analysis of the theoretical foundations of the formation and development of ideas of personality education.

Practical training

Practical training is carried out according to the schedule of the educational process directly on the certified bases of practices, among which: vocational and technical educational institutions, institutions of professional higher education and institutions of

higher education. Vocational training provides on the basis of the listed educational institutions: assistant practice, industrial complex practice in the specialty, scientific and pedagogical practice.

**Curriculum of Master training
in educational program "Pedagogy of higher education"
(educational and professional program of master's training)**

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
GENERAL TRAINING CYCLE			
Compulsory components of EPP			
CC 1	Business foreign language	5	exam
CC 2	Head of educational institution	4	test, exam
Optional components of EPP			
<i>Free choice according to the preferences of students from the list of disciplines</i>			
OCP 1	Choice from the catalog 1	4	test
OCP 2	Choice from the catalog 2	4	test
SPECIAL (PROFESSIONAL) TRAINING CYCLE			
Compulsory components of EPP			
CC 3	Pedagogy of high school	10	course robot, exam
CC 4	Fundamentals of scientific research in pedagogy.	4	exam
CC 5	The history of pedagogy and the development of higher education in foreign countries.	6	exam
CC 6	Leadership in education	4	exam
CC 7	Distance education	4	offse
CC 8	Methods of teaching agricultural disciplines	8	exam
CC 9	Practical training	10	
CC 10	Preparation and defense of master's qualification thesis	11	
Optional components of EPP			
<i>Free choice according to specialty</i>			
<i>Optional Block 1</i>			
OC 1	Electronic pedagogy in the conditions of digitalization	4	offse
	Smart digital technology		
<i>Optional Block 2</i>			
OC 2	Pedagogy of tolerance	4	exam
	Pedagogical excellence and ethics of the teacher of higher education		
<i>Optional Block 3</i>			
OC 3	Methods of work of the group mentor	4	offse
	Health-preserving technologies in the educational process		
<i>Optional Block 4</i>			
OC 4	Business coaching	4	exam
	Retrospective analysis of ideas of personality education		
The total amount of compulsory components		66	
The total amount of optional components		24	
THE TOTAL AMOUNT OF EPP		90	

Annotations of subjects in the curriculum

GENERAL TRAINING CYCLE

Compulsory components of EPP

Business foreign language. The formation of knowledge and skills for reading professional and scientific literature, conducting conversations in the “teacher-student”, “supervisor-subordinate”, “subordinate-supervisor” modes, annotating and abstracting the text.

Head of educational institution. The constituent documents of the educational institution, state regulation of the activities of educational institutions, the system of normative documents in the field of education, legislative and regulatory acts of the labor protection and civil protection management system, the organizational basis of the work of the head of the educational institution, the work of the administrative service of educational institutions, disciplinary relations management, institution management technologies.

SPECIAL (PROFESSIONAL) TRAINING CYCLE

Compulsory components of EPP

Pedagogy of high school. The questions of theory and practice of the organization of training (didactics), education and management of education in higher education institutions are considered.

Fundamentals of scientific research in pedagogy. Pedagogical research, research methods, organization of scientific research, processing of research results, pedagogical experiment.

The history of pedagogy and the development of higher education in foreign countries. The development of the theory and practice of upbringing, education and training from ancient times to the present, in different historical periods, in different socioeconomic formations.

Leadership in education. The aim of the discipline "Leadership in education" is to provide students with knowledge about the essentiality of leadership origins theory, its types, styles of leader behavior, means of person's leadership qualities realization, secrets of getting success, examples of success in business, agroindustrial complex, scientific life, art, sport, IT-sphere. Discipline includes a subject-specific component which allows students: to get knowledge of the leadership qualities self-improvement, means of the influence on the person's behavior and consciousness, skills of group managing, usage of constructive manipulation and how to disable destructive manipulative ways of influence, how to build up well-balanced interpersonal relationship in the group of people.

Distance education. The purpose of the discipline is the theoretical foundations and practical skills of organizing the educational process in distance format, features of distance learning as a kind of m-learning, features of the information educational environment of higher education, theoretical aspects of using cloud technologies, Google communication tools.

Methods of teaching agricultural disciplines. Knowledge of discipline is necessary when studying the laws of development and improvement of production in specific enterprises and associations of agricultural production, as well as maximizing profit. The purpose of this discipline is to obtain theoretical knowledge and the acquisition of practical skills on the efficient use of productive resources, the rational organization of labor, and the highly efficient conduct of agricultural business in a competitive market. The issues of the program of the discipline highlight the problems of the development of the agricultural sector of the economy, the form of agricultural enterprises at the present stage, the infrastructure of the agricultural market, the principles of the organization of

cooperatives, the ways of rational use of the material and technical base, the progressive forms of labor organization and the main directions for their improvement, the basics of agricultural calculation and other.

Optional components of EPP
Free choice according to specialty

Optional Block 1

Electronic pedagogy in the conditions of digitalization. Mastering the method of introduction into the education system of advanced advanced technologies, such as digital, in particular, for the organization of modern educational interaction; formation of skills of creation of electronic training courses; awareness of the peculiarities of the organization of the educational process, the role of the tutor and the success factors of e-learning.

Smart digital technology. The study of the discipline involves mastering the basics of development and programming of devices that work with smart technologies and Internet of Things technologies. In this case, IOT devices are considered as a set of hardware, information and software tools designed to solve a wide range of problems in various fields of education, economics, industry and more.

Optional Block 2

Pedagogy of tolerance. Transmission of theoretical knowledge about the genesis and day-to-day of understanding “tolerance”, its aspect and warehouse, the world of tolerance in the discourse of globalization of the European understanding, the regulatory and legal base in the implementation of processes of ideas about tolerance practical ambushes of the development of professional pedagogical schools, dealing with the problems of confusion, tolerance and behavior in the minds of a multicultural educational medium on the basis of interdisciplinary human scientific knowledge and advanced technologies.

Pedagogical excellence and ethics of the teacher of higher education. Mastering the theoretical principles and practical skills of the discipline involves awareness of the content and components of pedagogical skills of the teacher, principles and norms of scientific and pedagogical ethics of the specialist (teacher and head of higher education), creative nature of pedagogical work, requirements for professionally significant qualities of teachers; formation of a humane position in the process of active communication with various subjects of pedagogical activity; mastering the mechanisms of creative self-realization in professional activities and ways of professional self-improvement; mastering the norms and principles of scientific and professional ethics.

Optional Block 3

Methods of work of the group mentor. Вивчення дисципліни передбачає оволодіння методикою роботи наставника групи щодо створення морально-психологічних і організаційних умов для саморозвитку здобувачів освіти, формування студентського колективу, організації та проведення виховних заходів.

Health-preserving technologies in the educational process. The study of the discipline involves solving a number of problems of fundamental professional training, in particular: mastering the system of knowledge about the laws of health education and upbringing; study of technologies, programs, methods, which are aimed at the formation of health competencies, personal qualities that contribute to the preservation and strengthening of personal health, leading a healthy and safe lifestyle.

The purpose of teaching the discipline is to reveal modern scientific concepts of the introduction of health technologies in the educational process of educational institutions,

which will contribute to the formation, preservation and strengthening of the health of students and teachers.

Optional Block 4

Business coaching. Provides mastery of basic technologies and tools of business coaching, which will help solve practical problems in the field of psychological and pedagogical support of the individual and organization. Objectives of the course: mastering the knowledge of the psychological patterns of the coach's work to achieve a clear goal in the field of professional activity, personal life or self-development; structuring algorithms for goal setting, decision making, planning or motivation using coaching techniques and technologies; revealing the creative potential of the student to access ideas that open up innovative opportunities.

Introduction to the best practices and models of life and business coaching: coaching a new business; on business transformation; financial coaching in business, development of corporate standards, selection and inheritance of foreign experience; profitable partnership coaching; to build business relationships; marketing coaching; on personnel management; from effective advertising; pricing strategy, etc.

Retrospective analysis of ideas of personality education. The purpose of studying the discipline is a retrospective analysis and generalization of philosophical, psychological, economic and pedagogical ideas of personality education and involves penetration into the essence of educational and pedagogical phenomena, outlining approaches to improving the educational process, analysis of theoretical foundations of formation and development of personality education.

**Training of masters of sciences
in branch of knowledge "Education/Pedagogy"
in speciality 011 "EDUCATIONAL AND PEDAGOGICAL SCIENCES"
educational program "INFORMATION AND COMMUNICATION
TECHNOLOGIES IN EDUCATION"**

Form of Training	Licensed number of persons
– Full-time EPP	35
– Part-time EPP	30
Duration of Training:	
– full-time educational and professional program	1 year and 4 months
– Part-time	1 year and 4 months
Credits ECTS:	
– educational and professional curriculum	90
Language of teaching	Ukrainian
Qualification of graduates	Master of Education. The specialist in the area of Information and communication technology. Higher education teacher

The Concept of Training

The training of a teacher of a higher education institution is determined by the need of our state for specialists who work to solve applied problems in the field of application of information and communication technologies in education, including the management of information resources, which form the basis of the educational information environment of an educational institution.

Areas of employment of graduates

A graduate with the qualification of “teacher of higher education institutions” can work in the following positions: assistant, teacher in higher education institutions for teaching disciplines with ICT, development of electronic educational materials (technical schools, colleges, higher schools, universities); in scientific, research institutions, methodological centers for the development, implementation and use of information and communication technologies in education; Information Technology Management Expert.

Optional Block 1

The sample block provides for mastering by a future specialist of such a complex of educational disciplines of special (professional) training, as “Pedagogical and psychological foundations of interpersonal interaction in a virtual educational environment”, “Education of the culture of using cyber space”, “Valeo Cybernetics”, “Psychology of success”.

The purpose of Optional block 1 is to study the pedagogical, psychological, cultural aspects of interpersonal interaction; understanding of the laws, principles, forms, methods and means of instruction in a virtual educational environment, mastery of their content and a system for monitoring and evaluating learning outcomes; improvement, design and modeling of the content of academic disciplines; application of theory and methodology of practical training; planning, organizing the educational process in higher education institutions, fostering a culture of using cyber space.

The academic disciplines of this electoral bloc enable higher education applicants to master the moral and ethical standards of computer ethics: Fundamentals of professional and applied ethics; Computer Ethics: Introduction to the issue; Information

Ethics. Ethics Internet; Professional ethical norms and rules for “computer professionals”: types of relationships. Legal regulation of the ethics of computer relations Information and legal framework for the regulation of computer relations.

Optional Block 2

The sampling unit provides mastering of a future expert of such a complex academic subjects of special (professional) training, "Measurement in education", "Smart digital technologies in education, Design and examination of the information-educational environment".

The purpose of Optional block 2 is the study of aspects of development theory and teaching methods educational information and communication Sciences; an understanding of the laws, principles, forms, methods and means of teaching, the mastery of the content and system of monitoring and evaluation of results of training; improvement, designing and modelling the educational content of disciplines; applications of theory and technique of practical training; planning, organization of educational process in institutions of higher education.

Of the discipline of this electoral bloc enable applicants to higher education to master the spec tests, quality indicators tests of various types, validity and measurement error. Involves mastering the basics of development and programming devices that operate using smart technologies and Internet technologies. The device information educational technologies are considered as a set of technical, informational and software tools designed to solve a wide range of tasks in various sectors of the economy, education, industry.

Involves the study of the theoretical foundations of design as improving the quality of teaching process (level of organization, the adequacy of methods and means of training, qualification of teachers, and others) Designing open educational technology. Open educational content. Pedagogical design as a science and practical activity. E-learning materials and their characteristics. The structure of the multimedia course. Electronic textbook, Electronic directory, training complex. Electronic laboratory, Computer testing system. A computer model.

Optional Block 3

The sampling unit provides mastering of a future expert of such a complex academic subjects of special (professional) training, as a "Web programming", "Making e-resources training portal, Technology, STEM education, Technology mobile learning".

The purpose of Optional block 3 is the study of information and communication aspects of development of theory and teaching methods of disciplines cycle; understanding of laws, principles, forms, methods and means of creating web projects, e-resources training portal, STEM education and mobile learning, mastery of their content and the system of monitoring and evaluation of results of training; improvement, designing and modelling the educational content of disciplines; applications of theory and technique of practical training; planning, organization of educational process in institutions of higher education by means of ICT.

Of the discipline of this electoral bloc enable applicants to higher education to learn the basics of web design, web layout and web programming to the Internet, theoretical knowledge and practical skills in each of these areas, digital resources in the information society, digital information resources in the field of education, international and national educational resources and personalization of knowledge, technology, the skills needed in the information environment in the General secondary education system. Includes the study of theoretical and practical foundations of STEM education (Science, Technology, Engineering and Mathematics), the approach to the educational process, under which the

basis of knowledge acquisition is easy and accessible visualization of scientific phenomena that makes it easy to cover and gain knowledge based on practice and deep understanding of the processes.

Involves the study of the essence of mobile learning as e-pedagogy, the role and place of mobile learning technologies in educational process training of masters, distance learning as a kind of m-learning, information educational environment of institutions of higher education.

Optional Block 4

The sample block provides for the mastery of a future specialist in such a complex of educational disciplines of special (professional) training, such as "Organization of project activities", "Entrepreneurship", "World economy", "Philosophy of education".

The goal of Optional block 4 is to study the economic aspects of the development of the theory and methods of teaching disciplines; understanding of the laws, principles, forms, methods and training tools, mastery of their content and the system of monitoring and evaluation of learning outcomes; improvement, design and modeling of the content of academic disciplines; application of theory and methodology of practical training; planning, organization of the educational process in higher education institutions.

The academic disciplines of this electoral block enable higher education applicants to form a knowledge system that is related to the design, planning and control of the project, project budget, project risks, project management automation systems, international economic systems, international economic relations, subject and objectives of the philosophy of education.

Practical training

Practical training is carried out according to the schedule of the educational process directly on the certified practice bases, including: vocational education institutions and higher education institutions (technical schools, colleges, higher schools, institutes).

