

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

**MASTER CURRICULA
AND TRAINING PROGRAMS**

**2015-2016
academic year**

2015

Reviewed and approved by the Scientific Council of NULES of Ukraine
from 24.06.2015 (protocol № 11)

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The authors would like to thank the deans of the faculties and the directors of educational and research institutes of the basic institution of NULES of Ukraine (Kyiv) for their contribution: L. Bal-Prylypko, O. Hlazunova, A. Dibrova, M. Dolia, T. Yevsiukov, V. Zabaluiiev, V. Kozyrskyi, V. Kondratiuk, M. Kulaiets, P. Lakyda, Ya. Mykhailovych, A. Ostapchuk, Z. Ruzhylo, M. Tsvilikhovskiy, V. Shynkaruk, O. Yara, the deputy-deans and deputy-directors, employees of the University O. Lobova, E. Nazarova, T. Shatets, L. Shyshkova,

Translated by N. Kharchuk, L. Dankevych

Design, layout, prototyping, and printing is performed
by editorial-publishing department of NULES of Ukraine
03041, Kyiv, provulok Silskohospodarskyi, 4

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HISTORICAL BRIEF

This year National University of Life and Environmental Sciences of Ukraine (NULES of Ukraine) has celebrated its 117th birthday. Its origin dates back from the agricultural department and the veterinary faculty of Kiev Polytechnic Institute, department of forestry, Institute of agriculture and forestry in Marimont (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".

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.

The first dean of the agricultural department was M.P. Chyrvynskiy, 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. Mendeleev, 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.

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

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

In 1948 on 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 forest school which affiliated with Institute of Agriculture in Marimont (Poland, 1840), and the latter was reorganized into the Institute of Agriculture and Forestry. In 1862, it transferred to Novo-Alexandriya (now – Pulawy, Poland). At the beginning of World War I (1914), a number of faculties of Novo-Alexandriya Institute of Agriculture and Forestry incorporated into Kharkiv Institute of Agriculture and Forestry (since 1921). In 1930, Forestry Faculty of Kharkiv Agricultural Institute moved to Kyiv and affiliated with Forestry engineering faculty

of Kyiv Agricultural Institute to become the Ukrainian Forestry Technical Institute, and the same year it reorganized into Kyiv Forestry Institute.

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

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). This period became one of the most fruitful in the history of the institution, since there was a real possibility of integration of education and research activities, which made the institution famous in the former USSR. This was the prototype of large education and research universities functioning in highly developed countries of the world.

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

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

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

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

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

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

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

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

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

Since 1936 the University has incorporated Boyarka Forest Research Station, since 1957 – training and research farm "Vorzel", since 1966 – Agronomic Research Station

(Kyiv region), since 1972 – Velykosnitynka training and research farm named after O.V. Muzychenko.

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

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

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

According to the Resolutions of the Cabinet of Ministers of Ukraine from 6 May 2001 No 434 and from May 16, 2001 No 508, Berezhany and Nizhyn agrotechnical institutes were organized. According to the order of Cabinet of Ministers of Ukraine from August 8, 2001, № 327 of the Ministry of Agrarian Policy of Ukraine the Institute of post-diploma education of managers and specialists of AIC was transferred to the National Agrarian University. Since 2003, the Ukrainian laboratory of quality and safety of AIC products was organized in the National Agrarian University.

In 2004 the Ukrainian Research Institute of Agricultural Radiology joined the National Agrarian University.

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

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

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

Regulations on granting the research status and renaming of the university have legalized all innovations introduced at the University in recent years.

Reforming of the university resulted in clear outline of its prospects - consolidation of training, research, innovation, information, advisory, educational and production activities. Thus, the achievements of the University testify that NULES of Ukraine is a prime example of the institution of the 21st century.

MASTER TRAINING PROGRAMS IN NULES OF UKRAINE

The National University of Life and Environmental Sciences of Ukraine has been training masters 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 trains masters in 51 specialties (Table 1).

Table 1. The list of specialties of Master training programs at the NULES of Ukraine

Code and title of the branch of knowledge code and title of specialty	Form of training
0101 – Pedagogic Education	
8.01010601 – Social Pedagogy	+ (F, P)
0203 – Human Sciences	
8.02030304 – Translation	+ (F, P)
0304 – Law	
8.03040101 – Law Science	+ (F, P)
0305 – Economics and Entrepreneurship	
8.03050201 – Economic Cybernetics	+ (F)
8.03050401 – Economics of Enterprise	+ (F, P)
8.03050701 – Marketing	+ (F, P)
8.03050801 – Finance and Credit	+ (F, P)
8.03050803 – Taxation	+ (F, P)
8.03050901 – Accounting and Audit	+ (F, P)
0306 – Management and Administration	
8.03060101 – Management of Organizations and Administration	+ (F, P)
8.03060104 – Management of Foreign Economic Activities	+ (F, P)
0401 – Natural Sciences	
8.04010601 – Ecology and Environmental Protection	+ (F, P)
8.04010604 – Environmental Monitoring and Auditing	+ (F)
0501 – Informatics and Computation Technics	
8.05010101 – Information Managing Systems and Technologies	+ (F)
8.05010105 – Computer Ecological and Economic Monitoring	+ (F)
0502 – Automation and Control	
8.05020201 – Automated Control of Technological Processes	+ (F)
0505 – Mechanical Engineering and Processing of Materials	
8.05050303 – Forest Complex Equipment	+ (F, P)
8.05050312 – Machinery and Agricultural Equipment	+ (F, P)
0507 – Electrical Engineering and Electromechanics	
8.05070103 – Electrotechnical Systems of Power Consumption	+ (F, P)
0514 – Biotechnology	
8.05140105 – Environmental Biotechnology and Bioenergetics	+ (F, P)
0517– Alimentary industries and reprocessing of products of agriculture	
8.05170104 – Technologies of Preservation, Conservation and Processing of Meat	+ (F, P)
8.05170105 – Technologies of Preservation and Processing of Water Bioresources	+ (F, P)
0518 – Wood Processing	
8.05180101 – Wood Processing Technologies	+ (F, P)
0601 – Construction and architecture	
8.06010101 – Industrial and Civil Construction	+ (F)
0701 – Transport and Transport Infrastructure	
8.07010102 – Organization of Transportation and Management in Transport	+ (F, P)
8.07010104 – Organization and regulation of Traffic	+ (F, P)
0801 – Geodesy and Land management	
8.08010103 – Land management and Cadastre	+ (F, P)
1304 – Agriculture and Forestry	
8.09010101 – Agronomy	+ (F, P)
8.09010102 – Agrochemistry and Soil Science	+ (F, P)
8.09010104 – Fruit and Vegetable Science and Viticulture	+ (F, P)
8.09010105 – Selection and Genetics of Agricultural Crops	+ (F, P)
8.09010201 – Technologies of Production and Processing of Livestock Products	+ (F, P)
8.09010301 – Forestry	+ (F, P)
8.09010302 – Hunting industry	+ (F, P)
8.09010303 – Park and Gardening Management	+ (F, P)
8.09010501 – Plant Protection	+ (F, P)
8.09010502 – Quarantine of plants	+ (F)

Code and title of the branch of knowledge code and title of specialty	Form of training
0902 – Fishery and Aquaculture	
8.09020101 – Water Bioresources	+ (F, P)
1001 – Techniques and Energetics of Agricultural Production	
8.10010101 – Energetics of Agricultural Production	+ (F, P)
8.10010103 – Electrification and Automation of Agriculture	+ (F, P)
8.10010203 – Mechanization of Agriculture	+ (F, P)
1101 – Veterinary	
8.11010101 – Veterinary Medicine	+ (F, P*)
8.11010102 – Veterinary-Sanitary Inspection, Quality and Safety of Livestock Products	+ (F)
1501 – Public Service	
8.15010002 – Public Administration	+ (F*, P*)
1801 – Specific Categories	
8.18010004 – Extension service	+ (F)
8.18010009 – Stockbroking	+ (F)
8.18010010 – Quality, Standardization and Certification	+ (F, P)
8.18010012 – Management of Innovative activity	+ (F)
8.18010018 – Administrative Management	+ (F, P)
8.18010020 – Management of Educational Institution	+ (F, P)
8.18010021 – Pedagogy of Higher School	+ (F, P)
Note: + – available; f – Full-time; p – Part-time; * – training on the basis of full higher education	

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;
- branch of knowledge “Specific categories” in specialties:
 - “Administrative Management”;
 - “Stockbroking”;
 - “Extension service”;
 - “Pedagogy of Higher School”;
 - “Management of Innovative activity”;
 - “Management of Educational Institution”;
 - “Quality, Standardization and Certification”;
- branch of knowledge “Public Service” in specialty “Public Administration”.

Individuals who have studied and intend to continue training in the chosen field of study for deeper specialization in the chosen specialty are enrolled on educational and professional programs (1,5 years of study (90 ECTS)) by the results of entrance exams. 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 them into modern high technologies.

Masters on the educational and research program (2 years of study (120 ECTS)) are trained only at departments of the University, which are entitled to train postgraduate students, have sufficient funding and considerable progress in research activities. Applicants to such Master Degree Programs should 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 research activity according to the chosen specialty during postgraduate study or at educational and research institutions and science-intensive industries.

The specialties in the branch of knowledge "Specific Categories" have a great appeal to students. Their brief description is given below.

Specialty "Administrative Management" is focused on training highly-professional managers who are able to manage agrarian business using innovative managerial knowledge and skills, modern computer technologies and foreign languages. The program content is determined by basic education (economic or non-economic) and future employment. The curriculum of economic program includes technological disciplines in the cycle of elective disciplines, for others – economic disciplines.

Specialty "Stockbroking". The specialty focuses on training specialists through effective use of the tools of stock market, who will be able to minimize both the production and financial risks in almost all spheres of economic activity, to develop and implement the forecasts for domestic and world markets, on the whole and within the specific groups of commodities or financial instruments. In addition to specialization, graduates will be able to trade in the commodity and stock markets.

Specialty "Extension Service". The development of market relations in Ukraine has caused an urgent need to establish an effective advisory information and consultancy service for agricultural producers and the population. Knowledge and practical experience obtained through training will help graduates create their consulting services (firms) to extend knowledge, information, innovation, using new information technologies with interactive, consulting systems for competitive agricultural production.

Specialty "Pedagogy of higher school". Training of a university teacher is caused by the demand in specialists able to organize the educational process, methodological and research activities in colleges and vocational schools, promote social development of young people in higher education institutions.

Specialty "Management of innovative activity". The specialty focuses on training highly qualified managers with special knowledge in basic education, able to make strategic and tactical managerial innovative solutions, identify the most promising scientific developments and implement them in production on the administrative level of the central state and regional regulatory agencies, counseling centers, innovative financial and credit institutions, enterprises in accordance with the requirements of international standards.

Specialty "Management of educational institution". Training of managers of enterprises, institutions and organizations (in the sphere of education and industrial training) is caused by the demand in specialists able to carry out work on planning and optimization of the organizational structure of the institution; management of its educational and economic activities; monitoring the implementation of the plan; development of the staff policy of the institution and the student audience.

Specialty "Quality, standardization and certification". The specialty focuses on training specialists able to adapt Ukrainian system of assessment of quality, safety, certification and standardization of AIC products according to international standards and their practical implementation.

Since 2012, the University has been training experts-analysts in specialization "Laboratory activity" who master modern methods of chemical, physico-chemical, biological, ecological expertise and evaluation of the quality and security of facilities according to international standards.

At NULES of Ukraine the **specialty "Public service"** in the branch of knowledge "Public administration", is in demand. 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.