Curriculum of Master training in educational program "Information and communication technologies in education" (educational and professional program of master's training)

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
GENERAL TRAINING CYCLE			
Compulsory components of EPP			
CC 1	Business foreign language	5	exam
CC 2	Head of educational institution	4	test, exam
Optional components of EPP			
Free choice according to the preferences of students from the list of disciplines			
OCP 1	Choice from the catalog 1	4	test
OCP 2	Choice from the catalog 2	4	test
SPECIAL (PROFESSIONAL) TRAINING CYCLE			
Compulsory components of EPP			
CC 3	Methodology and organization of scientific researches with the basics of intellectual property	4	exam
CC 4	Information technologies in management of educational process	8	term paper, exam
CC 5	Modern programming technologies	8	exam
CC 6	Pedagogy of higher education	9	exam
CC 7	Leadership in education	4	exam

MASTER CURRICULA AND TRAINING PROGRAMS

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
CC 8	Teaching methods	4	exam
CC 9	Scientific and Industrial Practice	2	
CC 10	Production (assistant) practice	3	
CC 11	Production (undergraduate) practice	5	
CC 12	Preparation of Master's qualification thesis	9	
CC 13	Certification exam	1	
Optional components of EPP			
Free choice according to specialty			
<i>Optional Block 1</i>			
OC 1	Pedagogical and psychological foundations of interpersonal interaction in a virtual learning	4	exam
	Fostering a culture of use of cyber space		
	Valeo Cybernetics		
	The psychology of success		
<i>Optional Block 2</i>			
OC 2	Educational-dimension.	4	exam
	Smart digital technology		
	Design and examination of the information and educational environment		
<i>Optional Block 3</i>			
OC 3	Web programming	4	exam
	The creation of the e-resources		
	Technology STEM education		
	Mobile Learning Technologies		
<i>Optional Block 4</i>			
OC 4.	Organization of project activities	4	exam
	Entrepreneurship The essence of entrepreneurship		
	World economy		
	Philosophy of Education		
The total amount of compulsory components		66	
The total amount of optional components		24	
THE TOTAL AMOUNT OF EPP		90	

Annotations of subjects in the curriculum

GENERAL TRAINING CYCLE

Compulsory components of EPP

Business foreign language. The formation of knowledge and skills for reading professional and scientific literature, conducting conversations in the “teacher-student”, “supervisor-subordinate”, “subordinate-supervisor” modes, annotating and abstracting the text.

Head of educational institution. The constituent documents of the educational institution, state regulation of the activities of educational institutions, the system of normative documents in the field of education, legislative and regulatory acts of the labor protection and civil protection management system, the organizational basis of the work of the head of the educational institution, the work of the administrative service of educational institutions, disciplinary relations management, institution management technologies.

SPECIAL (PROFESSIONAL) TRAINING CYCLE

Compulsory components of EPP

Methodology and organization of scientific researches with the basics of intellectual property Pedagogical research, methods of research, organization of research, processing of results of research, pedagogical experiment.

Information technologies in management of educational process and the role and Place of information technologies in management of educational process, organizational bases of application of information technology in the management of the educational process, building an information system for the management of educational process

Modern programming technologies a Systematic exposition of modern software engineering. Focuses on the organization and management of software systems development, methods for assessing quality and reliability assurance programs. The main task - to teach students methods of analysis, design, implementation, testing, and managing the development of complex programs, to acquaint them with existing software engineering standards and development tools.

Pedagogy of higher education. Examines the theory and practice of organization (didactics), education and educational management in institutions of higher education.

Leadership in education. The aim of the discipline "Leadership in education" is to provide students with knowledge about the essentiality of leadership origins theory, its types, styles of leader behavior, means of person's leadership qualities realization, secrets of getting success, examples of success in business, agroindustrial complex, scientific life, art, sport, IT-sphere. Discipline includes a subject-specific component which allows students: to get knowledge of the leadership qualities self-improvement, means of the influence on the person's behavior and consciousness, skills of group managing, usage of constructive manipulation and how to disable destructive manipulative ways of influence, how to build up well-balanced interpersonal relationship in the group of people.

Teaching methods. Acquisition of knowledge and skills in: preparation of educational and methodological support of the educational process; development and use of criteria and tools for evaluating educational outcomes; conducting theoretical and practical training sessions using modern methodological systems, methods, techniques and technologies; organization of independent work, training and production practices, course design and preparation of qualifying works.

Optional components of EPP

Free choice according to specialty

Optional Block 1

Pedagogical and psychological foundations of interpersonal interaction in a virtual learning environment, exploring pedagogical aspects of creation of training-methodological support of effective conditions for students basic theoretical knowledge and practical skills, encourage them to seek new professional knowledge and innovative solutions to assigned tasks, including ICT; the ability to deliver a training problem that was stimulated by intellectual activity, analysis and comparison of the known facts, independence of conclusions and generalizations; effective use of computer oriented educational environment of a higher educational institution during the classroom and out of classroom educational activities with students.

Fostering a culture of use of cyber space, exploring the effects of cyber space on the person in the application of information technology two types of dependence on cyber space: Internet addiction (dependence on on-line games, the dependence on information sites, dependence on communication in cyber space, dependence on porn sites) and

gambling addiction. Preventive educational technology, aimed at preventing the formation of students' computer addiction, involves: - ensuring the emotional well-being of students.

Valeo Cybernetics examines ethical rules of computer ethics - the basis of professional and applied ethics; Computer ethics: an introduction to the issues; Information ethics. Ethics online; Professional ethical standards and rules for "computer professionals": the types of relationships. Legal regulation of the ethics of computer ratio Information and the legal basis for the regulation of computer ratios. Computer crime; Computer crime on the Internet: a legal assessment, the means of their prevention, and prevention; Ethical-legal problems of protection of intellectual property and copyright on the Internet.

The psychology of success intended for the formation of ideas and methods to achieve self-realization, self-actualization, psychological well-being, personal maturity, awareness of self-image and self-esteem, self-confidence, readiness to goal setting. The success category in psychology. The concept of success in psychology. The phenomenon of success in social Sciences: psychology, philosophy, sociology, pedagogy, etc. the Success of the event. A comparison of the concepts of "success" and "success". The concept of life and social success. The problem of the formation of orientation on achievement of success in life in today's youth.

Optional Block 2

Educational-dimension. Theoretical preparation for understanding the features of educational measurements, abilities and skills for their implementation; knowledge system for the development of test tasks and tests, their alignment, scaling, evaluation and use; knowledge of the basics of probability theory and mathematical statistics; general principles for testing statistical hypotheses; the formation of a scientific worldview and methodological culture of an expert in the field of education; mastery of knowledge about the development of intelligence, creative qualities, the ability to research and innovative activities in the field of education. To the subject "Educational Dimensions" includes topics for training experts in the field of education. It is aimed at developing professionally significant qualities of a manager.

Smart digital technology in education is to learn the basics of developing and programming devices that work using smart technologies and Internet of things technologies. At the same time, IT devices are considered as a combination of technical, information and software tools designed to solve a wide range of tasks in various sectors of the economy, education, and industry. Fundamentals of Smart Technologies and the Internet of Things Introduction to Smart Technologies: definition, principles, examples. Definition and principles of Smart Technologies. Data, information, knowledge. Smart city. Smart home. Examples of practical implementation of Smart technologies in the network

Design and examination of the information and educational environment considers design as an improvement in the quality of the educational process (level of organization, adequacy of teaching methods and means, teachers' qualifications) Design of open educational technologies. Open educational content. Pedagogical design as a science and practice. Electronic educational materials and their features. The structure of the multimedia course. Electronic textbook, Electronic reference book, Training complex. Electronic laboratory workshop, Computer testing system. Computer models. Selective block by choice of specialty.

Optional Block 3

Web programming learn the basics of web design, web layout and web programming to the Internet, theoretical knowledge and practical skills in each of these

areas. Theoretical foundations programming techniques. Introduction to programming technology. The classical technological processes. Standard technological processes. The main stages of technological approaches. The main technological approaches. Modern programming techniques. Dynamic Link Library (DLL) a dynamic link library. Dynamic Data Exchange (DDE) is a mechanism of interaction between Windows applications and OS/2. The concept of hypertext. and technology and its role in the world wide web. A review of the current standards of web technology. System Internet Protocol. The use of web-technologies for creation of modern information systems. The hypertext markup language HTML – based web documents. The structure of an html document

The creation of the e-resources training portal exploring digital resources in the information society, digital information resources in the field of education. The basic definitions. The concept of resource. Resource classification. Digital resources. Classification of digital resources. International and national educational resources and personalization known. Technology the skills. Information environment in the General secondary education system. Stages of creation of digital educational resources. and principles of their use. The forms and means of application of digital educational resources. in education. Design of digital educational resources. A systematic approach to creating and using digital educational resources. A systematic approach to resource providing technologies. . Multimedia educational resources such as network components of the human system.

Technology STEM education. Acquisition of knowledge and skills in: STEM-education, information and communication technologies; prospects for the use of information and communication technologies as a means of STEM-integration in the system of training future specialists; implementation experience; relevance of using STEM-STEAM-STREAM technologies; STEM education tasks; problems and directions of STEM education; STEM education and augmented reality technologies.

Mobile Learning Technologies. Studies the essence of mobile learning as a branch of e-pedagogy Mobile learning technologies as a branch of e-pedagogy. The place and role of mobile learning technologies in the organization of the educational process of training masters. Distance learning as a form of m-learning. Information educational environment of higher education institutions. Theoretical aspects of the use of cloud technology. Google Communication Tools.

Optional Block 4

Organization of project activities ”studies the organization of design, planning and project control, project budget, project risks, project management automation systems. The main objectives of the discipline “Project management of informatization - to ensure the assimilation of the basic theoretical, methodological and organizational foundations of project management; provide an opportunity to master the methods of project management at all phases of the project life cycle; develop the ability to use the tools of the project management methodology in activities related to the informatization of the economy; to familiarize with the capabilities of the most common project management software in Ukraine and their practical application; to teach students to isolate and analyze various types of computerization projects in order to build effective ways to develop and maintain software.

Entrepreneurship The essence of entrepreneurship. The emergence and evolution of the concept of "entrepreneurship". The main functions of entrepreneurship and the comprehensive description of its modern nature. The subject and method of "foundations of entrepreneurial activity." Fundamentals of the emergence and development of entrepreneurship. Organization of social production and its structure. The essence and evolution of economic systems. Commodity production is the material basis

for the emergence of entrepreneurship. An entrepreneurial idea and a mechanism for its implementation. Entrepreneurial idea. Determination of the advantages of the created enterprise. The technology of establishing your own business. Constituent documents and their Principles of entrepreneurial activity in Ukraine.

World economy. Formation of fundamental knowledge among higher education applicants about the features of the functioning of the world economy in the aggregate of all its subsystems and structural elements, objective laws and principles of its modern development, the sectoral sectoral and regional structure of the world economy, as well as the key characteristics of its transformations in the context of trans-nationalization and globalization. Mastering the ability to analyze the international market for goods, services and innovations, the global market for international investments and loans, as well as the global financial market and the world labor market; the study of methods and mechanisms for regulating the global economy.

Philosophy of Education. The generalization of the knowledge of masters in education at the theoretical and methodological level, as well as their involvement in the philosophical comprehension of the idea of education as a socio cultural phenomenon and the development of their own worldview concept of education; promoting the formation of a high level of competence and culture of university graduates.

**Training of masters of sciences
in branch of knowledge 03 "Human sciences"
in specialty 035 "PHILOLOGY"
specialization 035.041 "Philology (German Languages and Literature)
(Including Translation), first – English)
educational program "ENGLISH AND OTHER FOREIGN LANGUAGE"**

Form of Training:	Licensed number of persons:
– Full-time EPP	30
– Part-time	40
Duration of Training:	
– Full-time educational and professional program	1 year 4 months
– Part-time	1 year 4 months
Credits ECTS:	
– educational and professional program	90
Language of Teaching	Ukrainian, English, German
Qualification	Master of Philology

The concept of training

The training of philologists-researchers, translators and foreign language teachers of higher educational institutions is determined by the state's demand for specialists engaged in translation and interpretation of scientific literature in agrobiolgy, environmental protection, economy, engineering and technology, as well as documentation in the field of food quality and safety, exploring contemporary issues of foreign philology and translation, teaching foreign languages at higher educational institutions.

Areas of employment of graduates

The Master of Philology has a sufficient qualification level to work in different professional groups according to the State Classifier of Professions, namely:

- 2444 philologist, linguist;
 - 2444.1 philologist-researcher
 - 231 lecturer at universities and colleges;
 - 2320 teacher of a professional educational institution, teacher of a secondary educational institution;
 - 234 specialized schools teacher; 2444.2 translator
 - 24316 translator;
 - 24325 translator of technical literature.
- Educational and professional program of master's training

Practical Training

Practical training is an integral part of the educational process and is carried out according to the educational process schedule directly on authorized practice bases, including: institutions and enterprises of agrarian and environmental profiles of all forms of ownership having translation departments; research institutes and laboratories; translation agencies; higher education institutions.

Proposed Topics of master's qualification thesis

1. The strategies of rendering diplomatic documents into English
2. Methods of reproducing American natural and everyday realities in the Ukrainian language.

3. Discourse strategies and rhetorical techniques of public speeches on environmental protection issues: translation transformations from English to Ukrainian
4. Translation of borrowings in scientific and technical texts (on the material of agrarian texts).
5. Linguopragmatic specifics of the translation of texts on agrarian topics from English into Ukrainian.
6. Structural and semantic features of bilingual multi-component terms of the biotechnology sublanguage (on the basis of the Ukrainian and English languages).
7. Metaphor as a method of conceptualization and a source of term formation in the lexis of veterinary medicine (based on Ukrainian- English examples).
8. Lexical-semantic substitutions in the translation of scientific and technical texts of natural and ecological direction.

**Curriculum of Master training
in educational program "English and Other Foreign Language"
(educational and professional program of master's training)**

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
GENERAL TRAINING CYCLE			
Compulsory components of EPP			
CC 1	Pedagogy and Psychology of Higher School	4	exam
Total		4	
Optional components of EPP			
<i>Free choice according to the preferences of students from the list of disciplines</i>			
OCP 1	Choice from the catalog 1	4	test
OCP 2	Choice from the catalog 2	4	test
Total		8	
SPECIAL (PROFESSIONAL) TRAINING CYCLE			
Compulsory components of EPP			
CC 2	Methods of Teaching Translation at Higher School	4	exam
CC 3	Communication Strategies of the First Foreign Language	8	exam
CC 4	Communication Strategies of the Second Foreign Language	8	exam
CC 5	Translation Theory	6	exam
CC 6	Translation Techniques (the First Foreign Language)	8	exam
CC 7	Translation Techniques (the Second Foreign Language)	8	exam
CC 8	Methodology and Organization of Scientific Research with Fundamentals of Intellectual Property	4	exam
CC 9	Practical training	8	
CC 10	Preparation and defense of master's qualification thesis	8	
Total		62	
Optional components of EPP			
<i>Free choice according to specialty</i>			
<i>Optional Block 1</i>			
OC 1.1	Head of the Educational Institution	4	exam
OC 1.2	Information Technologies in Translation	4	exam
OC 1.3	Interpretation and Translation of Specialized Texts (Horticulture and Forestry; Ecology and Agronomy; Veterinary Medicine and Animal Science)	8	exam
Total		16	
<i>Optional Block 2</i>			
OC 2.1	Linguistics of the text.	4	exam
OC 2.2	Modern computer translators' tools	4	exam
OC 2.3	Interpretation and Translation of Specialized Texts	8	exam

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
	(Agrarian Law; Quality, Standardization and Certification Of Production; Agricultural Machinery, Agricultural Mechanization and Electrification)		
Total		16	
The total amount of compulsory components		66	
The total amount of optional components		24	
THE TOTAL AMOUNT OF EPP			90

Annotations of subjects in the curriculum

GENERAL TRAINING CYCLE Compulsory components of EPP

Pedagogy and Psychology of Higher School. Higher school and pedagogy of higher school of Ukraine today. The student and the lecturer as the subjects of pedagogical interaction. Principles of higher school didactics. Organizational forms and methods of teaching. Monitoring and assessing students' knowledge and skills. Organization of education at higher educational institutions. Subject, tasks and methods of psychology of higher school. Age characteristics of students. Psychological foundations of interactive learning. Teaching and learning styles and their correction. Students' learning motivation. Psychological theories for creating effective teaching methods at higher educational institutions.

SPECIAL (PROFESSIONAL) TRAINING CYCLE Compulsory components of EPP

Methods of Teaching Translation at Higher School. Didactic basics of translation. Translator's professional competence. Content of translation training. Teaching translation and training translators at the higher educational institutions of Ukraine. Working out a syllabus in basic foreign languages (department of translation). Organization of students' self-education.

Communication Strategies of the First Foreign Language. Basic complex of topics for conversations and communicative situations aimed to improve linguistic, educational, strategic, pragmatic, intercultural and professional competences of students.
Translation

Communication Strategies of the Second Foreign Language. Basic complex of topics for conversations and communicative situations aimed to improve linguistic, educational, strategic, pragmatic, intercultural and professional competence of students.

Translation Theory. Bases of the translation theory. Translation within Interlingua communication. The problem of determining what translation is. Functions of a verbal message. Pragmatic basis of translation. Hermeneutic and normative aspects of translation. Problematic issue of modelling and evaluating quality of translation. Invariant and the translation unit.

Translation Techniques (the First Foreign Language). Consecutive interpretation of German texts into Ukrainian, Ukrainian texts into English, translation of excerpts into Ukrainian. Oral and written summarization in Ukrainian and English. Listening and interpretation/translation of authentic text passages.

Translation Technique (the Second Foreign Language). Consecutive interpreting a German text into Ukrainian, Ukrainian text into German, translation of excerpts into Ukrainian. Oral and written summarization in Ukrainian and German. Listening and translation/interpretation of authentic text passages.

Methodology and Organization of Scientific Research with Fundamentals of Intellectual Property. General description of methodology. Forms and methods of empirical and theoretical knowledge. Methodological principles and concepts. Current problems of modern methodology of science. The system of organization of scientific and cognitive activity. Basic model of scientific research. Searching and processing scientific information. Methods of preparation and design for publications. Scientific and methodological culture.

Optional components of EPP
Free choice according to specialty

Optional Block 1

Head of the Educational Institution. The organizational principles of the working activity of the head of the educational institution, work of the administrative service of the educational institution, management of disciplinary relations, technologies of managing the institution.

Information Technologies in Translation. Information translation environment. The use of information technologies at stages: preparation, understanding, interpretation of the English scientific and technical text, information and reference search, creation of a translation text and selection of translation equivalents, checking the executed translation. Modern systems of machine and automated translation, CAT-systems.

Interpretation and Translation of Specialized Texts (Horticulture and Forestry; Ecology and Agronomy; Veterinary Medicine and Animal Science). Consecutive interpretation of German texts on horticulture and forestry, ecology and agronomy, veterinary medicine and animal science. Consecutive interpretation of Ukrainian texts into German, interpreting excerpts into Ukrainian. Oral and written summarization in Ukrainian and German.

Optional Block 2

Linguistics of the text. The text is presented as a complex phenomenon, since communicative models and concepts explicitly or implicitly constantly function in different types of text due to the interaction of both linguistic and extra-linguistic phenomena in the process of communication. The study of the links between theoretical concepts and the practice of applied linguistics, the structure of discourse and text, and the techniques of discourse analysis for the general theoretical training of a linguist. Discourse and textual analysis are presented.

Modern computer translators' tools. The use of information technologies in translation and interpretation. Using computer-aided translation (CAT), computer-aided interpreting (CAI) and remote simultaneous interpretation (RSI). Management of terminological resources in computer-aided translation systems, which are used to support simultaneous interpretation and computer-aided translation. The study of operations of search, selection, structuring, import, export of terminology, which is organized in the form of specialized terminology databases.

Interpretation and Translation of Specialized Texts (Agrarian Law; Quality, Standardization and Certification Of Production; Agricultural Machinery, Agricultural Mechanization and Electrification). Consecutive interpretation of German texts on agrarian law, quality, standardization and certification of production, agricultural machinery, agricultural mechanization and electrification into Ukrainian. Consecutive interpretation of Ukrainian texts into German, interpreting excerpts into Ukrainian. Oral and written summarization in Ukrainian and German.

**Training of masters of sciences
in branch of knowledge "Human sciences"
in specialty 035 "PHILOLOGY "
Specialization 035.043 "Philology (German Languages and Literature) (Including
Translation), first – German)
educational program "GERMAN AND OTHER FOREIGN LANGUAGE"**

Form of Training:	Licensed number of persons:
– Full-time	15
– Part-time	10
Duration of Training	
– full-time educational and professional program	1 year and 4 months
– Part-time	1 year and 4 months
Credits ECTS	90
Language of Teaching	Ukrainian, German, English
Qualification	Master in Philology, philologistresearcher, translator (German/English), teacher of higher educational institution

The concept of training

The training of philologists-researchers, translators and foreign language teachers of higher educational institutions is determined by the state's demand for specialists engaged in translation and interpretation of scientific literature in agrobiolgy, environmental protection, economy, engineering and technology, as well as documentation in the field of food quality and safety, exploring contemporary issues of foreign philology and translation, teaching foreign languages at higher educational institutions.

Areas of employment of graduates

The Master of Philology has a sufficient qualification level to work in different professional groups according to the State Classifier of Professions, namely:

- 2444 philologist, linguist;
- 2444.1 philologist-researcher
- 231 lecturer at universities and colleges;
- 2320 teacher of a professional educational institution, teacher of a secondary educational institution;
- 234 specialized schools teacher;
- 2444.2 translator
- 24316 translator;
- 24325 translator of technical literature.

Practical Training

Practical training is an integral part of the educational process and is carried out according to the educational process schedule directly on authorized practice bases, including: institutions and enterprises of agrarian and environmental profiles of all forms of ownership having translation departments; research institutes and laboratories; translation agencies; higher education institutions.

Proposed Topics of master's qualification thesis

1. Stylistic and cognitive-pragmatic problems of translation of German agrarian advertising texts.
2. Reproduction of the linguistic and cultural features of German political discourse in Ukrainian translation.
3. Use of electronic databases in the translation process.
4. Features of translation of linguistic means of informative texts in agrarian sector.
5. German terminological borrowings and their translation into Ukrainian.

**Curriculum of Master training
in educational program "German and Other Foreign Language"
(educational and professional program of master's training)**

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
GENERAL TRAINING CYCLE			
Compulsory components EPP			
CC 1	Pedagogy and Psychology of Higher School	4	exam
Optional components of EPP			
<i>Free choice according to the preferences of students from the list of disciplines</i>			
OCP 1	Choice from the catalog 1	4	test
OCP 2	Choice from the catalog 2	4	test
SPECIAL (PROFESSIONAL) TRAINING CYCLE			
Compulsory components EPP			
CC 2	Methods of Teaching Translation at Higher School	4	exam
CC 3	Communication Strategies of the First Foreign Language	8	exam
CC 4	Communication Strategies of the Second Foreign Language	8	exam
CC 5	Translation Theory	6	exam
CC 6	Translation Techniques (the First Foreign Language)	8	exam
CC 7	Translation Techniques (the Second Foreign Language)	8	exam
CC 8	Methodology and Organization of Scientific Research with Fundamentals of Intellectual Property	4	exam
CC 9	Practical training	8	
CC 10	Preparation and defense of master's qualification thesis	8	
Optional components of EPP			
<i>Free choice according to specialty</i>			
<i>Optional Block 1</i>			
OC 1.1	Head of the Educational Institution	4	exam
OC 1.2	Information Technologies in Translation	4	exam
OC 1.3	Interpretation and Translation of Specialized Texts (Horticulture and Forestry; Ecology and Agronomy; Veterinary Medicine and Animal Science)	8	exam
<i>Optional Block 2</i>			
OC 2.1	Comparative Typology of the First Foreign and Ukrainian Languages	4	exam
OC 2.2	Modern computer translators' tools	4	exam
OC 2.3	Interpretation and Translation of Specialized Texts (Agrarian Law; Quality, Standardization and Certification Of Production; Agricultural Machinery, Agricultural Mechanization and Electrification)	8	exam
The total amount of Compulsory components		66	
The total amount of Optional components		24	
THE TOTAL AMOUNT OF EPP		90	

Annotations of subjects in the curriculum

GENERAL TRAINING CYCLE

Compulsory components of EPP

Pedagogy and Psychology of Higher School. Higher school and pedagogy of higher school of Ukraine today. The student and the lecturer as the subjects of pedagogical interaction. Principles of higher school didactics. Organizational forms and methods of teaching. Monitoring and assessing students' knowledge and skills. Organization of education at higher educational institutions. Subject, tasks and methods of psychology of higher school. Age characteristics of students. Psychological foundations of interactive learning. Teaching and learning styles and their correction. Students' learning motivation. Psychological theories for creating effective teaching methods at higher educational institutions

SPECIAL (PROFESSIONAL) TRAINING CYCLE

Compulsory components

Methods of Teaching Translation at Higher School. Didactic basics of translation. Translator's professional competence. Content of translation training. Teaching translation and training translators at the higher educational institutions of Ukraine. Working out a syllabus in basic foreign languages (department of translation). Organization of students' self-education.

Communication Strategies of the First Foreign Language. Basic complex of topics for conversations and communicative situations aimed to improve linguistic, educational, strategic, pragmatic, intercultural and professional competences of students. Translation

Communication Strategies of the Second Foreign Language. Basic complex of topics for conversations and communicative situations aimed to improve linguistic, educational, strategic, pragmatic, intercultural and professional competence of students.

Translation Theory. Bases of the translation theory. Translation within Interlingua communication. The problem of determining what translation is. Functions of a verbal message. Pragmatic basis of translation. Hermeneutic and normative aspects of translation. Problematic issue of modelling and evaluating quality of translation. Invariant and the translation unit.

Translation Techniques (the First Foreign Language). Consecutive interpretation of German texts into Ukrainian, Ukrainian texts into English, translation of excerpts into Ukrainian. Oral and written summarization in Ukrainian and English. Listening and interpretation/translation of authentic text passages.

Translation Technique (the Second Foreign Language). Consecutive interpreting a German text into Ukrainian, Ukrainian text into German, translation of excerpts into Ukrainian. Oral and written summarization in Ukrainian and German. Listening and translation/interpretation of authentic text passages.

Methodology and Organization of Scientific Research with Fundamentals of Intellectual Property. General description of methodology. Forms and methods of empirical and theoretical knowledge. Methodological principles and concepts. Current problems of modern methodology of science. The system of organization of scientific and cognitive activity. Basic model of scientific research. Searching and processing scientific information. Methods of preparation and design for publications. Scientific and methodological culture.

Optional components of EPP
Free choice according to specialty

Optional Block 1

Head of the Educational Institution. The organizational principles of the working activity of the head of the educational institution, work of the administrative service of the educational institution, management of disciplinary relations, technologies of managing the institution.

Information Technologies in Translation. Information translation environment. The use of information technologies at stages: preparation, understanding, interpretation of the English scientific and technical text, information and reference search, creation of a translation text and selection of translation equivalents, checking the executed translation. Modern systems of machine and automated translation, CAT-systems.

Interpretation and Translation of Specialized Texts (Horticulture and Forestry; Ecology and Agronomy; Veterinary Medicine and Animal Science). Consecutive interpretation of German texts on horticulture and forestry, ecology and agronomy, veterinary medicine and animal science. Consecutive interpretation of Ukrainian texts into German, interpreting excerpts into Ukrainian. Oral and written summarization in Ukrainian and German.

Optional Block 2

Comparative Typology of the First Foreign and Ukrainian Languages. The subject of comparative typology. Types and history of typological research. Methods of typological analysis. Typology of phonetic, lexical, morphological and syntactic systems of compared languages.

Modern computer translators' tools. The use of information technologies in translation and interpretation. Using computer-aided translation (CAT), computer-aided interpreting (CAI) and remote simultaneous interpretation (RSI). Management of terminological resources in computer-aided translation systems, which are used to support simultaneous interpretation and computer-aided translation. The study of operations of search, selection, structuring, import, export of terminology, which is organized in the form of specialized terminology databases.