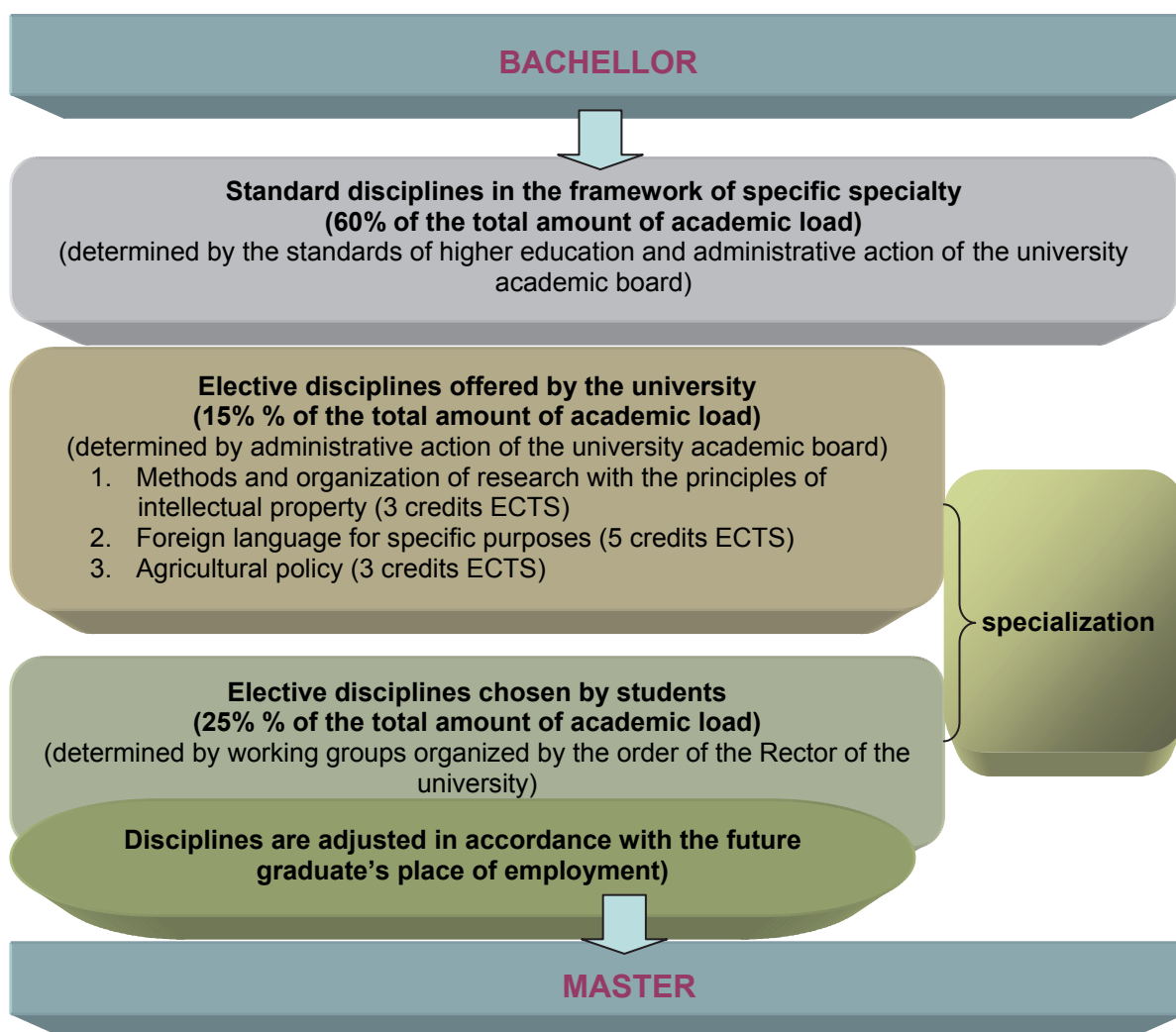
Content Structure of Master programs at NULES of Ukraine

Fig. 1. Content Structure of Master programs at NULES of Ukraine

The content of Master programs at the NULES of Ukraine is determined by:

- the requirements to the professional activity of specialists;
- the field of study and professional specialization of basic education;
- the peculiarities of Master training.

The content structure of Master programs at the NULES of Ukraine includes three discipline blocks.

The list, extent and attestation forms of standard disciplines within the framework of a definite specialty (block 1) are determined by the branch standards of higher education of Ukraine and the administrative action of the academic board of the university. The study of these disciplines provides the basis of specialty and master degree.

The elective part of disciplines determines the basis of specialization within the relevant specialty. The list, extent and attestation forms of elective disciplines offered by the university (block 2) are determined by the academic board of the university. These disciplines are studied by students during their first year according to educational programs of training. They contribute to masters' future research activities and postgraduate studies, help to master a foreign language, methodology and organization of scientific research and be professionally aware in agricultural issues.

The list of standard disciplines and elective courses offered by the University are the same for all students who study according to the same curriculum, regardless of their chosen major.

The list, forms of study and attestation of elective courses chosen by students (block 3) are defined by working groups organized by the rector's order, are recommended by the academic boards of the faculties (ERI), approved by educational-methodological council and by the academic board of the University. They are included in the curriculum depending on the student's choice and studied mainly during the second year of study. These disciplines enable the students to write master's thesis and adjust graduates to their future place of employment.

Professional training of students, including the master's degree research begin in the first semester. A significant part of the training is allotted for independent study.

***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).

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.

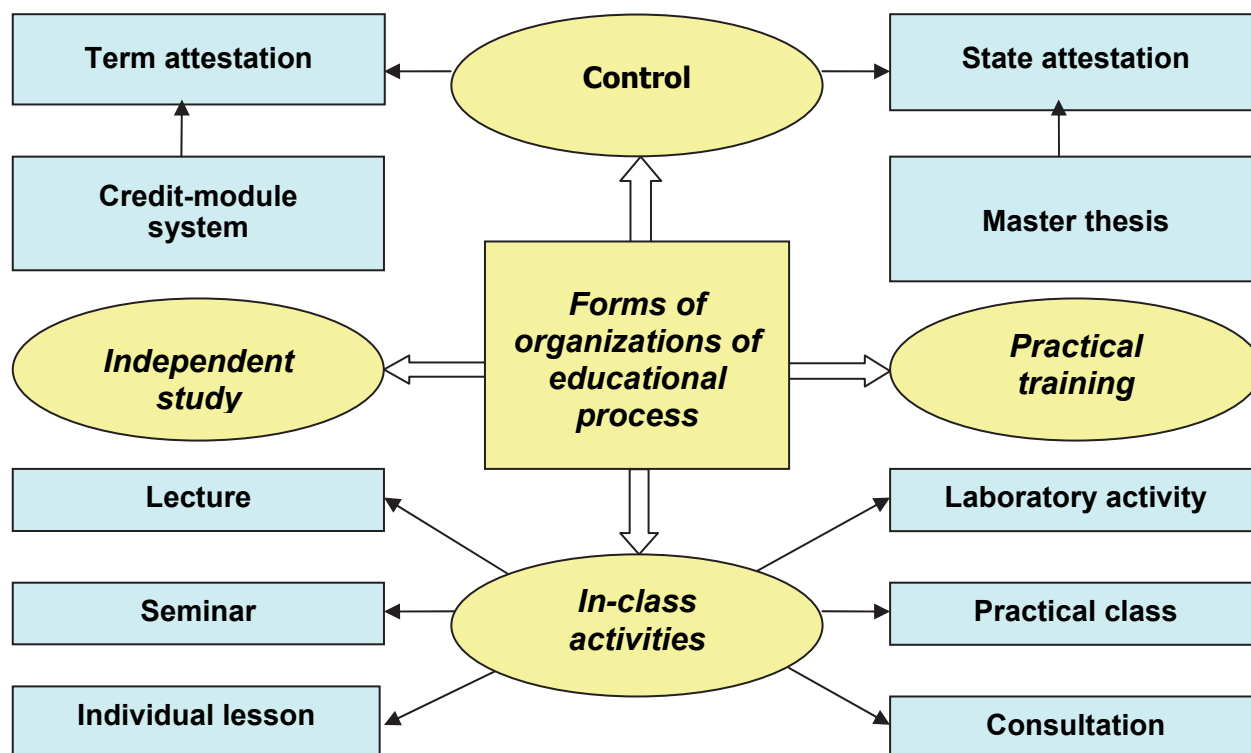


Fig. 2. The main form of implementation of educational process
at NULES of Ukraine

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 etc, as well as their electronic versions for distance learning. 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 Khraplyvnyi”, 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.

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.

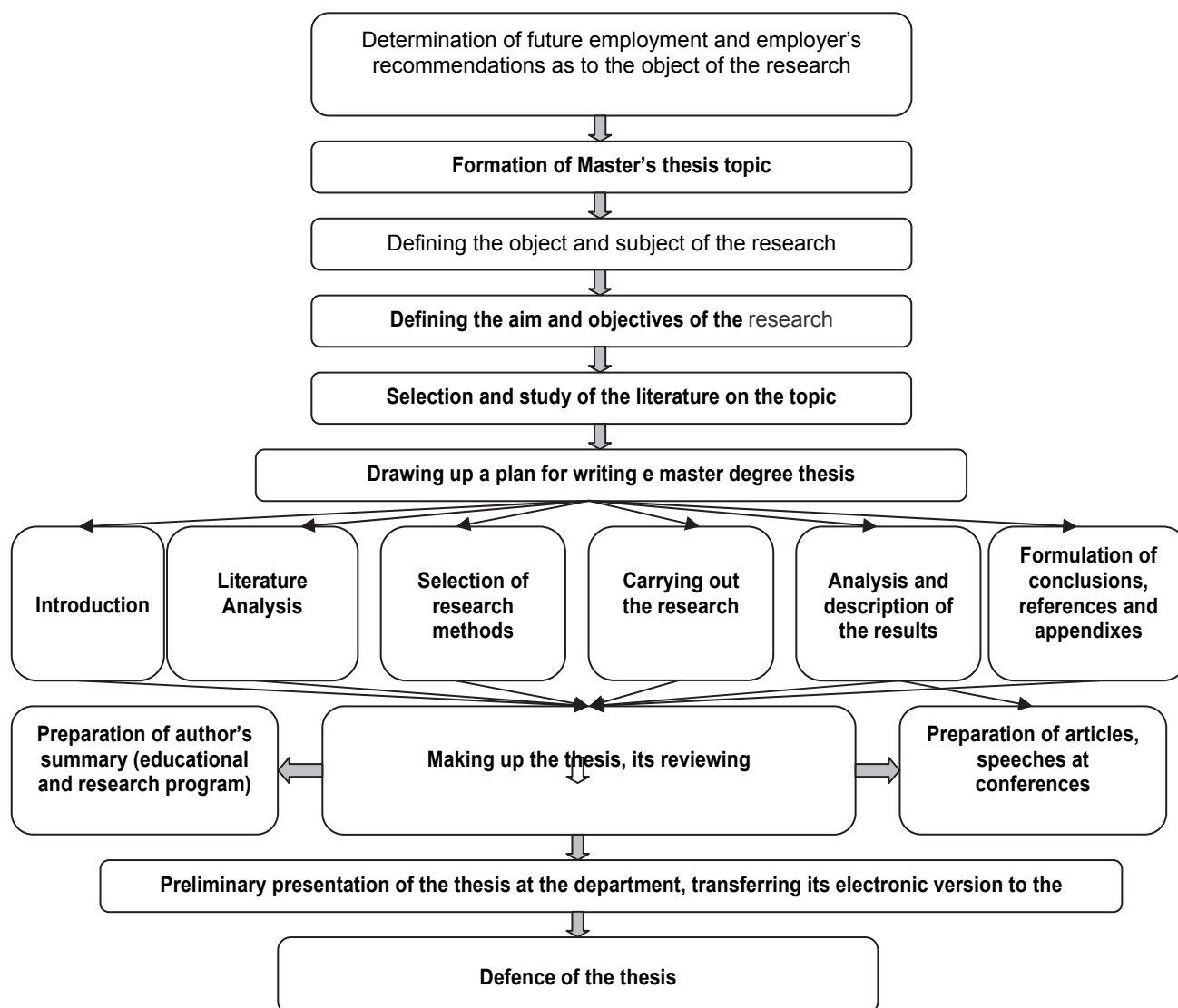


Fig. 3. Stages of writing Master thesis

The list of specialties in master training program in full-time and part-time forms of training is shown in table.1.

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 300 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: <http://library.nubip.edu.ua>.

Since 2006 the Scientific Library has become a depository library of FAO (FAO - Food and Agricultural Organization) in Ukraine. The Depository fund contains 700 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 EBSCO, containing more than 30,000 full-text journals, books, brochures, newspapers, reference books and analytical reviews, AGORA (Access to Global Online Research in Agriculture) is a full-text collection of more than 3000 journals from 106 countries in the field of food, agriculture and environmental sciences, Bio-One – full-text collection containing over 100 thousand articles in the field of biology, ecology and environmental sciences, and other databases.

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@twin.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: 71 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);
- 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 (<http://library.nubip.edu.ua>);
- uploading the library 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.

Department of academic literature. The total books collection of the department is 51176 items (books, periodicals, instructions for laboratory and practical works).

Users are provided with academic literature, reading room for 140 seats, free Internet and Wi-Fi access.

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.

The department of scientific literature and fiction. The main task of the department is to provide users with scientific literature and fiction. Book collection of the department is more than 450,000 items, including:

- 400000 copies of scientific literature;
- 58000 copies of fiction;
- 9500 copies of foreign literature;

Users are provided with:

- 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 900 documents in English and Russian including analytical materials, collected statistic data, reports.

Branch of scientific library of mechanic-technological faculty. The total book collection of the branch is 51664 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 library of forestry and park-gardening ERI. The total book collection of the library is 24509 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 library of the faculties of economics and agrarian management. The total book collection of the affiliate is 53594 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 library of land management and jurisprudence faculties.

The total book collection of the library is 14039 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 library of veterinary medicine faculty. The total book collection of the library is 48823 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 main objective of the university – to train highly qualified specialists for the agricultural sector with up-to-date computer knowledge and skills. In order to make efficient use of ICT in the educational process, a corporate information-educational environment (IEE). It includes the following components: well-developed computer infrastructure, software platforms, information and educational resources and a system of IEE management (Fig. 4).

The University infrastructure provides students with an access to information and educational resources. On average, there is one computer per 3.4 students at the University. By the end of 2014 the university information system had 2872 computers. They are supported by servers with the following operating systems: Windows 2003 Advanced Server (6 server licenses available) and SQL Server 2000 (one license available) as well as 12 servers on Open Source software Unix Free BSD and Linux. For some servers, virtualization methods are used. All virtual servers are running in a clustered environment. All educational buildings and student residence buildings are connected to the Local Area Network (LAN) with a bandwidth of 1 Gbps in each direction, and there is also a local Wi-Fi network with free access to the Internet.