Interpretation and Translation of Specialized Texts (Agrarian Law; Quality, Standardization and Certification Of Production; Agricultural Machinery, Agricultural Mechanization and Electrification). Consecutive interpretation of German texts on agrarian law, quality, standardization and certification of production, agricultural machinery, agricultural mechanization and electrification into Ukrainian. Consecutive interpretation of Ukrainian texts into German, interpreting excerpts into Ukrainian. Oral and written summarization in Ukrainian and German.

**Training of masters of sciences
in branch of knowledge "Psychology"
in specialty 053 "PSYCHOLOGY"
educational program "PSYCHOLOGY"**

Form of Training:	Licensed number of persons:
– Full-time EPP	30
– Part-time	40
Duration of Training:	
– Full-time educational and professional program	1 year and 4 months
– Part-time	1 year and 4 months
Credits ECTS:	
– educational and professional program	90
Language of Teaching	Ukrainian, English
Qualification	Master of psychology

The concept of training

The program is focused on the integration of basic psychological knowledge with access to the applied field of psychology as a science and practice. Its purpose is to develop the ability to solve complex problems and problems of practical psychology, which involves research and / or innovation and is characterized by uncertainty of conditions and requirements.

Educational and professional program of master's training

Areas of elective disciplines

1. Psychology and health – represented by disciplines: "Psychiatric propaedeutics", "Clinical psychodiagnostics", "Special psychology";
2. Family psychology – represented by disciplines: "Psychological assistance to the family", "Psychology of sexuality", "Child psychotherapy";
3. Personality and development – represented by disciplines: "Psychology of Spirituality", "Psychology of Leadership", "Telephone Counseling";
4. Psychology of business – represented by disciplines: "Psychological foundations of coaching", "Psychology of business communication", "Psychological technologies of business training";
5. Psychology of management – represented by disciplines: "Psychological evaluation of staff", "Psychology of marketing and advertising", "Psychological technologies for modeling and monitoring of electoral behavior."

Areas of employment of graduates

Educational institutions of all levels and types, enterprises and organizations, health care institutions, centers of practical psychology, social and psychological services, including the hotline, counseling centers, research institutions.

Practical training

The program provides for 2 types of practice, of which 1 – training, 1 production; In total, 15 ECTS credits of the total volume of the program were allocated for practical training, the total duration of practical training was 10 weeks for the entire period of study. Practical training is carried out separately from the fundamental.

Proposed Topics of master's qualification thesis

1. Psychosomatic features of children traumatized by war.
2. Features of psychological assistance to internally displaced families of Ukrainians.
3. Psychological conditions for the effectiveness of individual online counseling.
4. Self-design of the future specialist by means of coaching.
5. Features of electoral behavior of student youth.

**Curriculum of Master training
in educational program "Psychology"
(educational and professional program of master's training)**

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
GENERAL TRAINING CYCLE			
Compulsory components of EPP			
CC 1	Business Foreign Language	4	exam
CC 2	Psychology and pedagogy of higher education	4	test
CC 3	Methodology and organization of scientific research with the basics of intellectual sweetness	4	test
Total		12	
Optional components of EPP			
Free choice according to the preferences of students from the list of disciplines			
OCP 1	Choice from the catalog 1	4	test
OCP 2	Choice from the catalog 2	4	test
Total		8	
SPECIAL (PROFESSIONAL) TRAINING CYCLE			
Compulsory components of EPP			
CC 4	Differential psychology	5	exam
CC 5	Ethnopsychology	5	exam
CC 6	Psychological assistance of the individual	6	exam
CC 7	Psychology of stress (with term paper)	6	exam
CC 8	Organizational psychology	6	exam
CC 9	Workshop on psychological counseling and psychotherapy (with term paper)	4	exam
CC 10	Educational (specialty) practice	3	test
CC 11	Production Practice	12	test
CC 12	Qualifying exam	1	
CC 13	Preparation and defense of master's qualification thesis	6	
Total		54	
Optional components of EPP			
Free choice according to specialty			
<i>(student choose 1 discipline from optional block)</i>			
<i>Optional Block 1</i>			
OC 1.1	Psychiatric propaedeutics	8	exam
OC 1.2	Psychological help for the family	8	exam
OC 1.3	Psychology of spirituality	8	exam
OC 1.4	Psychological foundations of coaching	8	exam
OC 1.5	Psychological assessment of staff	8	exam
Total		8	
<i>Optional Block 2</i>			
OC 2.1	Clinical psychodiagnostics	4	exam
OC 2.2	Psychology of sexuality	4	exam
OC 2.3	Psychology of leadership	4	exam
OC 2.4	Psychology of business communication	4	exam
OC 2.5	Psychology of marketing and advertising	4	exam

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
Total		4	
<i>Optional Block 3</i>			
OC 3.1	Special psychology	4	exam
OC 3.2	Child psychotherapy	4	exam
OC 3.3	Telephone counseling	4	exam
OC 3.4	Psychological technologies of business training	4	exam
OC 3.5	Psychological technologies of modeling and monitoring of electoral behavior	4	exam
Total		4	
The total amount of compulsory components		66	
The total amount of optional components		24	
THE TOTAL AMOUNT OF EPP		90	

Annotations of subjects in the curriculum

GENERAL TRAINING CYCLE Compulsory components of EPP

Business Foreign Language. During its study, students prepare for professional communication in oral and written forms in English. The discipline provides consolidation of the basics of business and scientific and other speech, taking into account the specifics of the vocabulary of the specialty "Psychology". Studying the discipline helps students to master the main categories of phonetic and grammatical series; basic vocabulary and basic models of word formation; to form dialogical and monologue skills of foreign language communication, skills and abilities of independent work on the text during presentations, resumes, participation in business games, conducting interviews discussing practical situations of professional activity of psychologists in dialogues, teaching poster presentations at conferences, writing other business letters and telephone conversations, acquaintance with scientific achievements in the field of psychology, annotation of foreign countries and conclusion of own theses.

Psychology and pedagogy of higher education. The purpose of the course: the formation of psychological and pedagogical competencies of undergraduates that contribute to the effective implementation of the tasks of pedagogical activity in higher education institutions. However, students can take part in the course: take a course on psychological and pedagogical aspects of educational activities, tasks of modern higher from the standpoint of competence approach, find out age, gender, sociocultural characteristics of modern students, plan and conduct psychodiagnostic research / examination, interpret its results and, if necessary, to determine the corrective work on the basis of individual characteristics of students.

Methodology and organization of scientific research with the basics of intellectual property. The purpose of the discipline - research on the methodology and organization of scientific research, methods of planning and implementation of scientific, methods of search, processing, storage and use of scientific information, development of research programs and schemes, basics of intellectual property law. Objective: to provide in-depth theoretical knowledge and practical skills on the methodology and organization of research and the basics of intellectual property.

SPECIAL (PROFESSIONAL) TRAINING CYCLE Compulsory components of EPP

Differential psychology. The discipline contributes to the systematization of knowledge about individual, typological and group psychological differences of people, the

basis of their formation, structure and ways of manifestation; improving the psychological culture of undergraduates, acquainting them with different methods of diagnosing psychological differences of individuals. It provides an understanding of the main experimental models of research in this field of psychology, the causes and patterns of occurrence and formation of individual psychological characteristics. The discipline develops the ability to plan and conduct psychodiagnostic research / examination aimed at identifying individual differences.

Ethnopsychology. While studying the discipline, students gain ideas and knowledge about the uniqueness of the manifestation and functioning of the psyche of representatives of different ethnic communities. Course objectives: to ensure the implementation of a systematic approach to the coverage of socio-cultural and psychological aspects of ethnic communities. The subject of the discipline is the socio-psychological features of national and ethnic communities, their impact on individual behavior, as well as socio-psychological processes and features of ethnic development and interethnic communication.

Psychological assistance of the individual. The discipline is interdisciplinary in nature and acquaints students with the socio-cultural and historical context of the emergence of psychological assistance to the individual and society; forms a holistic view of the different types and levels of psychological assistance; promotes the development of their own emotional and semantic problems, mastering the culture of introspection and personal reflection. Acquired knowledge of the course contributes to the formation of a holistic view of the specifics of psychological care as an applied field of psychology and its place in the structure of psychological knowledge, the ability to analyze the basic theoretical constructs of counseling and therapeutic psychology.

Psychology of stress (with term paper). The discipline aims to form knowledge about the nature and specifics of stress, phases of its course, mechanisms and methods of preventing and overcoming stress, developing practical skills in diagnosing and correcting psychological stress and the ability to apply knowledge in practice. Its task is to acquaint master students with the phenomenon of stress as an important destabilizing factor in professional activities and personal life, the history of the study of stress, as well as the achievements of modern psychological science on stress, identifying ways to prevent and overcome stress. Discipline is important for mastering the skills of psychological help and self-help in stressful situations.

Organizational psychology. The purpose of the discipline is to acquaint students with the psychology of organizations: the essence of the organizational system, features of organizational development, psychological content of organizational management, psychological phenomena that accompany the individual in the organization, features of working groups and teams in organizations, signs of organizational culture. management and business, as well as methods of their research. The discipline also forms knowledge of the essence of psychological care in organizations: methods of psychodiagnostics, technology of organizational counseling, psychological support of organizational training.

Workshop on psychological counseling and psychotherapy (with term paper). The discipline is interdisciplinary in nature and is designed to form adequate ideas about the role and place of psychological counseling and psychotherapy in the system of psychological care, the peculiarities of the organization of psychological counseling; types of procedures and psychotechnics in relation to the stages of the psychological counseling process. She develops counseling and psychotherapy skills for clients and their families.

Educational (specialty) practice. The purpose of the practice is to deepen students' theoretical knowledge, acquaint them with the necessary requirements for the skills and abilities of future professional activity, the formation of a creative research approach to practical activities. Its tasks are to get acquainted with the legal

documentation governing the activities of psychologists on the basis of practice, with the system of interaction of psychologists and other employees of the practice base, with the work of psychologists on the basis of practice, with the peculiarities of the psychologist's work with clients. practices with the professional community. During the internship the analysis of types of requests of clients of the base of practice, methodical support used by psychologists of the base of practice, psychodiagnostic tools used by psychologists on the basis of practice, techniques of psychological assistance used by psychologists of the base of practice, maintenance of reporting documentation by psychologists of the base.

Industrial (specialty) practice. The purpose of the practice is to develop and consolidate students' practical skills in planning and implementing the main activities of psychologists: psychodiagnostics, psychocorrection and psychotraining, psychological counseling, psychological education, as well as improving the professional qualities of future professionals. During the internship it is necessary to get acquainted with the legal documentation, which regulates the activities of the psychologist at the place of practice, with the system of interaction between the psychologist and other employees of the practice base. The peculiarities of the work of psychologists on the basis of practice are also observed. Applicants perform the functions of a psychologist on the basis of practice, maintain the necessary documentation in the workplace, collect empirical material for qualification work, are supervised by an experienced psychologist from the base of practice.

Certification exam. This is an exam in disciplines that are professional in the training of psychologists. It involves testing the ability of applicants to integrate knowledge from different fields of psychology to solve a practical problem in the specialty.

Defense of qualifying master's thesis. This is the final form of independent research work of students, which reflects the level of their theoretical and practical, general and professional competencies within the mandatory and elective components of the educational and professional program. It involves the student's independent solution of research problems of a generalized nature.

Optional components of EPP
Free choice according to specialty
Optional Block 1

Psychiatric propaedeutics. It is important for mastering the skills of providing psychological assistance. During its study students learn the features and patterns of manifestation, course and consequences of mental disorders, their differences from the manifestations of normal mental activity, components of individual psychopathological symptom complexes, patterns of major mental illnesses, and learn ways and methods of clinical detection of mental phenomena. Discipline provides an understanding of the features and patterns of manifestation, course and consequences of mental disorders. It promotes the development of skills to apply acquired knowledge for clinical interviewing and diagnosis.

Psychological help for the family. The purpose of the course: the integration of psychological knowledge of students in the field of family psychology to implement them in the practice of psychological assistance to families in solving problems, overcoming family crises, as well as systematization of issues arising in family counseling. By studying the course, students will be able to: comprehend the theoretical aspects of family psychology, form an idea of the phenomenology of normative and non-normative family crises, develop skills in diagnosing the leading problems and characteristics of the family system; to consider the main directions of family counseling, to form psychological readiness to work in the field of psychological counseling.

Psychology of spirituality. The aim of the discipline is to form in future scientists theoretical knowledge about spirituality in a psychological context; research of deep questions of the nature of consciousness and behavior of people from complementary points of view; understanding of deep mental processes and their basis; study of basic concepts and research approaches to the interpretation of the spiritual world of man; formation of critical thinking. It acquaints master's students with the general laws and logic of the development of ideas about the spiritual world of man through psychological and religious-philosophical prism in diachronic and synchronous aspects, the originality of interpretation of the phenomenon of human spirituality in the context of psychodynamic and humanistic theories of personality. and their synthesis. The discipline provides students with higher skills of scientific unbiased and objective analysis of mental and spiritual phenomena by developing critical perception and evaluation of different conceptual points of view, the ability to objectively evaluate different approaches to human phenomenon, its spirituality and argue their own worldview.

Psychological foundations of coaching. The discipline develops future psychologists' knowledge in the field of coaching to help clients achieve their goals in professional and / or personal life. She acquaints with the psychological basis of coaching as one of the effective ways to achieve positive change, with the uniqueness of this method of consulting and training; with the techniques and methods that coaches work with.

Psychological assessment of staff. The discipline acquaints with theoretical, methodical and semantic aspects of psychological assessment of staff. It contributes to the formation of a system of knowledge, skills and abilities necessary for the organization of diagnostics in order to assess the staff of the organization. The course provides an opportunity to understand the patterns and features of the development and functioning of mental phenomena in the context of professional tasks, forms the ability to apply knowledge in practical situations.

Optional Block 2

Clinical psychodiagnostics. The discipline is designed to form adequate ideas about the role and place of the psychodiagnostic component in the system of clinical psychology, the possibilities and limitations of psychodiagnostic techniques; mastering ethical norms, strict adherence to which is mandatory for the clinical psychodiagnostic; ability to implement in practice the principles and methods of clinical and psychodiagnostic research. Acquired knowledge of the course will guide the practical tasks and functions of a clinical psychologist, identify opportunities, forms and methods of psychodiagnostic work, use the acquired knowledge to analyze and explain the functioning of basic mental functions and physiological systems in normal and pathology, use valid and reliable psychodiagnostic tools for analysis of factors that change the mental qualities of man as a result of the disease (somatic, neurological, mental).

Psychology of sexuality. While studying the discipline, students gain ideas and knowledge that exist in the psychological science of sexuality, its development and impact on personal and socio-psychological functioning, acquiring skills in psychocorrection and providing assistance to people with psychosexual disorders. Objectives of the course: to ensure the implementation of a systematic approach to the coverage of socio-cultural and psychological aspects of sexuality, psychological patterns of sexual behavior, equip students with knowledge of age-related sexual behavior, psychology of sexual life, psychology of sexual disorders.

Psychology of leadership. The purpose of the course is to form students' scientific and professional knowledge in the field of effective leadership, development of psychological culture of the future leader and development of technologies to create and

promote personal brand leader, activation of leadership potential as a set of skills of self-management and management. The discipline forms scientific ideas about the socio-psychological nature of leadership, about modern challenges and requirements for effective leadership; acquaints with the main types of leadership and their manifestations in various spheres of life of the individual and society; expands students' understanding of the leader's own potential for further personal and professional development; develops skills of analytical and critical thinking, the ability to evaluate ideas and proposals, formulate evidence, draw conclusions and summarize arguments, creatively generate new ideas; to form primary skills of creation and advancement of a personal brand of the head.

Psychology of business communication. The discipline is aimed at the formation of communicative competence in future psychologists. During its study, undergraduates acquire knowledge about the features of types, forms, methods and technologies of business communication. The study of the discipline promotes the development of skills and abilities in the application of methods and means of business communication in professional activities during business conversations, collective discussion of problems, in public speeches that affect the effectiveness of social relations and interpersonal relationships.

Psychology of marketing and advertising. The purpose of the course is to form students' educational and scientific level of competence in determining the psychological impact of marketing and advertising on the target audience and the formation of practical skills in applying psychological techniques to influence consumer behavior in the use of various marketing tools. The discipline forms a system of knowledge of psychological theories and methods of influencing various marketing tools, promotes the acquisition of skills to create an advertising message in terms of formal and substantive aspects; mastering the knowledge of the psychological foundations of consumer behavior; develops the ability to carry out psychological and psychotechnical analysis of advertising, to determine the psychological effectiveness of advertising.

Optional Block 3

Special psychology. The discipline is designed to help higher education seekers to understand the essence of the practical psychologist by mastering theoretical and practical knowledge in the context of modern achievements of psychological science, psychological patterns of normal and abnormal personality development, driving forces of its development, typological manifestations of various forms of dysontogenesis, developmental disorders and their parents. In the process of studying the discipline, higher education students must understand the psychological aspects of teaching and education in higher education institutions.

Child psychotherapy. The discipline is designed to help higher education seekers to understand the essence of the child psychotherapist by acquiring knowledge in the context of modern achievements of child psychotherapy, psychological patterns of normal and abnormal development of the child's psyche, its driving forces and development, typological manifestations of various forms of maladaptation. developmental disorders and their parents. In the process of studying the discipline, higher education students must understand the psychological aspects of the functioning of the child's psyche within the norm and dysfunction. In addition, the discipline promotes the formation of students' abilities for self-esteem, self-control, self-realization, to ensure the development of possible patterns of behavior in situations of professional interaction, to understand the logic of communication management, as well as skills and psychological readiness to form and work in a team.

Telephone counseling. Discipline is important for mastering the skills of psychological care. During its study, students learn the theory and practice of providing

psychological assistance through telephone communication. The discipline provides an understanding of the features of psychological telephone counseling for different categories of clients. It promotes the development of skills to provide psychological support to emergency customers.

Psychological technologies of business training. The purpose of the training course is to provide a system of knowledge and organization of skills acquisition in the organization, conduct and management of business training. Tasks: formation of a holistic concept of the processes of organizing, preparing and conducting business trainings; disclosure of the technology of preparation, organization and conduct of business trainings in their unity and interdependence; identification of the main components of business training technology; providing skills in organizing and conducting specific business trainings in the organization (corporate business trainings).

Psychological technologies of modeling and monitoring of electoral behavior. The purpose of the training course is to consider the theories, factors and mechanisms of electoral behavior, to reveal the main technologies of sociological support of election campaigns. The discipline forms a system of knowledge about the basic theoretical approaches to the study of electoral behavior, the electoral process and electoral behavior of the population; helps to master the methods of sociological research of the electorate, the ability to analyze the information of sociological research during election campaigns.

**Training of masters of sciences
in branch of knowledge "Journalism"
in specialty 61 "JOURNALISM"
educational program "JOURNALISM"**

Form of Training:	Licensed number of persons:
– Full-time EPP	30
– Part-time	30
Duration of Training:	
– Full-time educational and professional program	1 year and 4 months
– Part-time	1 year and 4 months
Credits ECTS:	
– educational and professional program	90
Language of Teaching	Ukrainian, English
Qualification	journalist

The concept of training

The uniqueness of the program lies in its focus on training specialists to work in the digital media space and information support for the agricultural sector. The features of the program are: a logical continuation of the first (bachelor's level) educational program "Journalism"; taking into account managerial, legal, environmental aspects in the media scope and agribusiness, international standards of journalistic activity.

Educational and professional program of master's training

Optional Block "Digital media"

Provides for the acquisition of competencies in digital and network technologies in media, digital media marketing, digital media security

Optional Block 2 "Public ecospace"

Provides for the acquisition of competencies in environmental public relations, environmental safety in media discourse, environmental and legal ethics

Optional Block 3 "Information support of agribusiness"

Provides for the acquisition of competencies in agricultural policy and agribusiness management, media monitoring of the agricultural market, promotional technologies in agribusiness

Areas of employment of graduates

Employment for positions in accordance with the National Classifier of Ukraine: Classifier of professions (DK 003:2010), which require higher education in the specialty 061 Journalism.

Practical training

Jobs in the editorial offices of various media structures, publishing houses, information, advertising and PR agencies, educational institutions of the relevant profile, scientific institutions, research centers.

Proposed Topics of master's qualification thesis

1. Agrospace of Ukraine: topics, issues, communicative aspect.

2. Visual and verbal components of television advertising (for example, food advertising).
3. Environmental issues in modern media.
4. Ethical principles of journalistic activity during the election campaign.
5. European print media: problems of existence in the information space.
6. Genre varieties of critical materials in the electronic edition "Media criticism".
7. Appearance of TV presenters: stereotypes and innovations, aesthetic and pragmatic purpose.
8. Communicative components of psychological/information war.
9. Features of PR-support of political activity during elections.
10. Problems and conflict in the journalistic text.

**Curriculum of Master training
in educational program "Journalism"
(educational and professional program of master's training)**

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
GENERAL TRAINING CYCLE			
Compulsory components of EPP			
CC 1	Business foreign language	4	exam
CC 2	Research methodology with the basics of intellectual property	4	exam
CC 3	Organization of project activities	4	exam
Total		12	
Optional components of EPP			
Free choice according to the preferences of students from the list of disciplines			
OCP 1	Choice from the catalog 1	4	test
OCP 2	Choice from the catalog 2	4	test
Total		8	
SPECIAL (PROFESSIONAL) TRAINING CYCLE			
Compulsory components of EPP			
CC 4	Theory of social communications	4	exam
CC 5	Digital culture and media space	4	exam
CC 6	Ecojournalism	4	exam
CC 7	Legal regulation of media business	4	exam
CC 8	Professional ethics and integrity	4	exam
CC 9	Journalistic skills	4	exam
CC 10	Media relations	4	exam
CC 11	Industrial (undergraduate) Practicel	20	exam
CC 12	Preparation and defense of master's qualification thesis	7	exam
Total		55	
Optional components of EPP			
Free choice according to specialty			
<i>(applicant chooses one block out of three)</i>			
<i>Optional Block 1. "Digital media"</i>			
OC 1.1	Digital and network technologies in media	5	exam
OC 1.2	Digital media marketing	5	exam
OC 1.3	Digital media security	5	exam
Total		15	
<i>Optional Block 2. "Public ecospace"</i>			
OC 2.1	Environmental PR	5	exam
OC 2.2	Environmental safety in media discourse	5	exam
OC 2.3	Environmental and legislative ethics	5	exam
Total		15	

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
<i>Optional Block 3. "Information support of agribusiness"</i>			
OC 3.1	Agricultural policy and agribusiness management	5	exam
OC 3.2	Media monitoring of agricultural market	5	exam
OC 3.3	Promotion technologies in agribusiness	5	exam
Total		15	
The total amount of compulsory components		67	
The total amount of optional components		23	
THE TOTAL AMOUNT OF EPP		90	

Annotations of subjects in the curriculum

GENERAL TRAINING CYCLE Compulsory components of EPP

Business foreign language. The purpose of the course is learning the basics of business communication orally and in writing in typical situations: introduction, phone conversation, employment, business meeting, business trip, booking tickets and hotel rooms, restaurant, shop, doctor visit, business negotiation skills, discussion, drafting and signing of contracts, commercial correspondence. The basis of educational materials are texts of scientific and business style. The purpose of this course is also to teach students active proficiency in a foreign language, i.e. adequate ability to express their thoughts in a foreign language and understand the views expressed in a foreign language; work independently with a foreign language after graduation.

Methodology of scientific research with the basics of intellectual property. The aim of the course is to acquire theoretical knowledge and research methodology, as well as to acquire practical skills in conducting research in the media field. The curriculum provides for the formation of culture and skills of research, implementation of their results in the practice of organizations.

Organization of project activities. The purpose of the course is to provide students with competence in the organization of project activities, mastering the skills of practical activities for project management.

SPECIAL (PROFESSIONAL) TRAINING CYCLE Compulsory components of EPP

Theory of social communications. The purpose of the course is to present the dynamics of development of social communications and existing approaches, concepts in the field of social communications; provide theoretical knowledge about the document-communication system, models, processes and mechanisms of social communications; to outline the directions and tendencies of development of the document-communication system of the society in the conditions of formation of digital information space.

Digital culture and media space. The aim of the course is to analyze modern educational definitions: digital culture, digital literacy and digital competence. Based on the study of domestic and foreign scientific sources, government regulations, these concepts go beyond the technological or digital industry. The main semantic accents of digital culture are related to the emergence of new specific information and virtual forms of culture and cultural communication. Digital literacy indicates, first of all, the perfect use of electronic means, the formation of skills and abilities to work with "digital". The definition of digital competence is based on a general understanding of competence and consists of relevant knowledge, skills, experience, values and attitudes that can be fully implemented in practice.

Ecojournalism. The course provides a broad study of environmental issues of both global and regional importance, the subject area of which is the collection, analysis and dissemination of information related to current events, trends and environmental issues with which people constantly interact.

Legal regulation of media business. This course is a review of the legal regulation of the media in Ukraine in order to determine the state of compliance of legislative regulation with the legal nature of the media and business. The theoretical problem of classifying the media as objects or subjects of law is also considered. At the theoretical level, the constituent elements of the average understanding of the media are identified in order to find effective legal regulation of the media and business structures.

Professional ethics and integrity. The aim is to form knowledge, skills and competencies in the field of professional ethics and integrity, and to form a conscientious and responsible attitude to learning and the chosen profession. The task of the discipline is to get acquainted with the content and principles of professional ethics, mastering the basics of integrity and its importance for effective work in the Ukrainian and world scientific community. To teach students the basic ethical and professional, norms, principles, rules to ensure further effective professional activity.

Journalistic skills. The purpose of the discipline is to form a holistic view of journalistic skills as an activity, mastering the basic laws and methods of journalistic skills. Tasks of the discipline: mastering the mechanisms of skill; outlining the criteria of mastery; mastering the structural and compositional features of the journalistic text; determining the place of professional analysis of a journalistic text; outlining the creative process of a journalist; definition of methods and techniques of journalistic skills; developing skills in working with genres of journalism.

Media relations. The course is devoted to the problem of interaction between PR-services and mass media. The significant potential of the institute of public relations to meet the information needs of society can be realized only with the effective interaction of public relations and the media. Media relations, as a promising area of public relations, plays a special role in shaping the image of the organization. This is a professional and regular interaction of PR services with various mass media, namely with journalists, editors, managers and media owners. Establishing communications with the media is the most difficult task in the field of public relations. Building long-term and mutually beneficial relations is an effective contribution of public relations to the development strategy of all spheres of society.

Practical training. Practical training involves the acquisition of practical competencies in the media, press and news agencies, press centers, public relations services, advertising agencies, information departments and administrations of institutions, organizations, enterprises of all forms of ownership.

Preparation and defense of master's qualification work. Master's thesis is an important type of independent scientific work of students, during the writing of which they master the methods and acquire the skills of scientific research. The student completes his/her master's and scientific training at the university with a master's thesis. It should certify the professional maturity of the graduate, identify his/her general and special training, the ability to apply the knowledge acquired at the university to solve specific scientific and practical problems. The main requirement for students is independent and creative performance of master's theses.

Optional components of EPP
Free choice according to specialty
(applicant chooses one block out of three)

Optional Block 1. "Digital media"

Digital and network technologies in media. The course examines the concepts of "network technology", "digital technology", "digital literacy", "computer literacy", "media literacy" and "information literacy". The processes of their formation and formation are generalized, the comparison of these terms, competencies and components (actions) corresponding to certain skills is made, their differences and similarities are revealed.

Digital media marketing. The course provides a new concept of digital marketing for domestic marketing practice, which requires scientific generalization of the essence, classification and formation of methodology.

Digital media security. The course audits the IT infrastructure of newsrooms to identify potential threats to digital products and services. The course provides recommendations that help reduce digital risks and improve information security, in particular: increase the security of devices and services, accounts of editorial staff; ensure the preservation of information data in case of loss of devices; protect against viruses and spyware; help to achieve anonymity of voice conversations, instant messaging or e-mail.