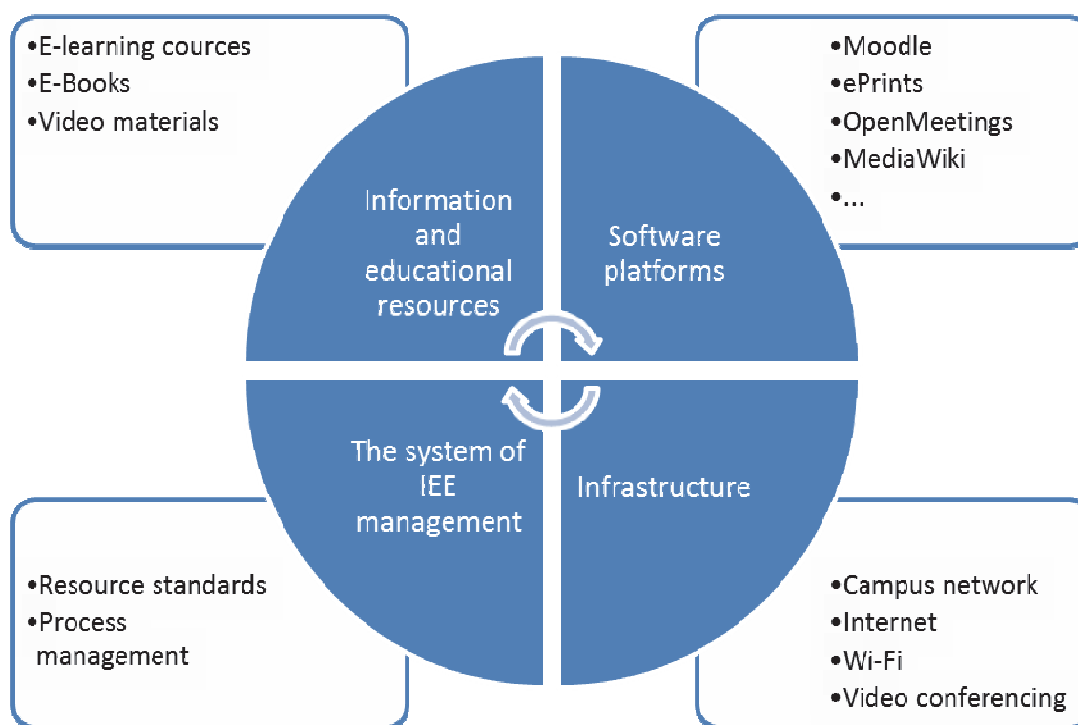


Fig. 4. Information-Educational Environment of NULESU

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

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

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

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

- Video Portal (video.nubip.edu.ua), which houses educational videos, video lectures and other video resources produced at the University and used in training, educational and cultural activities.

In the field of information and computer training, the University maintains cooperation with Ukrainian and foreign IT companies — IBM, Microsoft, Intel etc.

The university closely cooperates with regional educational institutions using the technologies provided by information and educational environment of NULESU. In particular, the university teachers give video lectures to students at the separated subdivisions: "Mukacheve Agricultural College", "Bobrovytsia College of Economics and Management named after O.Mainova", "Zalishchyky Agricultural College named after Ye.

Khraplyvy", "Berezhany Agrotechnical Institute", "Irpın Economic College", "Nizhyn Agrotechnical Institute". In 2014, the international conferences held at NULESU were provided with video reports of some foreign participants from their countries (Poland, Great Britain, the Netherlands etc).

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.

During this period more than 3000 foreign students from 91 countries have graduated with master degrees in various fields. More than 500 of them continued their education as postgraduates and doctoral students and have obtained scientific degrees of doctors and candidates of sciences.

At present, NULESU maintains contacts and cooperates with 146 organisations from 41 countries in the framework of partnership agreements.

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 2014, NULESU signed Memoranda of double diploma with universities-partners:

- Iowa State University, USA: “Quality and safety of agricultural and foodstuff products and objects of environment”, “Bioeconomics”, “Bioenergetics”;
- the University of Wageningen, the Netherlands: “Protection of environment”, “Bioeconomics”, “Biotechnology”;
- Humboldt University, Germany: “Process management and quality management”;
- Tokyo University of Agriculture, Japan “International bio-business”;
- University of Applied Sciences Weihenstephan, Germany: Master of Business Administration in Agriculture (MBA);
- University of Applied Sciences Anhalt, Germany: Master of Food and Agribusiness (MFA);
- Warsaw University of life sciences, Poland: “Energetics and automation of biosystems”;
- Russian State agricultural university (MAA named after K. A. Timiriazev): “Information and consulting in AIC”.

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

International mobility in NULES of Ukraine is one of the leading areas of international activity, which offers its students the exceptional opportunities to obtain quality education, do research or internship, and get experience abroad in the framework of international cooperation. Developing the mobility through the implementation of the mechanism of student exchange and participation in the dual diploma programs, individual grants, the University participates in the processes of internationalization and globalization, develops the training of professionals, highly qualified specialists; supports the social, economic, cultural, political relations and ties with other countries.

Today, motivated students of our University can get the experience in conditions of different system of higher education. Cooperation is based on agreements between

NULES of Ukraine and foreign higher educational institutions in different countries according to agreed and approved individual educational plans of students and programs of academic disciplines, and in the framework of intergovernmental agreements on cooperation in the field of education.

Every year in NULES of Ukraine:

- about 200 students do training and internship at overseas universities;
- about 500 students have practical training at the leading agricultural enterprises in different countries;
- about 200 lecturers do internship in foreign institutions train, establish cooperation and represent the university in international events.

Over the last 5 years (from 2010 to 2015) 3865 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 the international conference of GCHERA;
- participation in the activities of the Visegrad University Association;
- participation in MAGATE Agency activities and meetings of experts on nuclear safety in Fukushima-Chernobyl;
- participation in the activities of the Ukrainian-American Commission on investment and trade;
- participation in joint research projects GESAPU, MIMIPPA, QANTUS, ALRAKIS II, FP-7, 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.

EDUCATIONAL, SPORTS AND SOCIAL ACTIVITIES

Training and research centre (TRC) of educational and social development organizes and coordinates educational work of the University together with the departments of physical education, departments of the the Humanities, and the student self-government bodies.

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

The TRC of educational and social development organizes scientific-methodological seminars for mentors of academic groups of the first courses that help to apply

pedagogical methods and techniques aimed at students' team-building. The TRC initiated sports competitions "UNI-sportsman" among the staff and students of NULES of Ukraine in 15 kinds of sports.

In 2015 the University teams in tug-of-war, powerlifting, arm wrestling were organized.

A permanent commission on monitoring compliance with the internal Rules in the dormitories of NULES of Ukraine considers violations of the internal rules in the dormitories.

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

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

The University teams and individual athletes participate in competitions at various levels: district, city, national, international, and regularly become prizewinners. In 2012, in order to promote physical fitness and health of young people, the University built an outdoor playground for mini-football with artificial turf. In 2014-2015, the academic building № 9 which houses the Department of physical education University was renovated up to modern standards.

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

From year to year, the quality of living conditions in university dormitories is improving. Living rooms are well-equipped, there are comfortable conditions for independent learning: reading rooms with free access to the Internet, educational and cultural activities are organized. Almost all dormitories have launderettes. To improve the student recreation there are various sports facilities: volleyball courts in front of the dorm № 6, the children playground near the dorm № 12, a playground near the dormitories Nos. 8 and 10, and a modern hall for martial arts in dorm № 4. The bodies of student self-government also have meetings rooms.

STUDENT SELF-GOVERNING

There is a student organization at National University of Life and Environmental Sciences of Ukraine (SO) which is actively working and developing Student organization (CO). Its activities focus on the organization and consolidation of the students, protection of rights and legitimate interests of students, developing leadership skills, creative abilities by organizing their leisure through the activities of the clubs. Clubs and cultural centers of SO:

- Club of Experts of NULES;
- Science club;
- Media-centre "Focus";
- Center of social work;
- Sports club;
- Tourist club;
- University guards.

SO collaborates with many organizations and agencies. Students are members of Student Council under the auspices of the head of Holosiivskiy district of Kyiv city administration, the Student Council of Kiev, the Joint Council of the Ministry of agrarian policy and food of Ukraine. Cooperation with the student councils of other universities makes it possible to find new perspectives, to carry out joint activities and to implement projects.

ADMISSION TO MASTER DEGREE COURSE AT NULES OF UKRAINE

Admission to Master training is conducted according to governmental order, and contract with physical persons or entities. Applicants for Master Programs must have basic or full higher education in respective direction (specialty), according to requirements, approved by the rules of admission to Master Degree Programs at the NULES of Ukraine.

To apply for Master programs on the basis of full higher education, applicant should pay tuition fee (except applicants to specialty "Public service" at the basic institution of NULES of Ukraine). To apply for EQL Master in specialty 8.11010101 "Veterinary Medicine" (according to specialization), applicants are required to have EQL "Junior specialist" in specialty 5.11010101 "Veterinary Medicine" and on the basis of full secondary education.

According to the special rules confirmed by the regulation of the Cabinet of Ministers № 789 "On the approval of the procedure of admission to educational professional program of Masters training in specialty "Public Administration" of the branch of knowledge "Public Service" and employment of graduates" from 29.07.2009, admission to the specialty "Public Administration" is realized at the basic institution of NULES of Ukraine. Persons that have full higher education, work in public authority and self-government bodies, have at least one year work experience in public authority and self-government bodies and are younger than 45 years old at the moment of documents submission can apply for the program mentioned above.

An applicant applying for Master Program shall submit the following documents to the Admission Committee: application to Rector of the University; original of diploma about education obtained (EQL) and an annex to diploma (originals and approved copies); 5 colour photos (size 3x4cm); direction-recommendation (for research specialization); copy of identification number document, copy of passport (1, 2 pages and the place of registration). Passport and other documents giving the right for entrance are shown personally.

The individual's competitive grade is calculated as a sum of grades of the entrance examinations results and the average grade in the appendix to diploma. It is assessed according to the scale from 100 to 200 points. Entrance examinations for programs of EQL "Master" are conducted in the form of tests in the complex of fundamental and professionally oriented disciplines of the normative(standard) cycle and foreign language according to the Bachelor program.

For applicants in specialties:

- "Pedagogy of higher school" and "Management of educational institution" – tests in the complex of humanitarian disciplines and foreign language;
- "Quality, standardization and certification"– tests in quality, standardization, certification and foreign language;
- "Administrative management", "Stockbroking", "Extension service" – tests in the principles of economic theory and foreign language;
- "Public administration" – tests in the principles of state and law and the principles of economics and an interview on the issues of public management.
- "Management of Innovative activity" – tests in the principles of economics and management and foreign language.

Applicants for master's degree on the basis of bachelor's degree in another specialty, take an additional entrance test.

Table 2. The list of courses for persons with bachelor's degree applying for the EQL "Master" in a related specialty

Related Bachelor's Degree Specialties		Master's Degree Specialties	
title	code	code	Title
Social Pedagogy	6.010106	8.01010601	Social Pedagogy
Philology	6.020303	8.02030304	Translation
Law science	6.030401	8.03040101	Law science
Economic Cybernetics	6.030502	8.03050201	Economic Cybernetics
Economics of Enterprise	6.030504	8.03050401	Economics of Enterprise (according to the types of economic activity)
Marketing	6.030507	8.03050701	Marketing
Finance and Credit	6.030508	8.03050801	Finance and Credit (according to specialized programs)
Finance and Credit	6.030508	8.03050803	Taxation
Accounting and Auditing	6.030509	8.03050901	Accounting and Audit
Management	6.030601	8.03060101	Management of organizations and administration (according to the types of economic activity)
		8.03060104	Management of foreign economic activities
Ecology, environmental protection and sustainable development	6.040106	8.04010601	Ecology and Environmental protection
		8.04010604	Environmental Monitoring and Auditing
Computer Sciences	6.050101	8.05010101	Information Managing Systems and Technologies
Computer Sciences	6.050101	8.05010105	Computer Ecological and Economic monitoring
Automation and Computer Integrated Technologies	6.050202	8.05020201	Automated Control of Technological Processes
Mechanical engineering	6.050503	8.05050303	Forest Complex Equipment
Mechanical engineering	6.050503	8.05050312	Machinery and Agricultural Equipment
Electrical Engineering and Electrical technologies	6.050701	8.05070103	Electrotechnical systems of Power Consumption (by types)
Biotechnology	6.051401	8.05140105	Environmental Biotechnology and Bioenergetics
Food Technologies and Engineering	6.051701	8.05170104	Technology of Preservation, Conservation and Processing of Meat
Technological expertise and safety of food products	6.051702		
Food technologies and engineering	6.051701	8.05170105	Technology of Preservation and Processing of Water Bioresources
Technological expertise and safety of food products	6.051702		
Wood processing technologies	6.051801	8.05180101	Wood Processing Technologies
Construction	6.060101	8.06010101	Industrial and Civil Construction
Transport Technologies	6.070101	8.07010102	Organization of Transportation and Management in Transport (by types of vehicles)
	6.070101	8.07010104	Organization and regulation of Traffic
Geodesy, Cartography and Land Management	6.080101	8.08010103	Land Management and Cadastre
Agronomy	6.090101	8.09010101	Agronomy
	6.090101	8.09010102	Agrochemistry and Soil Science