Optional Block 2. "Public ecospace"

Environmental PR. With the aggravation of the issue of environmental protection, the number of environmentally conscious consumers around the world has grown rapidly, which has contributed to the emergence of new requirements for the quality of goods and services, the cycle of their production in general. The process of greening business has started the development of "green" PR and has become a new trend among progressive companies seeking to gain a competitive advantage through compliance with relevant environmental requirements. The course considers the concept of ecological public relations and its communication tools, which are aimed at creating competitive advantages through economical treatment of natural resources and their conservation among environmentally conscious consumers.

Environmental safety in media discourse. The course involves the identification and assessment of environmental problems, including the impact of war on environmental security in Ukraine: water bodies, air conditions, area conservancy, industrial facilities, etc. The specifics of environmental journalism in the modern world are considered; how to competently cover the environmental problems that have arisen as a result of hostilities; preventive environmental journalism: the role of the media in disaster prevention, solving environmental problems; increasing the efficiency of eco-materials. The sources of information for the preparation of materials from areas affected by hostilities. Are traditional methods effective, like information request, etc.?; preparation of detailed plans of articles/stories, on topics that applicants choose during the press tour and master class.

Environmental and legislative ethics. The course examines the problems of legal support of environmental policy of Ukraine, including methodological and legal measures, genesis and mechanism, priority of environmental policy, legal regulation of environmental quality – a strategic direction of environmental policy of Ukraine, as well as legal forms and ways to ensure environmental quality.

Optional Block 3. "Information support of agribusiness"

Agricultural policy and agribusiness management. A comprehensive course that allows the applicants to gain experience in agriculture, preparing them for a successful career immediately after graduation. The graduates will have the necessary knowledge to take on leadership positions or start their own business.

Media monitoring of agricultural market. The course involves activities to monitor the output of print, online and television media on agriculture. In the commercial sphere, this activity is usually carried out at home or in the media monitoring service, a private company that provides such services to other companies, organizations and individuals on a subscription basis – this process studies the specified course.

Promotional technologies in agribusiness. The aim of the course is to form in students a thorough theoretical knowledge and applied skills in the analysis of agribusiness, as well as its promotion in the media. The objectives of the course: formation of a system of knowledge about agribusiness entities, sources of information about agribusiness, resources and results of agricultural producers, balances of agricultural products and food security, gaining skills analysis of resources, results in agribusiness, evaluating their effectiveness and identifying reserves for improvement functioning of the agricultural sector of the economy.

**Training of masters of sciences
in branch of knowledge "Management and Administration"
in speciality 073 "MANAGEMENT"
educational program "HUMAN RESOURCES MANAGEMENT"**

Form of Training:	Licensed number of persons:
– Full-time EPP	20
– Full-time	30
Duration of Training:	
– Full-time educational and professional program	1 year and 4 months
– Part-time	1 year and 4 months
Credits ECTS:	
– educational and professional program	90
Language of Teaching	Ukrainian, English
Qualification	HR Manager

The concept of training

The training of the HR manager is conditioned by the need of our state in specialists who carry out work on selection, evaluation, training, personnel motivation, career coaching, management of personnel reserve; formation of personnel policy of the company and optimization of its organizational structure; staff records management; development of corporate social responsibility programs, improvement of systems and technologies of personnel management, assessment of socio-economic efficiency of their implementation; labor engineering; carrying out of in-company training, organization of business meetings and conference service.

Educational and professional program of master's training

It provides mastering by the future specialist of a complex of educational disciplines on business planning, personnel audit organization, personnel development management, self-management, image studies and social management. The training of a specialist is carried out in the direction of organizing theoretical and practical study with landmarks on the harmonious combination of classroom work of students and direct work at the bases of practical training, which allows the graduate to adapt to the place of future employment.

Areas of employment of graduates

Graduated students with the qualification of the "HR Manager" can hold the positions of the heads of departments in the field of education and industrial training, personnel and social and labor relations, be the manager or specialist of recruitment agencies, training companies or consulting agencies specializing in work with personnel, public authorities and so on.

Practical training

Practical training is carried out in accordance with the schedule of the educational process at certified practice facilities, including «AM Central Service Ukraine» LLC, «BILDENS» LLC, «Proxima Research International» LLC, «AMC «HEDGE INVEST» LLC, «Euro Invest Solution» LLC, «AMC Investment Capital Ukraine» LLC, the SI «The Institute of Traumatology and Orthopedics by NAMSU», JSC «IBOX BANK», the SI «National Institute of Surgery & Transplantology named after O.O. Shalimov by NAMSU», «Performance Marketing Ukraine» LLC, Italian Restaurant Rukkola (Bastante LLC).

Proposed Topics of master's qualification thesis

1. Evaluation of the results of professional activity of staff.
2. Personnel management in media agencies.
3. Management of human resources in a health care institution.
4. Management of personnel development of the health care institution.
5. Career management of the company's staff.
6. Management of intellectual capital of the organization.
7. Formation of an effective team.
8. Formation of a system of incentives for personnel of the organization.
9. Formation and organization of personnel policy of the enterprise.
10. Formation of favorable working conditions for the company's personnel.

**Curriculum of Master training
in educational program "Human Resources Management"
(educational and professional program of master's training)**

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
GENERAL TRAINING CYCLE			
Compulsory components of EPP			
CC1	Psychology of management	4	Exam
CC2	Fundamentals of human resources management	4	Exam
CC3	Information systems and technologies in management of the organization	4	Exam
CC4	Business Foreign Language	6	Exam
CC5	Legislative base of labour relations	4	Exam
CC6	Project management	8	
Total		28	
Optional components of EPP			
<i>Free choice according to the preferences of students from the list of disciplines</i>			
OCP 1	Choice from the catalog 1	4	test
OCP 2	Choice from the catalog 2	4	test
Total		8	
SPECIAL (PROFESSIONAL) TRAINING CYCLE			
Compulsory components of EPP			
CC7	Business Planning	6	Exam
CC8	Personnel audit	6	Exam
CC9	Management of personnel development	6	Exam
CC10	Team management	4	Exam
CC 11	Practical training	7	Differential test
CC 12	Preparation and defense of master's qualification thesis (073 "Management")	9	Defense of work
Total		38	
Optional components of EPP			
<i>Free choice according to specialty</i>			
OC 1.1.	Self-management	4	Exam
OC 1.2.	Time-management		
OC 1.3.	Organization of work of the manager		
OC 2.1.	Modern technology of personnel management	4	Exam
OC 2.2.	Image study		
OC 2.3.	Social partnership		
OC 3.1.	Social management	4	Exam
OC 3.2.	Emotion management		
OC 3.3.	Business ethics and corporate social responsibility		
OC 4.1.	Management of the organization	4	Exam
OC 4.2.	Management of the strategic development of the		

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
	organization		
OC 4.3	Changes management		
Total		16	
The total amount of compulsory components		66	
The total amount of optional components		24	
THE TOTAL AMOUNT OF EPP		90	

Annotations of subjects in the curriculum

GENERAL TRAINING CYCLE Compulsory components of EPP

Psychology of management. General psychological characteristics of management activities. The psychological content of management functions. Psychology of business communication. Verbal and nonverbal means of communication. Psychology of the formation of a manager's professional career. Psychology of organization in management. Conflict as a form of social interaction. The essence of the conflict and its characteristics. Dynamics of conflict and forecasting of its development. Conflict Management System in the organization. Conflict resolution methods. Conflict-free communication in the process of conducting professional negotiations and meetings, managing stress in a conflict situation.

Fundamentals of human resources management. Personnel service and its role in the management structure of the enterprise. Classification of human resources documents. The specificity of their drafting. Drafting and execution of documents for hiring various categories of workers with different conditions and working pattern. Drafting and execution of documents for transferring to another job both inside the enterprise and beyond. Special aspects of the dismissal of certain categories of workers. Drafting and execution of documents for the employees' dismissal. Accounting of labor hours. Execution of documents for granting various types of vacations to different categories of employees. Drawing up a staff schedule. Application of the classifier of the professions for drawing up staff schedule. Maintenance of employees' work record books.

Information systems and technologies in personnel management. Introduction to information systems in the management of organizations. Stages of development and the essence of information systems in the management of the organization. Typology of information systems in the management of organizations. Planning the development of management information systems. Management of information systems in the organization. Management decision support systems. Corporate information systems. Information resources of the Internet world network. Local and regional information networks in modern organizations. Security of information systems. Automated control systems, information processing, and analysis. Information processing technologies. Mathematical and informational support of automated information analysis systems. The use of automated systems for analyzing the activities of the enterprise and making management decisions. Automated systems for planning and analysis of marketing activities.

Business Foreign Language. Complex training of language professional activity. Types of language activities: reading, listening, speaking. Formation of skills of dialogical and monologue speech and preparation of students for professional communication in oral and written forms in a foreign language. Mastering the skills of translating special texts as a means of adequately presenting the content of scientific information. Formation of knowledge, skills and competences that will provide the masters with the necessary communication skills in the field of professional communication: in particular, the ability to

organize and hold a scientific conference by specialty, participate in the conference and make a scientific report, hold a business meeting or negotiate with foreign countries partners.

Legislative base of labor relations. Social and labor relations as a system. Social partnership. Social and employment relations of employment. Monitoring of the social and labor sphere as a tool for regulation and improvement of social and labor relations. International Labor Organization and its impact on the development of social and labor relations.

Organization management. General theory of organization. Organization management. Personnel management. Motivation system. Techniques and methods of staff motivation in management practice. Project-oriented management of the organization.

SPECIAL (PROFESSIONAL) TRAINING CYCLE

Compulsory components of EPP

Business Planning. The essence of business planning and the peculiarities of its implementation. Enterprise plan system. The structure and designing of a business plan. Branch, enterprise and its products. Characteristics of the competitive environment. Marketing plan. Production plan. Organizational plan. Analysis of potential risks. Financial plan and evaluation of the effectiveness of the investment project implementation.

Personnel audit. Personnel accounting. Personnel department. Local employer documents. Maintaining personnel records at the enterprise. Cases of personnel audit at the enterprise. Stages of an audit of personnel documents. Analysis of typical errors and violations.

Management of personnel development. Development of employees as a component of personnel management of the organization. Management of personnel development project. Internal marketing and marketing of organization staff training. Staff development based on its assessment. Training and staff development of the organization. International experience of staff development. Business career management and work with high-potential employees. Fundamentals of social development of personnel. Management of innovations in personnel work. Stimulation of staff development.

Team management. Basic stages of team formation. Model of an effective team. Characteristics of the basic rules of the existence of the team. Roles in team interaction. The role and place of effective communication to form a team. Factors of trust and responsibility in teamwork.

Optional components of EPP

Free choice according to specialty

Self-management. Basic principles of the theory of self-management. Laws, principles, synergetic paradigm of self-administration. The phenomenon of self-management. A person as an object of self-administration. A person as a subject of self-administration. Human self-determination. Theoretical and practical principles of person self-management in different types of being. Technological self-management. Fight in self-management.

Time-management. The subject and objectives of the "Time-Management course". Time-management analysis in time-management system. Targeting. Time planning. Implementation of plans and organization of activities. Self-control and self-motivation. Increasing time efficiency.

Organization of work of the manager. Theoretical bases of organization of management activity. Peculiarities of managerial work. Scientific bases of labor organization. Distribution and cooperation of managerial work. Planning the personal work of a manager. Rationing of managerial work, accounting and analysis of working time. Workplace organization. Working conditions. Documentation in management. Drafting and

processing of documents. Organization of record keeping. Processing of text materials. Organization and holding conferences and meetings. Business contacts, negotiations, telephone conversations.

Modern technology of personnel management. Conceptual principles of personnel management. Modern technologies of team formation and development of personnel of the organization. Technologies for assessing the activities of employees of the organization. Competency-based approach and its use in the management of the personnel of the organization. Management of personnel in crisis: modern technics and technology.

Image study. Image as a historical and cultural phenomenon, a component of civilization. Components of the personal image. Gender aspects of the image. Fashion and etiquette in the image structure. Image-strategy of impact on a mass audience. Psychology of perception of image-forming information. The image of the leader. Coaching as a deep tooling for creating an image. Corporate image. The image of the state. The image (style) of life.

Sociopartnership. The basic theoretical foundations of social partnership. Social partnership development practice. Social dialogue in the system of labor and social relations. Social partnership and corporate social responsibility. Basic principles of ensuring social partnership in the team. The negotiation process and social responsibility in professional activities.

Social management. Management as a modern direction of social management. Evolution of theories and practices of social work management. Social management and social policy. Management of personnel in the social management system. Resource support for social management. Social mechanism and technology of organization management. Manager in the system of social management. Management with Delegation. Communication in management. Organization of management activity.

Emotion management. Modern requirements to the manager. The emotional competence of the manager. Emotional intelligence and creating effective teams. Managing emotions when making decisions. Emotions in conflict management. Managing emotions with clients.

Business ethics and corporate social responsibility. The concept of business ethics and ethical standards. Business Ethics: Subject and Specificity. Social responsibility in the management system. Social responsibility in the organization management system. Formation of relations with employees on the basis of corporate social responsibility.

Project management. Project management in the management system of organizations. Justification of the feasibility of the project and its effectiveness. Organizational structures of project management. Project planning as a component of project management. Planning terms and terms of project implementation. Project resource management. Staffing the project. Project communications and information management. Control of terms and terms of project implementation. Risk management in projects. Project quality management.

Management of the strategic development of the organization. The concept of strategic management. Managing the strategic development of the organization. Determining the future of the organization, forming a strategic vision of the direction of development of the organization. Developing a strategy to achieve the desired goals. Assessment of the level of achievement of the set goals.

Changes management. The nature, sources and need for change. Classification of organizational changes. Leadership and change leadership. Models of change management. Preparing for and planning changes. The mechanism of change implementation. Change Resistance Management. Traditional and modern methods of change management. Organizational development. Changes in the organization's strategy.

**Training of masters of sciences
in branch of knowledge "Management and Administration"
in specialty 073 "MANAGEMENT"
educational program "MANAGEMENT OF EDUCATIONAL INSTITUTION"**

Form of Training:	Licensed number of persons:
– Full-time	15
– Part-time	20
Duration of Training:	
– full-time educational and professional program	1 year and 4 months
– Part-time	1 year and 4 months
Credits ECTS	
– educational and professional program	90
Language of Teaching	Ukrainian
Qualification	Master's Degree in Management, head of an enterprise, institution, and organization (in the sphere of education and industrial training)

The concept of training

The training of heads of an enterprise, institution, and organization (in the sphere of education and industrial training) is conditioned by the need of our state for specialists involved in designing and optimizing the education institution's organizational structure; leading its educational and economic activities; controlling the implementation of the planned tasks; developing the education institution personnel policy and the students' contingent.

Educational and professional program of training

Studying the complex of training disciplines on planning and organization issues of an education institution activities (general secondary education institution); leading educational and economic activities of a general secondary education institution; controlling the implementation of the planned tasks; developing the general secondary education institution personnel policy and students' contingent is provided for the future specialists. The training of a specialist is carried out to organize theoretical and practical study with landmarks on the harmonious combination of classroom work with direct work at the bases of practical training, which allows adapting the graduate to the place of future employment.

Areas of employment of graduates

Graduated students with the qualification of the «Head of an enterprise, institution, and organization (in the sphere of education and industrial training)» can work at general secondary education institutions having the following positions: school leaders (head, deputy head), training center leader, out-of-school education institution leader.

Practical training

Practical training is carried out following the training schedule on certified bases of practices: general secondary education institutions, vocational education and training institutions, higher education institutions (colleges, institutes, academies, universities).

Proposed Topics of master's qualification thesis

1. Vocational education and training institution management using innovative technologies.
2. Strategy designing for the development of vocational education and training institutions.
3. Content and features of the general secondary education institution management.
4. Developing the corporate culture of the vocational education and training institution's personnel.
5. Developing the managerial culture of the general secondary education institution's leader.
6. Information provision of educational process management in higher education institutions.
7. Secondary school management under the introduction of field-specific education.
8. System approach to the management of innovation activities of research universities.
9. Development of motivation and stimulation of the general secondary education institution's personnel.
10. System of effective personnel management in general secondary education institutions.

**Curriculum of Master training
in educational program "Management of educational institution"
(educational and professional program of master's training)**

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
GENERAL TRAINING CYCLE			
Compulsory components of EPP			
CC 1	Psychology of management	4	Exam
CC 2	Management of educational activity	4	Exam
CC 3	Information and communication technologies in the management of education institutions	4	Exam
CC 4	Business Foreign Language	6	Exam
CC 5	Methodology and organization of research with the basics of intellectual property	4	Exam
CC 6	Strategic management	4	Exam
Total		26	
Optional components of EPP			
<i>Free choice according to the preferences of students from the list of disciplines</i>			
OCP 1	Choice from the catalog 1	4	test
OCP 2	Choice from the catalog 2	4	test
Total		8	
SPECIAL (PROFESSIONAL) TRAINING CYCLE			
Compulsory components of EPP			
CC 7	Management of financial and economic activity	7	Exam
CC 8	Personnel management	6	Exam
CC 9	Manager of an education institution	5	Exam
CC 10	Self-management	6	Exam
OK 11	Practical training	7	Differential credit
OK 12	Preparation and defense of master's qualification thesis ("Management")	9	Defense of work
Total		40	

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
Optional components of EPP			
<i>Free choice according to specialty</i>			
OC 1.1	Educational technologies	8	Exam
OC 1.2	Quality management of educational results		
OC 1.3	Management of education institution development		
OC 2.1	Technology of management activity	4	Exam
OC 2.2	Monitoring educational Quality		
OC 2.3	Administrative management		
OC 3.1	Organization of the activities of the general secondary education institutions	4	Exam
OC 3.2	Quality management of the educational process		
OC 3.3	System development of education institution		
Total		16	
The total amount of compulsory components		66	
The total amount of selective components		24	
THE TOTAL AMOUNT OF EPP		90	

Annotations of subjects in the curriculum

GENERAL TRAINING CYCLE Compulsory components of EPP

Psychology of management. Psychology of management as an applied field of psychological knowledge. Psychological patterns of management. Psychological aspects of labor collective management. Personality as a subject of management. Organizational behavior. Psychology of business communication. Empirical studies and techniques in management psychology.

Management of educational activity. Regulatory framework of the institution of higher education. Theoretical and methodological principles of educational activity planning at the education institution. Organization and content of the educational activity. Strategic (perspective) and tactical (current) planning and their implementation in the planning documents of the education institution. Planning and organization of educational process at the education institution. Diagnostics and reports on the educational activity of the education institution.

Information technologies in education and management of education institutions. Methodology of using the Internet in education institutions. Method of using the MS Office. Methodology of using cloud-oriented services and technologies. Method of using special software.

Business Foreign Language. Formation of knowledge and skills in reading professional and scientific literature, conducting conversations in the mode of "supervisor-subordinate", "subordinate-supervisor", abstracting the texts.

Methodology and organization of research with the basics of intellectual property. Characteristics of the main legislative and regulatory documents on intellectual property, theoretical and practical problems of the research regulatory organization.

Strategic management. Studies the process of environmental assessment, formulation of organizational goals, decision-making aimed at creating and maintaining competitive advantages that can provide business profits in the long run.

Annotations of subjects in the curriculum

GENERAL TRAINING CYCLE Compulsory components of EPP

Management of financial and economic activity. Theoretical and methodological principles of management of financial and economic activities of education institutions. Estimates of the activity of education institution. Mechanisms and technologies for making managerial decisions on issues of financial and economic activities of education institution. Mechanisms and technologies for disposal of property belonging to the institution of property rights, funds within the allocations and income of the institution.

Personnel management. Personnel management as a system of measures performed by the personnel services of the organization. Structure of personnel of the organization and personnel records. Staff recruitment and selection. Professional orientation and adaptation of employees. Management of development and movement of personnel of the organization. Formation and preparation of staff reserve. Managing the process of releasing staff of the organization. Assessment of the effectiveness of the personnel service of organization.

Manager of an educational institution. Professional activity of the head of the educational institution. Modeling the professional activity of the head of the educational institution. Content of the head of the educational institution. Standards of Education. Social activity of the head of the educational institution: the idea, basic concepts. Formation of the content of education: an educational and professional program of specialist training. Structurally logical processing of the array of learning content. Technologies of diagnostics of education quality.

Self-management. Basic principles of the theory of self-management. Laws, principles, synergetic paradigm of self-administration. The phenomenon of self-management. A person as an object of self-administration. A person as a subject of self-administration. Human self-determination. Theoretical and practical principles of person self-management in different types of being. Technological self-management. Fight in self-management.

Optional components of EPP *Free choice according to specialty*

Educational technologies. Theory and practice of teaching (didactics) and education. Theoretical foundations of educational technologies, history of educational and technology processes, technology of developmental training, project training, interactive technologies in education, technology of educational activity and development of creative personality.

Management of the educational process. Management of education institution. Higher education institutions in the higher education system of Ukraine; quality assurance of higher education; licensing and accreditation; the structure and system of management of higher education institutions; participants in the educational process; formation and movement of students. Organization of educational process in higher education institutions; basic principles of organization of the educational process in HEI; forms of organization of educational process in HEI; forms of training in HEI; control measures in the process of professional training.

Management of education institution development. Concepts and modern concepts of management of development of education institution. Basic features of systemic development management. Analysis of internal and external factors of development of education institution. The targeted program is the primary means of systemic development management. Systematic planning of education institution

development. System development management of education institution. Effective use of all types of education institution resources. Making optimal decisions regarding the development of the education institution.

Technology of management activity. Acquaintance with various forms and methods of building organizational culture, working with people in the management process, promoting the formation of humanistic goals of management.

Monitoring the quality of education. Quality of Education: Common Approaches to Measurement and Management. Monitoring and evaluation of the quality of education. Technologies for measuring and evaluating the quality of education. Methodology of pedagogical measurements: a conceptual apparatus.

Administrative management. Criteria for evaluating the activity of the staff, assessing and monitoring the state of performance of the institution's tasks, organizational activity, prospective work plans, types and directions of activity of the education institution, strategy of development of the education institution.

Organization of the activities of the general secondary educational establishments. Scientific foundations of general secondary education institution management, education institution management bodies, organization of methodical work, study, generalization and dissemination of advanced pedagogical experience.

Quality management of the educational process. Basic approaches to defining the concept of quality of education; the essence of quality management education as a systematic methodology for effective management; basic principles of quality management and features of their application in educational organizations; basic models and methods of quality management education.

System development of education institution. System: nature, types and characteristics. Education as a system. The modern higher education system. The pedagogical process as a system. Practical application of the systematic approach in higher education.

**Training of masters of sciences
in branch of knowledge 23 "Social work"
specialty 231 "SOCIAL WORK"
educational program "SOCIAL AND PSYCHOLOGICAL REHABILITATION"**

Form of Training:	Licensed number of persons:
– Full-time	25
– Part-time	25
Duration of Training:	
– full-time educational and professional program	1 year and 4 months
– Part-time	1 year and 4 months
Credits ECTS	
– educational and professional program	90
Language of Teaching	Ukrainian
Qualification	Rehabilitation teacher. Specialist in social and psychological rehabilitation. Social manager

The concept of training

Training of qualified specialists is conditioned by the need of our state for highly professional social workers. This need is exacerbated by the complex socio-economic, environmental conditions of our time, as well as the hostilities in eastern Ukraine. There is an urgent need to train specialists who are able to carry out social and psychological rehabilitation of different population groups (including persons who have suffered from natural and man-made emergencies) on the basis of "ecological social work" and to manage the rehabilitation institutions/social services.

Areas of employment of graduates

Our graduate can work in the following positions: Senior official of a public organization (in culture, education, charity, human rights, etc.); chairman (another top official) of a branch of a public organization (humanitarian, specialized); the head (leader) of the institution of social protection of the population; director of an institution (establishment) providing social services; director of rehabilitation institution (center) for persons with disabilities; head of the department (social services); manager (director) in the social sphere; instructor of social pedagogy; social tutor on work with children with disabilities; rehabilitation teacher; social educator; social worker; social work specialist; specialist in project and program management in material (immaterial) production; methodologist on vocational rehabilitation; methodist of educational and methodological work on rendering social services.

Practical training

Practical training is carried out according to the schedule of the educational process directly on the certified practice bases, including: rehabilitation centers; centers for social and psychological rehabilitation; territorial centers of social service; community service centers for families, children and young people.

Proposed Topics of master's qualification thesis

1. Socio-psychological rehabilitation of the participants of military conflicts.
2. Socio-psychological rehabilitation of the families of military personnel.
3. Socio-psychological rehabilitation of internally displaced persons.
4. Socio-psychological rehabilitation of parents having children with disabilities.

5. Social rehabilitation of the elderly in stationary treatment institutions of the social protection system.
6. Socio-psychological rehabilitation of the disabled.
7. Technologies of social and psychological rehabilitation of the victims of emergencies.
8. Educational and rehabilitation work in children's rehabilitation institutions.

**Curriculum of Master training
in educational program "Social and psychological rehabilitation"
(educational and professional program of master's training)**

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
GENERAL TRAINING CYCLE			
Compulsory components of EPP			
CC 1	Foreign language for business communication	4	Exam
CC 2	Methodology and organization of scientific research	4	Exam
CC 3	Head of the institution	4	Exam
Optional components of EPP			
<i>Free choice according to the preferences of students from the list of disciplines</i>			
OCP 1	Choice from the catalog 1	4	test
OCP 2	Choice from the catalog 2	4	test
SPECIAL (PROFESSIONAL) TRAINING CYCLE			
Compulsory components of EPP			
CC4	Social rehabilitation and «green» social work	5	Exam
CC 5	Management of rehabilitation and social services institutions	8	Exam
CC 6	Rehabilitation psychology	6	Exam
CC 7	Inclusive pedagogy	7	Exam
CC 8	Practical training	16	Test
CC 9	Preparation and defense of master's qualification thesis	12	Exam
Optional components of EPP			
<i>Free choice according to specialty</i>			
OC 1	Social and psychological rehabilitation for families	5	Test
OC 2	Basic course of physical and medical rehabilitation	5	Test
OC 3	Digital marketing in social sphere	5	Test
OC 4	Advertisement and information technologies in social sphere	5	Test
OC 5	Premedical training	5	Test
OC 6	Social project management	5	Test
OC 7	Organization of rehabilitation in different social groups	5	Test
OC 8	Social and psychological rehabilitation of emergency victims	5	Test
The total amount of compulsory components		66	
The total amount of selective components		24	
THE TOTAL AMOUNT OF EPP		90	

Annotations of subjects in the curriculum

**GENERAL TRAINING CYCLE
Compulsory components of EPP**

Foreign language for business communication. Development of knowledge and skills necessary for reading professional and scientific literature, conducting a conversation

in the mode of «leader – subordinate», «subordinate – leader», making annotations and summarizing texts.

Methodology and organization of the scientific research. The concept of the scientific research methodology. Priority areas of research on social work. Preparation of master's diploma research. Planning of the scientific research. Theoretical methods of the scientific research. Empirical methods of the scientific research. Experimental method. Implementation of mathematical statistics methods in the scientific research. Verification of the research results.

Social project management. Students study the categorical apparatus of discipline, investigate the stakeholder environment and identify sources and opportunities for project financing, research how to increase the effectiveness of projects, methods and specifics of social project assessment, study to find grant programs, prepare their own project aimed at social problems solution.

SPECIAL (PROFESSIONAL) TRAINING CYCLE

Compulsory components of EPP

Socio-pedagogical rehabilitation. The meaning of the «social rehabilitation» concept. Social and pedagogical activities, forms, methods and technologies that helps a child (or a person) to restore lost social connections and functions, filling the life support environment, personal care increase. «Green» social work.

Management of rehabilitation and social services institutions. Rehabilitation institutions as the elements of social space. Structure and features of a rehabilitation institutions management. Psychological aspects of a rehabilitation institution management. The process of making administrative decisions, as part of management and an element of administrative science. The global market of a rehabilitation industry as a stimulating factor for improving the management system of a rehabilitation institution. Personality of the head of a rehabilitation institution. Logistic system of a rehabilitation institution management. Service quality management in a rehabilitation institution. Marketing environment of a rehabilitation institution. Price and price formation for rehabilitation services. Distribution and promotion of rehabilitation services. Internal marketing of a rehabilitation institution. Motivation in personnel management. Interpersonal communications in a rehabilitation institution management.