MASTER CURRICULA AND TRAINING PROGRAMS

Related Bachelor's Degree Specialties		Master's Degree Specialties	
title	code	code	Title
	6.090101	8.09010104	Fruit and Vegetable Science and Viniculture
	6.090101	8.09010105	Selection and Genetics of Agricultural Crops
Technology of production and processing of livestock products	6.090102	8.09010201	Technology of production and processing of livestock products
Forestry, Park and Gardening Management	6.090103	8.09010301	Forestry
		8.09010302	Hunting Industry
		8.09010303	Park and Gardening Management
Plant Protection	6.090105	8.09010501	Plant Protection
		8.09010502	Quarantine of Plants
Water Bioresources and aquaculture	6.090201	8.09020101	Water Bioresources
Energetics and electrotechnical systems in agroindustrial complex	6.100101	8.10010101	Energetics of Agricultural Production
		8.10010103	Electrification and Automation of Agriculture
Processes, machinery and equipment of agroindustrial production	6.100102	8.10010203	Mechanization of Agriculture
Veterinary Medicine	6.110101	8.11010101	Veterinary Medicine (by types)
		8.11010102	Veterinary-sanitary inspection, quality and safety of livestock products
Full higher education		8.15010002	Public Administration
Basic higher education		8.18010004	Extension service
Basic higher education		8.18010009	Stockbroking
Basic higher education		8.18010010	Quality, Standardization and Certification
Basic higher education		8.18010012	Management of Innovative activity
Basic higher education		8.18010018	Administrative Management
Basic higher education		8.18010020	Management of Educational Institution (by type)
Basic higher education		8.18010021	Pedagogy of Higher School

Table 3. The list of courses for persons with bachelor's degree applying for the EQL "Master" in another specialty

Related Bachelor's Degree Specialties		Master's Degree Specialties	
Title	Code	Code	Title
Social Pedagogy	6.010106	8.02030304	Translation
Electrical Engineering and Electrical technologies	6.050701		
Agronomy	6.090101		
Technology of production and processing of livestock products	6.090102		
Forestry, Park and Gardening Management	6.090103		
Plant Protection	6.090105		
Water Bioresources and Aquaculture	6.090201		
Processes, machinery and equipment of agroindustrial production	6.100102		
Veterinary Medicine	6.110101		
Preschool education	6.010101	8.01010601	Social Pedagogy
Primary education	6.010102		
Technological education	6.010103		

Related Bachelor's Degree Specialties		Master's Degree Specialties	
Title	Code	Code	Title
Professional education (by major)	6.010104		
Remedial education (by nosologies)	6.010105		
Social work	6.130101		
Соціальна робота	6.130102		
Political science	6.030104	8.03040101	Law Science
International law	6.030202		
Law enforcement activity	6.030402		
Economics of Enterprise	6.030504		
Finance and Credit	6.030508		
Accounting and Auditing	6.030509		
management	6.030601		
Economic theory	6.030501	8.03050201	Economic cybernetics
International economics	6.030503		
Economics of Enterprise	6.030504		
Human resources management and labour economics	6.030505		
Applied statistics	6.030506		
Marketing	6.030507		
Finance and Credit	6.030508		
Accounting and Auditing	6.030509		
Merchandising and commercial Entrepreneurship	6.030510	8.03050401	Economics of Enterprise (according to the type of economic activity)
Economic theory	6.030501		
Economic Cybernetics	6.030502		
International economics	6.030503		
Human resources management and labour economics	6.030505		
Applied statistics	6.030506		
Marketing	6.030507		
Finance and Credit	6.030508		
Accounting and Auditing	6.030509	8.03050701	Marketing
Merchandising and commercial Entrepreneurship	6.030510		
Economic theory	6.030501		
Economic Cybernetics	6.030502		
International economics	6.030503		
Economics of Enterprise	6.030504		
Human resources management and labour economics	6.030505		
Applied statistics	6.030506		
Finance and Credit	6.030508	8.03050801	Finance and Credit (according to specialized programs)
Accounting and Auditing	6.030509		
Merchandising and commercial Entrepreneurship	6.030510		
Economic theory	6.030501		
Economic Cybernetics	6.030502		
International economics	6.030503		
Economics of Enterprise	6.030504		
Human resources management and labour economics	6.030505		
Applied statistics	6.030506		
Marketing	6.030507		

MASTER CURRICULA AND TRAINING PROGRAMS

Related Bachelor's Degree Specialties		Master's Degree Specialties	
Title	Code	Code	Title
Accounting and Auditing	6.030509	8.03050803	Taxation
Merchandising and commercial Entrepreneurship	6.030510		
Economic theory	6.030501		
Economic Cybernetics	6.030502		
International economics	6.030503		
Economics of Enterprise	6.030504		
Human resources management and labour economics	6.030505		
Applied statistics	6.030506		
Marketing	6.030507		
Accounting and Auditing	6.030509		
Merchandising and commercial Entrepreneurship	6.030510	8.03050901	Accounting and Audit
Economic theory	6.030501		
Economic Cybernetics	6.030502		
International economics	6.030503		
Economics of Enterprise	6.030504		
Human resources management and labour economics	6.030505		
Applied statistics	6.030506		
Marketing	6.030507		
Finance and Credit	6.030508		
Merchandising and commercial Entrepreneurship	6.030510	8.04010601	Ecology and environmental protection
Chemistry	6.040101		
Biology	6.040102		
Geography	6.040104		
Biotechnology	6.051401		
Food Technologies and Engineering	6.051701		
Agronomy	6.090101		
Forestry, Park and Gardening Management	6.090103		
Plant Protection	6.090105		
Water Bioresources and Aquaculture	6.090201	8.05010101	Information Managing Systems and Technologies
Information science	6.040302		
Systems analysis	6.040303		
Computer engineering	6.050102		
Program engineering	6.050103		
Systems engineering	6.050201		
Automation and Computer Integrated Technologies	6.050202	8.05010105	Computer ecological and economic monitoring
Ecology, Environmental Protection and Sustainable Development	6.040106		
Information science	6.040302		
Systems analysis	6.040303		
Computer engineering	6.050102		
Program engineering	6.050103		
Systems engineering	6.050201	8.05020201	Automated Control of Technological Processes
Телекомунікації	6.050903		
Information science	6.040302		
Systems analysis	6.040303		
Computer science	6.050101	8.05020201	Automated Control of Technological Processes
Computer engineering	6.050102		

MASTER CURRICULA AND TRAINING PROGRAMS

Related Bachelor's Degree Specialties		Master's Degree Specialties	
Title	Code	Code	Title
Program engineering	6.050103		
Systems engineering	6.050201		
Electrical Engineering and Electrical technologies	6.050701		
Electrical mechanics	6.050702		
Electronic devices and systems	6.050802		
Radio engineering	6.050901		
Radioelectronic machines	6.050902		
Telecommunications	6.050903		
Metrology and information-measuring technologies	6.051001		
Energetics and electrotechnical systems in agroindustrial complex	6.100101		
Engineering materials science	6.050403	8.05050303	Forest Complex Equipment
Applied mechanics	6.050501		
Engineering mechanics	6.050502		
Processes, machinery and equipment of agroindustrial production	6.100102		
Engineering materials science	6.050403	8.05050312	Machinery and Agricultural Equipment
Applied mechanics	6.050501		
Engineering mechanics	6.050502		
Processes, machinery and equipment of agroindustrial production	6.100102		
Computer engineering	6.050102	8.05070103	Electrotechnical systems of Power Consumption (by types)
Electrical mechanics	6.050702		
Electronic devices and systems	6.050802		
Radio engineering	6.050901		
Radioelectronic machines	6.050902		
Telecommunications	6.050903		
Metrology and information-measuring technologies	6.051001		
Energetics and electrotechnical systems in agroindustrial complex	6.100101		
Technological expertise and safety of foodstuff products	6.051702	8.05170104	Technology of Preservation, Conservation and Processing of Meat
		8.05170105	Technology of Preservation and Processing of Water Bioresources
Mechanical Engineering	6.050503	8.06010101	Industrial and Civil Construction
Architecture	6.060102		
Transport Technologies	6.070101		
Geodesy, Cartography and Land Management	6.080101		
Mechanical Engineering	6.050503	8.07010102	Organization of Transportation and Management in Transport (by types of vehicles)
Motor transport	6.070106		
Processes, machinery and equipment of agroindustrial production	6.100102		
Mechanical Engineering	6.050503	8.07010104	Organization and regulation of Traffic
Motor transport	6.070106		
Processes, machinery and equipment of agroindustrial production	6.100102		
Geology	6.040103	8.08010103	Land Management and
Geography	6.040104		

MASTER CURRICULA AND TRAINING PROGRAMS

Related Bachelor's Degree Specialties		Master's Degree Specialties	
Title	Code	Code	Title
Construction	6.060101		Cadastre
Plant Protection	6.090105	8.09010101	Agronomy
		8.09010102	Agrochemistry and Soil Science
		8.09010104	Fruit and Vegetable Science and Viniculture
		8.09010105	Selection and Genetics of Agricultural Crops
Forestry, Park and Gardening Management	6.090103	8.09010101	Agronomy
		8.09010102	Agrochemistry and Soil Science
		8.09010104	Fruit and Vegetable Science and Viniculture
Ecology, Environmental Protection and Sustainable Development	6.040106	8.09010301	Forestry
Agronomy	6.090101		
Plant Protection	6.090105		
Technology of production and processing of livestock products	6.090102	8.09010302	Hunting Industry
Veterinary Medicine	6.110101		
Ecology, Environmental Protection and Sustainable Development	6.040106	8.09010303	Park and Gardening Management
Construction	6.060101		
Architecture	6.060102		
Agronomy	6.090101		
Plant Protection	6.090105		
Ecology, Environmental Protection and Sustainable Development	6.040106	8.09010501	Plant Protection
Agronomy	6.090101		
Forestry, Park and Gardening Management	6.090103		
Ecology, Environmental Protection and Sustainable Development	6.040106	8.09020101	Water Bioresources
Food Technologies and Engineering	6.051701		
Fishery	6.090202		
Technology of production and processing of livestock products	6.090102		
Veterinary Medicine	6.110101		
Computer engineering	6.050102		
Automation and Computer Integrated Technologies	6.050202	8.10010101	Energetics of Agricultural Production
Electrical Engineering and Electrical technologies	6.050701		
Electrical mechanics	6.050702		
Electronic devices and systems	6.050802		
Radio engineering	6.050901		
Radioelectronic machines	6.050902		
Telecommunications	6.050903		
Metrology and information-measuring technologies	6.051001		

MASTER CURRICULA AND TRAINING PROGRAMS

Related Bachelor's Degree Specialties		Master's Degree Specialties	
Title	Code	Code	Title
Power mechanical engineering	6.050604	8.10010103	Electrification and Automation of Agriculture
Processes, machinery and equipment of agroindustrial production	6.100102		
Computer engineering	6.050102		
Automation and Computer Integrated Technologies	6.050202		
Electrical Engineering and Electrical technologies	6.050701		
Electrical mechanics	6.050702		
Electronic devices and systems	6.050802		
Radio engineering	6.050901		
Radioelectronic machines	6.050902		
Telecommunications	6.050903		
Metrology and information-measuring technologies	6.051001		
Processes, machinery and equipment of agroindustrial production	6.100102	8.10010203	Mechanization of Agriculture
Energetics and electrotechnical systems in agroindustrial complex	6.100101		
Mechanical Engineering	6.050503		
Transport Technologies	6.070101		
Chemistry	6.040101	8.04010604	Environmental Monitoring and Auditing
Biology	6.040102		
Geography	6.040104		
Biotechnology	6.051401		
Food Technologies and Engineering	6.051701		
Agronomy	6.090101		
Forestry, Park and Gardening Management	6.090103		
Plant Protection	6.090105		
Water Bioresources and Aquaculture	6.090201		
Agronomy	6.090101	8.09010502	Quarantine of Plants
Forestry, Park and Gardening Management	6.090103		
Plant Protection	6.090105		
Economic theory	6.030501	8.03060101	Management of Organizations and Administration (according to the type of economic activity)
Economic Cybernetics	6.030502		
International economics	6.030503		
Economics of Enterprise	6.030504		
Human resources management and labour economics	6.030505		
Marketing	6.030507		
Finance and Credit	6.030508		
Accounting and Auditing	6.030509		
Merchandising and commercial Entrepreneurship	6.030510		
Mechanical Engineering	6.050503		
Food Technologies and Engineering	6.051701		
Wood processing technologies	6.051801		
Construction	6.060101		
Transport Technologies	6.070101		
Geodesy, Cartography and Land Management	6.080101		
Agronomy	6.090101		

Related Bachelor's Degree Specialties		Master's Degree Specialties	
Title	Code	Code	Title
Technology of production and processing of livestock products	6.090102		
Forestry, Park and Gardening Management	6.090103		
Plant Protection	6.090105		
Water Bioresources and Aquaculture	6.090201		
Energetics and electrotechnical systems in agroindustrial complex	6.100101		
Processes, machinery and equipment of agroindustrial production	6.100102		
Economic theory	6.030501	8.03060104	Management of foreign economic activities
Economic Cybernetics	6.030502		
International economics	6.030503		
Economics of Enterprise	6.030504		
Human resources management and labour economics	6.030505		
Marketing	6.030507		
Finance and Credit	6.030508		
Accounting and Auditing	6.030509		
Merchandising and commercial Entrepreneurship	6.030510		
Mechanical Engineering	6.050503		
Food Technologies and Engineering	6.051701		
Wood processing technologies	6.051801		
Construction	6.060101		
Transport Technologies	6.070101		
Geodesy, Cartography and Land Management	6.080101		
Agronomy	6.090101		
Technology of production and processing of livestock products	6.090102		
Forestry, Park and Gardening Management	6.090103		
Plant Protection	6.090105		
Water Bioresources and Aquaculture	6.090201		
Energetics and electrotechnical systems in agroindustrial complex	6.100101		
Processes, machinery and equipment of agroindustrial production	6.100102		

In conclusion it should be mentioned that clearly defined concept of Master training, regular selection of talented young people and their scientific support, highly qualified teaching staff, up-to-date material and technical base promote training of competitive and highly-skilled specialists able to combine scientific achievements with innovative activity finding their place in today's rapidly changing labour market.