Rehabilitation psychology. General concept of rehabilitation, its essence and types. Main components of rehabilitation. Subject, tasks of rehabilitation psychology and phase of the rehabilitation process. Basic principles of the rehabilitation program implementation and the rehabilitation program determining steps.

Inclusive pedagogy. Provides acquaintance of students with scientific and methodological bases of inclusive education and features of organization of inclusive education of children.

Optional components of EPP

Free choice according to specialty

Social and psychological rehabilitation for families. Parental responsibility formation, parental potential revival, independent living skills formation, families leading-up for return of the child from boarding schools, social integration of families.

Basic course of physical and medical rehabilitation. Means of physical rehabilitation, their classification, indications and contraindications of their usage; mechanism of positive impact of physical activities; methods of study and evaluation of individual personality features; rules and methods of activity dosing; process of motor skills forming; basic forms of physiotherapy, modes of physical activities; rules of physiotherapy

preparation and produce; physiotherapy reaction studying and evaluation; organization of physical therapy; different types of therapy in rehabilitation institutions.

Digital marketing in social sphere. Social media marketing (SMM) as a special tool of Digital marketing. Promotion of products, services, companies, brands, etc. through the use of social media. Creation and update of content by visitors. Mechanisms of viral marketing increase of the amount of information displayed on the site, search engine rankings.

Advertisement and information technologies in social sphere. Specificity of using the advertising and information technologies in social sphere, strategies and technologies of interaction between social worker and media; specificity of advertising activities of social workers and institutions.

Premedical course. Emergency regulations. Technique of carrying out emergency assistance of the victims. Actual requirements for victim emergency evacuation. Emergency assistance in case of acute insufficiency. Cardiopulmonary resuscitation. Premedical help in case of injuries. Premedical help in a state of shock.

Premedical training. Rules of conduct at the emergency site. Technique for the inspection of victims. Modern requirements for emergency evacuation of victims. The provision of premedical care in acute failure. Cardiopulmonary resuscitation. Domestic care in case of injury. The provision of medical care in case of shock.

Organization of rehabilitation in different social groups. Organization of rehabilitation with: addicted people; people affected by human trafficking; girls (14-18 years) and women victims of violence; families with deviant behavior children; unemployed youth; children and young people victims of bullying; refugees and internally displaced person; war veterans and their families. Social protection of people affected by the Chernobyl disaster.

Social and psychological rehabilitation of emergency victims. Basic principles of providing psychological help to victims in psycho-traumatic situations. Overcoming consequences of psychological traumas: psychological first-aid. Psychological support in distress. Rules of nonviolent communication and conflict solution.

Head of the institution. Management of the institution. Responsibility of the supervisor for educational, financial, economic and other activities of the institution.

**Training of masters of sciences
in branch of knowledge "International relations"
in specialty 291 "INTERNATIONAL RELATIONS, PUBLIC COMMUNICATION
AND REGIONAL STUDIOS"
educational program "INTERNATIONAL RELATIONS, PUBLIC COMMUNICATION
AND REGIONAL STUDIOS"**

Form of Training:	Licensed number of persons:
– Full-time	40
– Part-time	30
Duration of Training:	
– full-time educational and professional program	1 year and 4 months
– Part-time	1 year and 4 months
Credits ECTS	
– educational and professional program	90
Language of Teaching	Ukrainian, English
Qualification	Master of International Relations, Public Communications and Regional Studios

The 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.

Areas of 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.

Practical training

Practical training is carried out according to the schedule of the educational process directly in certified practical institutions, including: trade representations and other representative organizations of Ukraine abroad; foreign states representations and international organizations in Ukraine; Ukraine-foreign joint stock, public and private enterprises; public organizations which have close contacts with foreign countries; structural units of Cabinet of Ministers of Ukraine; Ministry of Foreign Economic Relations of Ukraine; other republican departments, that are a subdivision of Foreign Affairs;

domestic and foreign research institutes and laboratories.

Proposed Topics of master's qualification thesis

1. The Asia-Pacific region: integration and rivalry in new geopolitical conditions.
2. "Non-governmental actors" of diplomacy and their role in international relations.
3. The Palestinian-Israeli conflict in the context of the evolution of the Middle East security system.
4. The concept of "russian world" as an element of the foreign policy expansion of the Russian Federation towards the countries of the former USSR.
5. The Russian-Ukrainian war as a threat to world food security.
7. The London-Warsaw-Kyiv axis as the basis of the new geopolitical reality in Eastern Europe
8. Participation of the Ukrainian contingent in UN peacekeeping missions on the African continent.
9. Transformation of the EU's foreign policy as a result of the Russian military aggression against Ukraine.
10. Food security as a factor of the world politics agenda.

**Curriculum of Master training
in educational program "International relations, public communications
and regional studios"
(educational and professional program of master's training)**

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
GENERAL TRAINING CYCLE			
Compulsory components of EPP			
CC 1	International Systems and Global Development	4	exam
CC 2	Practicum of Translation	15	test, exam
CC 3	Agrarian Policy of the World Developed Countries	4	exam
Total		23	
Optional components of EPP			
<i>Free choice according to the preferences of students from the list of disciplines</i>			
OCP 1	Choice from the catalog 1	4	test
OCP 2	Choice from the catalog 2	4	test
Total		8	
SPECIAL (PROFESSIONAL) TRAINING CYCLE			
Compulsory components of EPP			
CC4	Methodology and Organization of Scientific Research	4	exam
CC 5	Ukraine in the System of Contemporary World Agrarian Politics	4	exam
CC 6	Multilateral Diplomacy and Mechanisms for Regulating International Relations	4	exam
CC 7	International Cooperation in Agriculture	4	exam
CC 8	International Organizations and Global Problems of Modern Age	4	exam
CC 9	Agrarian Diplomacy	4	exam
CC 10	Ukraine in the Contemporary Geopolitical Area	4	exam
CC 11	Language of Diplomatic Documents	4	exam
CC12	Production Practice	4	exam
CC 13	Preparation and defense of master's qualification thesis	7	exam
Total		43	
Optional components of EPP			
<i>Free choice according to specialty</i>			

Code n/a	Components of the educational program (education disciplines, course projects (paper), practice, qualification work)	Amount of credits	The final control
OC 1.1	Foreign Policy Communication Technologies	4	exam
OC 1.2	Global and National Security		
OC 1.3	International environmental security		
OC 1.4	“Soft power” as a mechanism of influence on the modern world		
OC 2.1	Economy of Foreign Countries	4	exam
OC 2.2	World Agriculture		
OC 2.3	Strategic communications in international relations		
OC 2.4	Regional Security of Southeast Asian countries		
OC 3.1	EU Regional Policy	4	exam
OC 3.2	International Trade Law		
OC 3.3	Informational operations in international relations		
OC 3.4	Crisis analysis and foreign policy decision-making		
OC 4.1	Political Science of International Relations	4	exam
OC 4.2	Public and Cultural Diplomacy		
OC 4.3	Cultural and religious factor in international relations		
OC 4.1	International conflicts, world terrorism and hybrid wars		
Total		16	
The total amount of compulsory components		66	
The total amount of optional components		24	
THE TOTAL AMOUNT OF EPP			90

Annotations of subjects in the curriculum

GENERAL TRAINING CYCLE Compulsory components of EPP

International Systems and Global Development. The formation and development of systems of international relations, their features, main trends and stages of evolution are studied. Global and regional aspects of international relations and world politics are covered. The peculiarities of the activity of Ukrainian diplomacy in the international arena are revealed.

Practicum of Translation. General, lexical-phraseological and morphological-syntactic aspects, as well as the main tasks of translation studies; rules of translation as a type of communicative activity, principles of achieving translation adequacy at the level of equivalence.

Agrarian Policy of the World Developed Countries. The main directions and ways of international division of labor in the agricultural sphere in the global and regional dimensions are considered, as well as general principles, nature and mechanism of state policy in the agricultural sphere on the example of best practices of leading countries.

SPECIAL (PROFESSIONAL) TRAINING CYCLE Compulsory components of EPP

Methodology and Organization of Scientific Research. Theoretical and practical issues of modern research in the field of international relations, methodology of writing articles, abstracts, information reviews, etc., problematic aspects of preparation for a master's thesis, taking into account the latest requirements for such a scientific component of training international masters are considered.

Ukraine in the System of Contemporary World Agrarian Politics. Topical issues of Ukraine's place and role in the modern world, the foreign policy of the state in international relations, aimed at its participation in solving global problems of today, are considered.

Multilateral Diplomacy and Mechanisms for Regulating International Relations. The basic principles, mechanisms and directions of realization of multilateral diplomacy, in particular in the field of regulation of modern international relations in the conditions of globalization are considered.

International Cooperation in Agriculture. The problems of international cooperation in the field of agriculture, in particular cooperation in solving the most pressing problems of its development, the introduction of new technologies, improving the ecology of agriculture and more.

International Organizations and Global Problems of Modern Age. It is revealed how the globalization and interconnectedness of the world has led to an increase in the role of international organizations diplomacy, which is carried out at the highest level and allowed to make cardinal decisions on the most acute international problems during the second half of the XX century and the beginning of the XXI century and thus drastically change the international situation.

Agrarian Diplomacy. The main features, directions of realization and efficiency of realization of the state interest on the international arena in the agriculture sector by means of economic influence with application of classical and specific approaches of diplomatic activity of the countries are analyzed.

Ukraine in the Contemporary Geopolitical Area. The role of Ukraine in modern international relations and world politics, the relationship and mutual influence of Ukrainian diplomacy and geopolitics are described. Various aspects of international relations, geopolitics and geostrategy are considered through the prism of Ukrainian national interests.

Language of Diplomatic Documents. The content of the EPP aims to prepare future diplomats for verbal communication in their diplomatic practice, the rules of writing diplomatic and other official documents.

Optional components of EPP

Free choice according to specialty

Foreign Policy Communication Technologies. Introduces students to the history of the emergence and formation of foreign policy communication, its main manifestations and implementation in the modern international environment.

Global and National Security. The global and regional dimensions of solving the problem of world security, the activities of Ukrainian diplomacy to join the world security policy in today's globalized world are covered.

International environmental security. Discipline studies the formation of a complex of theoretical and practical knowledge, skills and abilities on international environmental security and environmental protection (study of environmental processes and environmental management of social production and non-production processes of human activity) for use in professional activities.

Economy of foreign countries. The most important aspects of the economy of foreign countries in their holistic interaction, which forms the world economy, are considered. The main attention is paid to the characteristics of the economic potential of countries and regions, economic policy of governments, factors influencing the dynamics of economic development and its structure. The ethnocultural features of the countries influencing the business behavior of their businessmen are also considered.

World Agriculture. The state, structure, problems of agricultural development as one of the global problems of the present are considered against the background of the current possibilities of science and industry to provide mankind with agricultural products.

Strategic communications in international relations. Aim of course is the formation of systemic knowledge of international strategic communications, implementation of the laws as a means of ensuring the realization of national interests.

EU Regional Policy. The characteristic features of the European Union as a unique integration association are studied in the global and regional system of international relations through the revealing of historical features and institutional principles of the EU, the process of EU enlargement in Central and Eastern Europe, internal changes related to Europeanization, regional policy of organization.

International Trade Law. The discipline deals with the features of functioning of world trade relations, peculiarities of trade institutional system, and also questions of realization of legal regimes of world trade.

Informational operations in international relations. Aim of discipline: mastering knowledge, formation of skills and abilities on the conceptually theoretical and practical basis of information operations in the field of international relations.

Political Science of International Relations. Paradigmatic, conceptual and praxeological aspects of international relations and world politics are considered in the context of evolutionary development of domestic and foreign political science.

Public and Cultural Diplomacy. The peculiarities of the functioning of public and cultural diplomacy, in the system of existing and promising foreign diplomatic relations of Ukraine, the formation of the image of the state and its institutions at the international level, as well as cultural and diplomatic issues facing the state are considered.

Cultural and religious factor in international relations. Aim of academic discipline is analysis of spiritual, religious, cultural, civilizational and ethnopyschological factors in terms of their influence on the foreign policy of a country (or group of countries) and international and interstate relations in the regional and global dimensions.

"Soft power" as a mechanism of influence on the modern world. The modern world has become more flexible and requires new approaches to the process of achieving goals. Therefore, open confrontation may no longer be as effective as the basic technologies of "soft power", which make it possible to build a positive image of the state and obtain the necessary preferences or potential opportunities. It is also important to be able to counteract the destructive effect of hard political technologies aimed at worsening the reputation or threatening the national security of Ukraine. Knowledge of the specifics of using socio-humanitarian resources in promoting the brand, achieving foreign-policy goal, establishing a dialogue between cultures will enable effective implementation of the "soft power" policy.

Regional security of Southeast Asian countries. The relevance of studying the regional security of the Association of Southeast Asian Nations (ASEAN) is determined by the growing importance of this subregion in modern world politics. Central to this course is the study of regional security challenges in the countries of Southeast Asia (SAA), past and present, which will allow participants to analyze the parameters of regional security in a holistic (local, regional and global) approach. The regional focus of this course recognizes that too often local and national conflicts pose a serious threat to neighboring states, and in many cases to the entire region. The main goal of the course is to study the regional stability and security processes of ASEAN, as well as the international/regional politics of its main actors.

Crisis analysis and foreign policy decision-making. The purpose of the course is to form ideas about the essence, place, main types and stages of the development of crisis phenomena, the disclosure of methodological approaches to the analysis of crisis phenomena in the field of foreign policy, the main provisions of the theory and features of foreign policy decision-making, principles, models and methods of foreign policy decision-making in crisis situations.

International conflicts, world terrorism and hybrid wars. The purpose of the course is to form ideas about the specifics of armed conflicts, to understand the difference between war and armed conflict, to study classical and modern theories of armed struggle, to raise awareness of the impact of information and communication technologies on modern armed conflicts. In addition, students should learn the main provisions of international humanitarian law in modern armed conflicts; to know the forms of conflict resolution in the modern world; understand the threats of terrorism and know ways to prevent and combat this phenomenon.