***Welcome to master courses at National University
of Life and Environmental Sciences!***

AGROBIOLOGY FACULTY

Dean – Viktor Zabaluyev, Doctor of Agricultural Sciences, Professor

Tel.: (044) 527-82-13

E-mail: viaza@ukr.net

Location: Building № 4, room 41^a

The faculty (ERI) organizes and coordinates Bachelor training in the following courses:

8.09010101 “Agronomy”

Departments in charge of graduate training:

Plant Growing

Tel.: (044) 527-86-26

E-mail: kalenskaya@nauu.kiev.ua

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

Agriculture and Herbology

Tel.: (044) 527-82-14

E-mail: agriculture_chair@twin.nauu.kiev.ua

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

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

Tel.: (044) 527-86-66

E-mail: save_tech_chair@nauu.kiev.ua

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

Forage production, melioration and meteorology

Tel.: (044) 527-85-15

E-mail: korm60@ukr.net

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

8.09010102 “Agrochemistry and Soil Science”

Departments in charge of graduate training:

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

Tel.: (044) 527-88-17

E-mail: quality_chair@mail.ru

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

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

Tel.: (044) 527-81-02

E-mail: grunt_nubip@ukr.net

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

8.09010104 “Fruit and Vegetable Science and Viticulture”

Departments in charge of graduate training:

Vegetable Growing

Tel.: (044) 527-81-69

E-mail: irinabobos@ukr.net

Head of department – Candidate of Agricultural Sciences, Associate professor

I.M. Bobos

Gardening named after Professor V.L. Symyrenko

Tel.: (044) 527-85-59

E-mail: garden_chair@nauu.kiev.ua

Head of department – Candidate of Agricultural Sciences, Associate professor

B.M. Mazur

Soil under Cover

Tel.: (044) 527-80-67

E-mail: hothouse_chair@twin.nauu.kiev.ua

Head of department – Doctor of Ecological Sciences, Professor O.V. Prylipko

8.09010105 “Selection and Genetics of Agricultural Crops”

Department in charge of graduate training:

Breeding, genetics and seed named after Professor M.O. Zelenskoho

Tel.: (044) 527-86-26

E-mail: breedingdepartment@gmail.com

Head of department – Candidate of Agricultural Sciences, Associate professor

V.L. Zhemoyda

Form of Training, Licensed number of persons:	
– Full-time	90 persons
– Part-time	50 persons
Duration of Training:	
– Full-time educational and professional program	1,5 year
– Part-time	2 years
Credits:	
– educational and professional program	90 ECTS
Language of Teaching	Ukrainian, English
Qualification	Agronomist-researcher

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.

Educational and professional Master's program
Specialization "Production and marketing of cereal crops"

Production of cereal crops provides studying of field crops forms diversity, peculiarities in its biology and physiology, extension of cereal crops species set that are suitable for cultivation in certain soil-climatic zones, technologies of cereal crops cultivation, standards on obtained products quality, regularities of yield quality and quantity formation, development and improvement of technological elements to obtain high, sustain, economically valuable and environmentally friendly yields with high quality in zonal and varietal aspects, economy, marketing and management of grain production.

Agricultural enterprises of different ownership, regional and district administration, advanced farms, companies, holdings and corporations, scientific-research establishments of NAAS of Ukraine.

The aim of the program is to provide students with the knowledge and skills of a qualified analysis of farming systems in terms of their compliance with organic and ecological agriculture.

The object of the study serves purposes of agriculture or some of their units or technology. Subjects of study are defined technological regulations of organic links and ecological agriculture: environmentally sound crop rotation, environmental regulations fertilize the soil, mechanical tillage systems, pest control, and irrigation activities.

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.

Specialization "Manufacture and marketing of fodder crop production"

The program provides for growing of fodder crops as a source of nutrient green fodder for livestock feeding and raw material for procurement of conserved fodder according to the market.

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.

Specialization "Transportation, storage and processing of crop production"

Generates in-depth knowledge of the latest technologies of transportation, post harvest handling (ventilation, cleaning, drying, etc.). Cereals masses on the basis of knowledge of basic features of cereals (flour, cereals), legumes and oilseeds. Based on the knowledge of physical and physiological properties of the main vegetables, fruit crops, potato is logistics harvest each juicy product. Requirements for industrial raw materials (lonotresty, sugar beet roots, hops raw material) provided the choice of optimum cleaning and initial portfolio – which creates this master's program.

Areas of employment of graduates

Growing organization collecting, handling, product evaluation, storage and processing of plant products grown.

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", SRF "Vorsel" 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 for Master Theses

1. Impact of agriculture on soil fertility and productivity of corn in the Forest-Steppe of Ukraine of Ukraine.
2. Indicators of soil fertility and productivity of winter wheat depending on farming systems.
3. Forming of Fodder Production of Legume-Grass Herbage Mixtures
4. Productivity of Lucerne depending on variety and level of mineral nutrition
5. Improvement of sunflower cultivation technology elements in right-bank forest-steppe of Ukraine.

6. Quality and yielding capacity of maize grain depending on biologization factors of cultivation technology elements.
7. Realization of soya bean varieties genetic potential due to technological methods of cultivation on typical black soils.
8. Changing technological quality of winter rye during post-harvest ripening and storage.
9. Influence of varietal characteristics and regimes of storage on commodity indices of potato in the economy
10. Formation of maize hybrids productivity depending on technological methods of cultivation

Academic rights of applicants entering Master course

Applicants with the Diploma of Bachelor can continue training in connected specialties including ones of the field of knowledge "Specific categories", (table 2) and other specialties (table 3) in accordance with the Terms of enrolment to higher educational institutions of Ukraine in 2015 approved by the Order of the Ministry of education and science of Ukraine on October 15, 2014 № 1172 and the Regulations of enrolment to National University of Life and Environmental Sciences of Ukraine (basic institution, Kyiv) for 2015.

Curriculum of Master training in specialty "Agronomy" Educational and qualification Master program

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	Geographic information systems	1	90	3
2	Prediction and programming of yields of agricultural crops	1	90	3
3	Methods and organization of research in Agronomy	1	90	3
4	Adaptive systems of agriculture	1	120	4
5	Systems of modern intensive technologies	1	120	4
6	Innovative technologies in the branch of storage and processing of plant products	1	90	3
7	Innovative technologies in crop-growing	2	90	3
8	Scientific justification of farming systems	2	90	3
9	Field and Meadow Fodder Production	2	90	3
10	Post-harvest handling, storage and transportation of plant products	2	90	3
11	Theory of agro systems sustainability	2	90	3
12	Problems of weed-infested in modern farming systems	2	90	3
13	Commodity of crop-growing products	2	90	3
14	Ecologization of technological processes in fodder production	2	90	3
Total for standard part			1320	44
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by University				
1	Methodology and organization of scientific research on the basics of intellectual property	1	90	3
2	Business foreign language	1	150	5
3	Agricultural policy	3	90	3
Total (Disciplines offered by University)			330	11
2.2. Disciplines offered by students				
2.2.1. Specialization “Production and marketing of cereal crops”				
1	Technological and market principles of crop production	3	150	5
2	Ecology and biology of agricultural crops	3	90	3

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
3	Biometry	3	90	3
4	Seed science field crops	3	120	4
5	Energy and raw phytoresources	3	90	3
Total (Disciplines offered by students)			540	18
2.2.2. Specialization "Organic agriculture"				
1	Modern systems of agriculture	3	150	5
2	Theoretical and applied Herbolology	3	120	4
3	Methods and organization of research in agriculture	3	120	4
4	Ecological problems of agriculture	3	150	5
Total (Disciplines offered by students)			540	18
2.2.3. Specialization "Manufacture and marketing of fodder crop production"				
1	Methods and organization of research in fodder production	3	180	6
2	Energy saving technologies of fodder production	3	180	6
3	Growing of fodder plants for sowing methods of their quality defining	3	180	6
Total (Disciplines offered by students)			540	18
2.2.4. Specialization "Transportation, storage and processing of crop production"				
1	Processing of crop production	3	150	5
2	Techno-chemical control of crop production	3	120	4
3	Material and technical base for storage and processing of plant products	3	90	3
4	Quality management and certification of plant products	3	90	3
5	Methods and organization studies of storage and processing of plant products	3	90	3
Total (Disciplines offered by students)			540	18
Total for elective part			870	29
3. OTHER TYPES OF TRAINING				
1	Production Practice	1, 2	300	10
2	Preparation and defense of master's work	1-3	210	7
Total			510	17
Total for Specialty			2700	90

Annotations educational plan disciplines

1. STANDARD ACADEMIC DISCIPLINES

Geographic information systems. The course includes basics of geographical information systems and spatial analysis. Practical applications of geoinformation technologies for simulation, forecast and monitoring in agronomy and agriculture are reviewed.

Prediction and programming of yields of agricultural crops. Forecast and programming of yield of agricultural crops basing on principle of establishment of possible level of productivity, which is determined by the biological features of crops, quantitative influence of factors of growth and development of plants, establishment of supply level of these factors in concrete soil-climatic conditions and evaluation of necessity in resources to regulate abovementioned factors. Programming of soil fertility and crop production is directed to regulate organization of agrophytocenosis as system with the view of improvement of maximum its productivity. Population provision with crop production will to realize mainly decide to crop capacity increase, by virtue of scientific and technical progress introduction to agriculture and crop grown. Actions complex for to attention of objective point included programming course of soil fertility and crop production.

Methods and organization of research in Agronomy. Objective of the course is acquirement by students the methodology, methods and technique of scientific research in

agronomy. Object of study – is methodology of scientific-research work in agronomy. Subjects of study – are planning and organization of research work in agronomy, peculiarities of method elements of research of certain problems in agronomy – crop rotation, soil tillage, fertilization, application of pesticides, melioration and soil protection from erosion, cultivation technologies for field, vegetable, fruit, forage crops and pastures, research in plant selection, storage of plant products, methods of statistic examination of experimental data.

Adaptive systems of agriculture. The purpose of the course is the formation of students knowledge and skills with scientific foundations of systems of agriculture that are environmentally safe and economically feasible measures of farming cultivation and protection of crops, the rational design of crop rotations, tillage systems and erosion control measures, peculiarities of conducting adaptive, industrial, conservation, environmental, biological (organic) systems of agriculture and farming in contaminated areas.

Systems of modern intensive technologies. Studying of this course will enable future specialist to solve the problems in application of modern intensive technologies of agricultural crops cultivation. The major of “System of modern intensive technologies” educational course is acquirement of theoretical and applied skills to develop technological elements of field crops cultivation based on thorough knowledge of biological peculiarities of crop, its growth and development, acquaintance with the most applicable technologies in agriculture.

Innovative technologies in the branch of storage and processing of plant products. Academic discipline provides insight into students the essence of innovative technologies post-harvest handling, storage and processing of the major types of grain, vegetable, technical production, the study features technology handling, storage and processing of each type of crop production, who carries out work on handling, storage and processing of plant products with minimal losses and ecologically safe products. Academic discipline "Innovative technologies post-harvest handling, storage and processing of plant products" is based on the knowledge bases of physiology, plant biochemistry, microbiology, chemistry crop, vegetable, fruit, storage technology and vegetables. It is the base for the disciplines of economics, mechanization, electrification, automation, which have as their object the study of the processes of post-harvest handling, storage and processing of crop production.

Innovative technologies in crop-growing. Describes essence of modern adaptive, energy- and resource-saving, economically effective, safe innovative technologies of agricultural crops cultivation, taking into account biological features of highly productive varieties of intensive type and zonal peculiarities.

Scientific justification of farming systems. Academic discipline involves the formation of future research direction Masters essence of farming systems, the theoretical basis of their formulation and implementation components of farming systems and how valuable their content. The theoretical basis is the law of farming systems agronomy, biology and agriculture. Besides training course provides theoretical basis to equip students with the basic components of farming systems, such as: crop rotation, mechanical tillage systems, and fertilization systems, integrated crop protection from pests (weeds, pests and diseases) systems, erosion control measures and agri-environmental measures on soil pollution, environment and agriculture products.

Field and Meadow Fodder Production. Subject program provides for studying biological peculiarities, economic value of fodder crops, as well as studying intensive technologies of their growing and fodder conservation.

Post-harvest handling, storage and transportation of plant products. Discipline teaches physical and physiological characteristics major groups in crop production, horticulture and gardening products. Teach the basic principles of stabilization (preservation) of any product. Future professional on the base knowledge of the harvest of various crops and the basic principles of stabilization learning selected regime of short-term or long-term storage. Teaches techniques you can use to bring the yield of major crops to a stable state. Teaches how the introduction of a certain regime of keeping and creating an environment compliance regime under which the storage losses as the quality and quantity will be minimal.

Theory of agro systems sustainability. Educational course provides learning of theoretical basis of origin, formation and functioning of ecosystems in general and agricultural systems in particular, structure and properties of ecosystems. Educational course clarify principles of agrocenosis of field crops sustainability through the knowledge in plant biology and physiology, demands to environmental factors and regularities of formation of yield and its quality. Creation of scientific grounds of bioresources, rational use and forecast of changes in biosphere through anthropogenic factor.

Problems of weed-infested in modern farming systems. One of the basic foundations of any farming system is an efficient control of weeds in crops abundance of crops. In the course of the lecture course "Problems of weed-infested in modern farming systems" highlights the modern scientific bases control weeds in agricultural crops according to the capabilities of its holding, provided in different farming system. Themes laboratory and practical course provides students acquiring practical skills development of efficient, environmentally sound and economically reasonable control of weeds in agricultural lands in different farming systems, which are common in Ukraine.

Commodity of crop-growing products. The subject teaches the order of conclusion and performance of contracts for grain, vegetables, potato, technical materials, requirements of commodity levels of main grains for different purpose. Teaches techniques by which determine the identity of commodity products to a particular class of grain, class of vegetables and fruit. Consider techniques to determine standardization of sugar beet, raw flax numbering. Teaches the rules of settlement realized grain, raw oilseed, potato tubers of different purpose, vegetables, pome fruit, stone fruit and berries. Teaches basic regulations concerning implementation of commodity grain, vegetable and industrial raw materials.

Ecologization of technological processes in fodder production. Elements and technologies with minimal use of agrichemicals are pointed; the problems of getting pollutant free forage and environmental conservation are explained.

2. ELECTIVE ACADEMIC DISCIPLINES

2.1. Disciplines offered by University

Methodology and organization of research with the principles of intellectual property. The aim of the discipline is formation of the system of knowledge in methodology, theory of method and research process, methodical support of scientific and research activity at the stages of preparation of a Master paper, formation of the ability to organize research of a specific issue using the whole complex of the traditional methods of research including general and special methods. The main task of the theoretical part of the course is introduction to students the current concepts of research creation, the principles of methodology of scientific perception and methods of research. The main task of the practical part is the development of self-education ability, mastering skills of formation and application of perceived methodological position of research. In case of mastering the course students have to improve their skills of search, assortment and

processing of scientific information, accurate formulation of a problem, aim, task, object, subject, methods of research. Introduction to students the principles of intellectual property and direction of them to gain knowledge and skills concerning registration of rights of ownership, their protection, commercialization, estimation and management are envisaged.

Business foreign language. The general aim of the program of teaching of foreign language for the professional purpose is formation students' professional linguistic competencies that will contribute to their efficient operating in cultural variety of training and professional environment. The methods of search of new information in another language sources, linguistic methods of analytical study of another language sources are learned. Students study published original literature in another language and increase their lexical and grammatical skills. Methods and linguistic peculiarities of annotation and synopsis of another language sources, the principles of translation of professional oriented another language sources are studied.

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.

2.2. Disciplines offered by students

2.2.1. Specialization *"Production and marketing of cereal crops"*

Technological and market principles of crop production. Shines ecological and economic principles of accommodation of industrial crops, use, origin, location, productivity, volumes of manufacture of industrial crops. Describes classification, morphological, anatomical and biological peculiarities of industrial crops, requirement to conditions cultivation. Opens essence of adaptation, economy favorable, ecological secure technology cultivation of every culture in a zone section: characterizing accommodation it in crop rotation, system of fertilizer, system of preparation of ground and seeds, sowing, struggle with weeds, illnesses and anomies, harvesting and primary processing of productions.

Ecology and biology of agricultural crops. The purpose of discipline "Ecology and Biology crops – to form students research specializations magistracy system of knowledge on the ecology and biology of major crops, because the environment is the basis of social development, and knowledge of biology crops to take account of all the demands of culture in the process. In the area of environmental development are natural resources, including resources Biosphere origin which is based crop. The main forms of study of this discipline are: lectures, laboratory work and independent work. In conducting laboratory work focuses on deepening the students theoretical knowledge on the ecology and biology of crops with extensive use of educational and additional scientific literature. Securing the knowledge provided by fulfillment of curriculum objectives. The basis of laboratory classes students work assigned to individual tasks under the supervision of a teacher.

Biometry. Course of biometry aiming on formation future specialists with creative skills and knowledge for providing research activities in area of plant science. Discipline based on knowledge about modern technique and technologies of production of high

yields of crops with high quality, peculiarities of their development and demands to environment factors. Discipline based on such theoretical disciplines as botany, plant science, fodder production, industrial crops, I&T technologies, yield forecast, principles of research in agronomy, mathematic modelling. As a result of this course student should be able to analyze obtained results of research, plane and process research results with methods of mathematical statistic. Separate results into groups by the distinguish features. Analyze relationships between different properties of biological objects.

Seed science field crops. Educational course studying following questions: valid international schemes of varietal certification of seeds as a subject of trade according to OECD schemes, which at the time integrating in domestic legislative base of seed and seeding material production, trade and use; grounds of formation and functioning of world and domestic market of seeds, its modern state, trends and direction of development, peculiarities of price formation on international and domestic markets; valid State Standards and Industrial Standards of Ukraine harmonized according to international standards (ISTA, CEN, OECD, ISO) and ways of integration of domestic system of seed certification into international, control of seed production, trade and use of all types of enterprises according to valid domestic legislative base; modern technologies of growing, processing and storage of high quality seeds of field crops; methods of analyzing of seeding, varietal, yielding qualities of seeds according to international standards.

Energy and raw phytoresources. Educational course forms future specialists in prospective branch of crop production – production and processing of multipurpose vegetable raw. Include acquaintance with gene fund (species and varietal diversity), yielding potential and productivity of energy and raw crops, biological, ecological and biochemical peculiarities of plants, output of main and by-products, essential substances and energy from square unit and also peculiarities of cultivation, harvesting and processing of multipurpose plants. It is based on knowledge about resource potential of plants, peculiarities of their growth and development, reaction on environmental factors, modern technologies that provides obtaining of high yields with best quality and lowest material, energy and economical expenses. High value placed on bioecologization of cultivation technologies that provides reduction of pesticide load onto agrophytocoenosis, enhancing soil fertility due to potential of cultivated crops and green manure crops.

2.2.2. Specialization “Organic agriculture”

Modern systems of agriculture. The course is aimed at a comprehensive and deep study of all parts of modern farming systems (system of crop rotation, tillage, fertilization, control of weeds, pests and diseases, combating water and wind erosion, land reclamation activities, etc.), which are closely interrelated, consider and implement soil and climatic conditions, level of economic development of economy, its material and technical base, and other conditions. Ukraine has developed a modern system of agriculture for each region and even to specific households based on their specificity based on the principles of resource conservation and ensuring environmentally friendly and safe products. The theoretical basis of modern systems of agriculture are the agriculture laws, the doctrine of the soil fertility and rational use of land.

Theoretical and applied Herbology. The objects of discipline is to weed groups in agrophytocoenoses and their means of control. The subjects of study are biological properties of weeds, weed interference with the crops, the harmfulness, economic, energy and economic efficiency measures and systems of weediness control of agricultural land.

Methods and organization of research in agriculture. The objects of the discipline are environmental conditions in agricultural landscapes, agricultural crops, means to carry out technological activities crop production. The subjects of the discipline

are methods of planning and conducting the experiment in agronomy, statistical examination of the research results and their interpretation.

Ecological problems of agriculture. The objects of the discipline are soils, crops, tools for the implementation of technologies of growing crops. The subjects of the discipline combine methods for determining the environmental effects of anthropogenic technologies in agriculture, the safety of the environment and the direction of ecologization.

2.2.3. Specialization “Manufacture and marketing of fodder crop production”

Methods and organization of research in fodder production. Subject program provides for explanation of ecological and economical principles of field crop distribution, use, origin, capacity and production volumes of crops. They are given modern methods and techniques of researches in intensive fodder production.

Energy saving technologies of fodder production. They are indicated the ways of fodder production intensification in the context of introduction of alternative energy and resource saving technologies of fodder plant growing, and production of high quality, cheap safe fodder of them without doing harm to the environment.

Growing of fodder plants for sowing methods of their quality defining. Subject program provides for explaining the essence of adaptive, economically profitable, environmentally friendly technologies of fodder crop growing for sowing.

2.2.4. Specialization “Transportation, storage and processing of plant products”

Processing of crop production. This discipline teaches methods of processing of basic raw materials for human food grains to flour, groats and others. Agricultural mills – this is basics to get flour, which provide raw materials bakeries that are located in countryside. Discipline teaches technology preparation of grain before its processing to flour of the different grades. Discipline teaches technologies of preparation of groats grain: peas, barley, millet, buckwheat to get on the rural lines groats (peeling mill), providing high output and quality. Discipline teaches methods of obtaining starch from potato tubers and technology for production of canned vegetables. Discipline provides knowledge of the efficient technologies preserving perishable vegetables (tomatoes, cucumbers, peppers), fruits and berries products than ensuring the efficiency of their production (growing).

Techno-chemical control of crop production. In this course, students graduate study biochemical significance harvest of major crops and tasks techno-chemical control in the stages of primary processing, industrial processing and storage of basic types of flour, cereals and oilseeds, fruit and vegetable, potato, industrial raw materials – flax, hops, tobacco, shag, sugar beets, and grapes. Based on knowledge of physiology, microbiology, plant pathology, fruit growing, vegetable growing, standardization, crop production, technologies of storage and processing of plant products discipline teaches the methods of controlling crop production based on thorough knowledge of the product, taking into account their changes depending on factors that can act on it during transportation, post-harvest handling, storage and processing.

Material and technical base for storage and processing of plant products. Material and technical base for storage and processing of plant products is special a discipline that studies the equipments and buildings which used for the storage and processing of crop production and technological properties of granaries, vegetable stores, freezers, refrigerators and buildings for the storage of canning products, equipment for production processing plant products (cereals, pulses, oilseeds, technical crops, fruits and vegetables).

Quality management and certification of plant products. Discipline including study thus questions: purpose and task quality management of plant products, basic concepts and categories in the field of quality management, the factors affecting the quality of products, the role of human factors in addressing the quality, competitiveness and product quality, development of quality control and native experience in quality management, development of methods quality of products, quality evaluation production, quality management experience in various countries, international standards for quality systems (ISO 9000).

Methods and organization studies of storage and processing of plant products. Significant amount of grown plant products to the time of its selling remained in the economy. With its storage there are changes in quality, natural losses that must be considered for each product. In this connection it is necessary set to the storage control samples, which carried accounting losses, determine the change in quality depending on the type of product, the actual term and way of storage. This discipline studies the methods of storage and processing of crop production, gardening and vegetable growing.

**Master's course
in specialty "AGROCHEMISTRY AND SOIL SCIENCE"
branch of knowledge "Agriculture and Forestry"**

Form of Training, Licensed number of persons:

- | | |
|-------------|------------|
| – Full-time | 45 persons |
| – Part-time | 30 persons |

Duration of Training:

- | | |
|--|----------|
| – Full-time educational and professional program | 1,5 year |
| – Part-time | 2 years |

Credits:

- | | |
|--|---------|
| – educational and professional program | 90 ECTS |
|--|---------|

Language of Teaching

Ukrainian, English

Qualification

Researcher in agrochemistry
and soil science

The concept of training

Modern farming requires high-quality, environmentally friendly products with minimal energy and labor costs while maximizing its output that requires large-scale introduction of high-grade, energy- and resource-saving and environmentally appropriate technologies. For the present, which puts high demands to humanity, it is need not just an agronomist but a professional in the field of agrochemistry and soil science, who can make a qualitatively new technological solutions with use of information technologies in technological processes management. In the future, improving of management practices in crop production process is undoubted. These technologies can be realized only by highly skilled professional in "Agrochemistry and soil science". Specialist of the profession can realize the following areas of professional activity: 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 and agrochemical service on farms, monitoring of production quality with application of fertilizers and plant protection, prediction of agrochemical market and economic efficiency of plant growing.

Educational and professional Master's program

Specialization "Agrochemical service and quality management of soil"

The specialization aims to build knowledge and skills of the process of production in the crop. It reveals methodological and agronomic aspects of agrochemical service, analytical and practical application of modern control methods of soil fertility, the elements of precision agriculture and energy-efficient technologies, diagnostics, power plants, development of agrochemical cartograms, passports fields, budget and technical documentation. The basis for the implementation of the master program is research and teaching laboratories and production department.

Establishment and analysis based on field and laboratory studies of physical, water-physical, physical-chemical, biological and agrochemical soil properties, developing measures for their conservation and restoration of fertility. Defining of ecological and genetic status and potential productivity of soils in relation to particular cultures or groups, as well as other specialized use of soil. Establishing the nature and extent of degradation processes. Measures of rational management and improvement of soil fertility. Studying of disturbed and polluted soils reclamation methods, increasing of potential soil fertility after their pollution, destruction, degradation, and through them landscapes and the biosphere

as a whole. Metrological aspects of modern instrumental methods of analysis and characteristics of modern instrumental methods of analysis.

Areas of employment for graduates

Field crop production agricultural industry, farmers, government agencies of soil fertility and crop agrochemical service.

Graduates may be employed in the system of regional branches of Scientific-research institute “Ukrzemprom”, in the system of design and exploration centres for monitoring of soil fertility “Obldzhrodyuchist”, in any agricultural enterprise in positions of agronomist, agronomist-chemists, in the system of soil conservation service as an engineer-soil-scientist, in the banking sector as experts to assess the soil, the system of quarantine services and customs control of Ukraine in positions related to the assessment of soil quality and ecological state of the environment, in the commercial and government establishments that produce and sell chemicals (fertilizers, pesticides) as a manager, in environmental inspections in the internal affairs, in the field of criminology, Soil Conservation Service System, in Inspection of rational use and protection of land in positions connected to the ecological state of the environment control, assessing 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 for Master Theses

1. Agrochemical estimation of various methods of corn plant nutrition diagnosing on meadow-black soil calcareous.
2. Productivity of winter wheat under long-time application of fertilizers on meadow- black soil of Forest-Steppe zone of Ukraine.
3. The effect of fertilizers application under sugar beets in different parts of crop rotation on meadow-black soil calcareous soil.
4. Simulation of winter wheat productivity with ultra disperse systems of biogenic micronutrients using.
5. Management of soybean productivity under resource-saving technology of crop growing.
6. Fertility reproduction in black soil typical in field and vegetable crop rotation.
7. Change in water-physical and physical-chemical properties of black soil typical under minimization of tillage and biologization of farming.
8. Assessment of fertility of various quality Anthrosols under their agricultural use.
9. Effect of soil conservation technology on soil microaggregative and structural aggregate composition of black soil typical.
10. Effect of tillage and fertilization in short crop rotations on parameters of physical properties of black soil typical of Right-Bank Forest Steppe.

Academic rights of applicants entering Master course

Applicants with the Diploma of Bachelor can continue training in connected specialties including ones of the field of knowledge “Specific categories”, (table 2) and

other specialties (table 3) in accordance with the Terms of enrolment to higher educational institutions of Ukraine in 2015 approved by the Order of the Ministry of education and science of Ukraine on October 15, 2014 № 1172 and the Regulations of enrolment to National University of Life and Environmental Sciences of Ukraine (basic institution, Kyiv) for 2015.

**Curriculum of Master training in specialty “Agrochemistry and Soil Science”
Educational and qualification Master program**

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	Soil Quality, Standardization and Certification	1	120	4
2	The scientific communication in agrochemistry and soil science	1	90	3
3	Soil Conservation and Restoration of Fertility	1, 2	120	4
4	Management of nutritive conditions of crops in the greenhouses and in the fertigation	1	120	4
5	Optimization of crop nutrition in modern growing technologies	1	120	4
6	Innovative technologies in soil science	2	120	4
7	Management of soil regimes	2	120	4
8	Agrochemical service crop	2, 3	150	5
9	The technologies of the management by the quality of crop products	2	90	3
10	Technologies of Rational Land Use	2	90	3
11	System of the application of the special agrochemical products	3	90	3
12	Land Reclamation	3	90	3
Total for standard part			1320	44
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by University				
1	Methodology and organization of scientific research on the basics of intellectual property	2	90	3
2	Business foreign language	1	150	5
3	Agricultural policy	3	90	3
Total (Disciplines offered by University)			330	11
2.2. Disciplines offered by students				
2.2.1. Specialization «Agrochemical service and quality management of soil»				
1	Quality of Soils (Bonity of Soils)	3	120	4
2	Soil Quality Monitoring	3	150	5
3	Analytical agrochemical service and diagnosis of plant nutrition	3	150	5
4	Agrochemical foundations of the biologisation of the system of crop fertilization	3	120	4
Total (Disciplines offered by students)			540	18
Total for elective part			870	29
3. OTHER TYPES OF TRAINING				
1	Production Practice	1-2	300	10
2	Preparation and defense of master's work	1-3	210	7
Total			510	17
Total for Specialty			700	90

Annotations educational plan disciplines

1. STANDARD ACADEMIC DISCIPLINES

Soil Quality, Standardization and Certification. We consider the current status of land resources in Ukraine and priorities for their reproduction. We give a qualitative

assessment of soil and the strategy of their fertilization with regard to scientific approaches. Monitoring soil quality and new usage of the results of monitoring of soil are described in details. We give methods of qualitative land evaluation, quality of soil, as well as regulations on standardization and certification. In the study of this course students learn terms and definitions, purpose and objectives of standardization and oversee the implementation and application of standards. The course introduces the national standardization system in Ukraine and regulatory framework for standardization in the economy and health of soils. The purpose of discipline is mastering the basic principles of certification of soil and lands according to their specialized use.

The scientific communication in agrochemistry and soil science. The course is in view to study forms and sources and ways and methods of the search of the scientific information in agrochemistry and in soil science. The future specialists form scientific experience. The course gives the base of the scientific investigation and advantage of the different levels of the scientific knowledge and periods of the scientific investigation.

Soil Conservation and Restoration of Fertility. The course introduces the current status of soil resources of the world and in Ukraine, methods of investigation of degradation processes in soils, through the rational use. The main objectives of the course is getting the appropriate amount of theoretical and methodological knowledge and practical skills to assess the degradation processes in soils, prediction of mechanical, physical and chemical degradation, development of measures to preserve and restore fertility, rational use of land resources on specific soil and climatic conditions, the formation of skills independently analyze the state of the soil cover.

Management of nutritive conditions of crops in the greenhouses and in the fertigation. The course takes into consideration of the particularities of specialty and the level of the qualification. This subject lets to hold of basic of the management of nutritive conditions of crops in drop irrigation in greenhouses. Future specialists take knowledge and skills in creation of optimal models for nutritive regimes in greenhouses and may to manage these regimes according to crop needs.

Optimization of crop nutrition in modern growing technologies. The course is in view analysis of theoretical knowledge and practical skills and it synthesis and it general conclusion in field of agrochemistry and soil science and taking new knowledge. In this course future specialists look into the problems about plant nutrition in modern growing technologies (resource-saving technologies, organic farming, biological farming, precision farming, Effective Microorganism Technologies (EM-technologies, Low Input Sustainable Agriculture (LISA), Biodynamic Agriculture, etc) and study aspects of the regulation and optimization of plant nutrition in these conditions. The main task of the course is formation of the knowledge and skills in specialist about regulation of crop nutrition in conditions of organic farming and in conditions of the biological farming and in conditions of the precision farming and other different modern growing technologies in agriculture.

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

Management of soil regimes. The main place in the rational and efficient use of natural resources is land use, conservation and improvement of soil fertility. The study and understanding of all the processes taking place in soils is an important condition for the realization of these objectives. Especially useful is the ability to manage processes and groundwater regimes and on this basis to improve soil fertility.

Agrochemical service crop. Modern crop production technologies are based on scientific foundations. Formation of crop productivity and management of soil fertility and production and application of the fertilizers, etc. is the issues that need trained professionals. Agrochemical service is link between science and farming. The subject gives knowledge about basics of farming agrochemical provided and service and forms skills to monitor and use of chemicals in crop production processes and preservation and improvement of soil fertility including natural conditions the agrochemicals market and specific production. The objective of discipline is to develop a specialist and master the theoretical knowledge and practical skills with guidance and support producers in crop chemicals facilities and services.

The technologies of the management by the quality of crop products. The course is devoted to the studying of the most important topics of modern crop growing in the field of the quality of crop products. The course based on the studying of the main indexes (chemical, physical, biological, technological) of the quality of crop products (such crops as: cereals, technical crops, oil crops, vegetables and horticultural crops).

Technologies of Rational Land Use. The course is intended to help harmonize the relationship between the agricultural domain and the natural environment, develop new approaches and principles of agricultural production on different soil and climatic conditions with minimal energy and material resources to carry out measures of forecasting and planning and efficient use of land, regardless of ownership and management. The main objectives of the course is the acquisition of knowledge and practical skills in management of land resources on specific soil and climatic conditions, the formation of skills independently analyze the state of the land, to evaluate options for optimizing land use patterns, predict the development of degradation processes and to develop measures to prevent and control them, capture the general principles of environmentally sustainable agricultural landscapes.

System of the application of the special agrochemical products. The course "System of the application of the special agrochemical products" generalizes of theoretical knowledge and practical skills and taking new skills. In the course future specialist studies new fertilizers and conditions of their application for decreasing of the people pressure on the agroecosystems and for leveling of the environmental stresses and for full opening of the genetic crop potential of the modern sorts and hybrids. The goal of the course is formation in specialist of the highest professional knowledge for effective application of the modern agrochemical products.

Land Reclamation. Land Reclamation studies rehabilitation measures of damaged and degraded lands in biogenic status, particularly for use in agriculture, forestry, creating recreation areas, construction and stocking of artificial reservoirs, i.e. the creation of landscapes, harmonized with the natural environment. The purpose of discipline is to explore options and evaluate overburden, grading disturbed land, development of fertility restoration measures.

2. ELECTIVE ACADEMIC DISCIPLINES

2.1. Disciplines offered by University

Methodology and organization of research with the principles of intellectual property. The aim of the discipline is formation of the system of knowledge in methodology, theory of method and research process, methodical support of scientific and research activity at the stages of preparation of a Master paper, formation of the ability to organize research of a specific issue using the whole complex of the traditional methods of research including general and special methods. The main task of the theoretical part of the course is introduction to students the current concepts of research creation, the

principles of methodology of scientific perception and methods of research. The main task of the practical part is the development of self-education ability, mastering skills of formation and application of perceived methodological position of research. In case of mastering the course students have to improve their skills of search, assortment and processing of scientific information, accurate formulation of a problem, aim, task, object, subject, methods of research. Introduction to students the principles of intellectual property and direction of them to gain knowledge and skills concerning registration of rights of ownership, their protection, commercialization, estimation and management are envisaged.

Business foreign language. The general aim of the program of teaching of foreign language for the professional purpose is formation students' professional linguistic competencies that will contribute to their efficient operating in cultural variety of training and professional environment. The methods of search of new information in another language sources, linguistic methods of analytical study of another language sources are learned. Students study published original literature in another language and increase their lexical and grammatical skills. Methods and linguistic peculiarities of annotation and synopsis of another language sources, the principles of translation of professional oriented another language sources are studied.

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.

2.2. Disciplines offered by students

2.2.1. Specialization “Agrochemical service and quality management of soil”

Quality of Soils (Bonity of Soils). Quality of soil is a quantitative assessment of their potential productivity. It is the basis for quality and economic value of land and land registry, without which efficient use of land in Ukraine is impossible. The purpose of discipline is to train high quality specialists in soil science, masters in the field of soil and land conservation. Quality of soil is the final discipline in a series of soil science and agronomic sciences.

Soil Quality Monitoring. Monitoring of soil quality is a system of observations, quantify and control the use of soil and land with the purpose of managing their productivity. For diagnostics of soils stage it is important to have knowledge and to be able to interpret these complex informative indicators: changes in the structure of soil, land transformation, assessment rate of change of the basic properties of soils, assessment of erosion intensity, reclamation indicators, evaluation of effective soil fertility. The purpose of this course is to teach methods of assessment soil quality to control and prevention of negative processes of soil formation.

Analytical agrochemical service and diagnosis of plant nutrition. The place and role of soil diagnostic and of plant diagnostic and of other types of diagnostic in the valuation plant nutrition are planned to study in the course. The methods of soil and plant diagnostic are looked into. The great attention is given to learning of operative methods of soil diagnostic and of plant diagnostic during plants vegetation. The strategic diagnostic is looked into the questions of the influence of fertilizers application and the effect of plant

protection application on changes in chemical and agroecologic conditions of soil and plants. The diagnostic of crop yield and diagnostic of yield quality are studied in field of usefulness to produce of ecologic clean products.

Agrochemical foundations of the biologisation of the system of crop fertilization. The course is in view to study trends of the ecological efficiency and energy efficiency and economic efficiency of the fertilizers application system of crops. The special attention is given for innovative methods of biologisation of the fertilization system and for solvating of the problems about soil fertility recreation by activation of the inside resources of the agroecosystems and role of the crop residues and green manure and other crop fertilizers in optimization of plant nutrition and in soil fertility saving. The task of the course is formation of the theoretical knowledge and practical skills into future specialist about working up of the effective bioadaptive systems of crop fertilization through their biologisation.

**Master's course
in specialty "FRUIT AND VEGETABLE SCIENCE AND VITICULTURE"
branch of knowledge "Agriculture and Forestry"**

Form of Training, Licensed number of persons:

- | | |
|-------------|------------|
| – Full-time | 45 persons |
| – Part-time | 30 persons |

Duration of Training:

- | | |
|--|----------|
| – Full-time educational and professional program | 1,5 year |
| – Part-time | 2 years |

Credits:

- | | |
|--|---------|
| – educational and professional program | 90 ECTS |
|--|---------|

Language of Teaching Ukrainian, English

Qualification Horticulture and viticulture researcher

The concept of training

Training of master's degree students in specialty is oriented at modern and perspective directions of development in fruit and vegetable growing and viticulture. Training master degree students on specialty foresees the deep specialized training in the sphere of fruit-growing, vegetable-growing of 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 fruit and vegetable products 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 knowledge's and skills of modern technologies in the field of horticulture and viticulture.

**Educational and professional Master's program
*Specialization "Horticulture"***

There is foreseen in this master's degree program that students are to be fulfilled the scientific and practical works on different problems of a horticultural branch. The theme of master's degree works may be chosen within such cycle of tasks: modern technologies of the new garden installation, looking after plantation during the vegetation period, ways of growing the planting material, selection of cultivars with useful properties, investigations of cultivar resistance to unfavorable changes of environmental conditions and harmful organisms, prognosis and programming of yield for fruit cultures, methods of computer processing the results of investigations.

Areas of employment for graduates

Agricultural enterprises, farms.

Specialization "Vegetables growing"

Vegetable growing is an important branch of agriculture in Ukraine. Currently, more than 100 species of cultivated plants to produce as the vegetables. Now is developing new farm specialization – organic production, for export, for different types of processing and so on. The basis of all technologies is growing variety and heterosis hybrid. The problem of creating new varieties are very important for different technologies is very important. The prospect planning of the vegetable growing is impossible without programming and

forecasting of the yielding and quality. The particular attention is given to post-harvest technology preparation the vegetables for marketing. The comprehensive study and development of practical skills will enable future specialists actively to develop modern technology of vegetable production. Studying of crops cultivation technology for a different greenhouse types. Kind of hydroponic methods plants cultivation and principles of its functioning. The main illness and pests in greenhouses and complex of operations anticipating emergence. Specific methods of selection and seed-growing of vegetables culture for protected cultivation.

Areas of employment for graduates

Agricultural enterprises, farms. Greenhouses, structures delivering the equipment and materials for greenhouses, scientific organization.

Practical training

Students receive practical training in educational and research farmstead of NULES: SD of NULES "Agronomy Research Station", "Velika Snitinka Training and Research farmstead named after O.V. Muzychenko" and "Training and Research farmstead "Vorzel", as well as in leading agricultural enterprises of different ownership, educational-scientific-industrial laboratory of NULESU "Test new varieties of plants and environmental assessment technologies of fruit, vegetables, medicinal and floral and ornamental crops", research institutions of NAAS and NAS of Ukraine and state pomology-ampelografical inspections.

Proposed Topics for Master Theses

1. The peculiarity of seedlings planting of new sweet cherry varieties on seed and clonal rootstocks.
2. Economic and biological characteristics of immune varieties on average height rootstocks.
3. Development of the method of accelerated propagation of black currants varieties.
4. The peculiarity of generative and vegetative propagation of promising varieties of hazelnut.
5. The optimization of the plant density of the late cabbage varieties for the conditions of Kyiv region.
6. The selection of the optimal density non-woven materials to obtain the early production of the bunch carrots.
7. The effect of the plant growth regulators on the fruit quality and earliness Butternut pumpkin.
8. Peppers' breeding for greenhouses.
9. Improving of half-determine tomato formation methods in winter greenhouses.
10. Cultural-morphological characteristics of fungus species of "Basidiomycetes" class.

Academic rights of applicants entering Master course

Applicants with the Diploma of Bachelor can continue training in connected specialties including ones of the field of knowledge "Specific categories", (table 2) and other specialties (table 3) in accordance with the Terms of enrolment to higher educational institutions of Ukraine in 2015 approved by the Order of the Ministry of education and science of Ukraine on October 15, 2014 № 1172 and the Regulations of enrolment to

National University of Life and Environmental Sciences of Ukraine (basic institution, Kyiv) for 2015.

**Curriculum of Master training
in specialty “Fruit and Vegetable Science and Viticulture”
Educational and qualification Master program**

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	Psychology of Management	1	90	3
2	History of Horticulture, vegetables growing and viticulture	1	90	3
3	Civil protection	1	90	3
4	Modern technologies in horticulture and viticulture	1	180	6
5	Labor protection in gardening, horticulture and viticulture	1	90	3
6	Investigations methods in Horticulture	1	120	4
7	Mushroom-growing	1	120	4
8	Agribusiness and marketing in fruit and vegetable growing and viticulture	2	120	4
9	Modern technologies of open and closed ground	2	180	6
10	Postharvest preparation of fruits, vegetables and vine	2	120	4
11	Floriculture of open and closed ground	2	120	4
Total for standard part			1320	44
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by University				
1	Methodology and organization of scientific research on the basics of intellectual property	2	90	3
2	Business foreign language	1	150	5
3	Agricultural policy	2	90	3
Total (Disciplines offered by University)			330	11
2.2. Disciplines offered by students				
2.2.1. Specialization “Horticulture”				
1	Modern technologies in horticulture	3	180	6
2	Advanced technologies in the nursery	3	180	6
3	Ornamental crops Protected Cultivated	3	180	6
Total (Disciplines offered by students)			540	18
2.2.2. Specialization “Vegetables growing”				
1	Organic vegetable	3	180	6
2	Organic vegetables Protected Cultivated	3	180	6
3	Varieties’ study of the vegetable crops	3	180	6
Total (Disciplines offered by students)			540	18
Total for elective part			870	29
3. OTHER TYPES OF TRAINING				
1	Production Practice	1, 2	300	10
2	Preparation and defense of master's work	1, 3	210	7
Total			510	17
Total for Specialty			2700	90

Annotations educational plan disciplines

1. STANDARD ACADEMIC DISCIPLINES

Psychology of Management. Discipline disclose the contents and features of the psychological aspects of management activities helps students acquire extensive knowledge of Psychology, promotes the abilities and skills of effective use of methods and

tools developed in the psychology of management to ensure the successful conclusion of the heads of various administrative issues.

History of Horticulture, vegetables growing and viticulture. We study the history of the scientific bases of horticulture and viticulture. Centres of origin of plants for MI Vavilov. Proceedings of the outstanding scientists of Ukraine and the world. Advances of research institutions and university departments in Ukraine. The share of horticulture, vegetable growing and viticulture in the agriculture and economy of the developed countries. Horticulture Industry Sector: melon, potato, vegetable seed. The history of gardening, horticulture, vegetable farming and gardening. Forms of specialization and concentration of production, stock and peasant farms specialized on gardening, horticulture, viticulture. Large specialized farms for the production of fruit, vegetables and grapes.

Civil protection. Task discipline involves mastering and mastering the latest theories, methods and techniques of forecasting emergencies, building models of their development, assessing the risk and justify a set of measures aimed at preventing emergencies, protection of personnel, population, material and cultural values in emergencies, localization and liquidation of their consequences.

Modern technologies in horticulture and viticulture. Discipline studies the agronomic elements of modern intensive technologies of cultivation of horticultural products, namely selection, design of stands (variety-rootstock combinations, planting schemes, crown forms) systems, maintenance of soil, irrigation, plant protection, harvesting, storage and sale fruit-based analysis of the achievements of advanced domestic and foreign horticultural farms. Because of the discipline the student should be able to develop, improve and implement advanced technologies of growing of fruit and berry crops.

Labor protection in gardening, horticulture and viticulture. This regulatory applied discipline, based on the analysis and production of harmful factors caused by production processes in gardening, horticulture and viticulture, provides science-based measures of organizational and technical plan to prevent accidents, injuries, occupational disease workers.

Investigations methods in Horticulture. Modern Technologies of experimental investigations, visions, rations, planning and statistics analyses of the results one and many factors with computer programs are determined. So interpretations and analyses of the scientific researches as a methods of process for technologies' estimating in Horticulture and vegetable-growing. Teaching discipline aims to teach students the planning and rational conduct research on fruit, vegetables, grapes using modern information technology. Served basis of rational conduct research methods and statistical analysis of experimental data.

Mushroom-growing. Appearance and modern tendency of mushroom-growing, biological capacities of the industrial's mushrooms and influence the climate's factors on it are described. Also construction's characteristics of its mycelia's with industrial principles for the optimum microclimate parameters. Base culture and technological methods for the getting of clone mycelia, different kind of substrate's for the different mushrooms and technologies of the growing to the figure's of mushrooms in artificial terms and fields.

Agribusiness and marketing in fruit and vegetable growing and viticulture. Discipline is dedicated to business and marketing strategy on the fruit and vegetable growing market and consists of three modules. The first module examines the theoretical and practical aspects of commercial activities on the fruit and vegetable market. The methodological and practical issues of marketing software business activities of the subjects on the fruit and vegetable market are studying. The commercial activities in the

fruit and vegetable sector envisage a chain of transactions such as the rationale usage for resources for the production of each product, the choice of distribution channels, consumers and the establishment of economic links between them, monitoring the implementation of treaty obligations, organizing the sale of fruit and vegetable production and its stimulation. The second module considers the features of the vegetable production's consumption in Ukraine and in the world, the perspectives and trends on the consumer market. The third module considers the commercial strategy for businesses to improve production efficiency and competitiveness on the market. On the laboratory lessons the masters are acquainting with the development of a business plan as a specific planning document, which represents the organizational and financial income for the production of certain goods and services. The production of the main and new kinds of fruits and vegetables by SWOT-analysis as the basis for creating marketing strategies are analyzing.

Modern technologies of open and closed ground. In the lecture course covers issues newest technologies of growing vegetables in the open and under glass, especially soil preparation and fertilization, cultivation of seedlings, general measures plant care and harvesting. In laboratory classes students are introduced to the equipment and farming activities, unknown or little known in the national greenhouse production.

Postharvest preparation of fruits, vegetables and vine. The Ukraine systems for marketing fresh vegetables under present-day conditions are complex, fragmented and dynamic. Demands for high-quality produce are continuing to increase now. In schemes supply of vegetables from field to table is of great importance postharvest technologies. The topics of our lectures are logical base of harvesting vegetables crops. The great importance are the methods of determining quality. The factors that influence on the quality are varieties, timing and method of harvesting, post-harvest technological methods of preparation. The definition of terms ripening vegetables. The biochemical changes during ripening and postharvest preparing vegetables. Under considering of field vegetables are shown the technology of crops harvesting for cabbage, carrot, table beet, parsley, selery, onion, tomato, sweet pepper, egg-plant, cucumber, and so on. On the cours lectures is present various aspects of postharvest stages of technology - harvest, load into field bins, trailers, transport, unload, cure, wash, sort and grade, size, cool, pack, cold storage and load into transport vehicles. Standards requirements for post-harvest technology training and vegetables are presented.

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 pot culture floral ornamental plants. The use of growth regulators to improve the decorative flowers. Modern methods of pest and disease flower crops. Standards for fresh and cut flower production. Methods prolong life of cut flowers.

2. ELECTIVE ACADEMIC DISCIPLINES

2.1. Disciplines offered by University

Methodology and organization of research with the principles of intellectual property. The aim of the discipline is formation of the system of knowledge in methodology, theory of method and research process, methodical support of scientific and research activity at the stages of preparation of a Master paper, formation of the ability to organize research of a specific issue using the whole complex of the traditional methods of

research including general and special methods. The main task of the theoretical part of the course is introduction to students the current concepts of research creation, the principles of methodology of scientific perception and methods of research. The main task of the practical part is the development of self-education ability, mastering skills of formation and application of perceived methodological position of research. In case of mastering the course students have to improve their skills of search, assortment and processing of scientific information, accurate formulation of a problem, aim, task, object, subject, methods of research. Introduction to students the principles of intellectual property and direction of them to gain knowledge and skills concerning registration of rights of ownership, their protection, commercialization, estimation and management are envisaged.

Business foreign language. The general aim of the program of teaching of foreign language for the professional purpose is formation students' professional linguistic competencies that will contribute to their efficient operating in cultural variety of training and professional environment. The methods of search of new information in another language sources, linguistic methods of analytical study of another language sources are learned. Students study published original literature in another language and increase their lexical and grammatical skills. Methods and linguistic peculiarities of annotation and synopsis of another language sources, the principles of translation of professional oriented another language sources are studied.

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.

2.2. Disciplines offered by students

2.2.1. Specialization "Horticulture"

Modern technologies in horticulture. The discipline studies modern intensive profitable competitive production technology of horticultural products, namely, pome fruit, stone fruit, berry and little common fruit crops in the example of the achievements of scientific institutions on gardening and farms of different form of ownership in Ukraine and abroad.

Advanced technologies in the nursery. Course of study investigates modern intensive profitable technologies of plant material production on the example of the achievements of scientific gardening institutions of Ukraine and best foreign technologies. Base of course is studding of sertificated virus free and virus tested plant material production system. intensive technologies of sidling an vegetative rootstocks growing, modern technologies of granule, stone fruits, nuts and berry plant material production. Working program includes problems of plant material standardizing and modern storing technologies.

Ornamental crops Protected Cultivated. The tendencies of the growing of the ornamental crops in Protected Cultivated in historical and nowadays are described. Winter greenhouses for ornamental crops, different kinds of ornamental crops, tropic and exotic, transplanting, post selling import's pot's production in greenhouses.

2.2.2. Specialization “Vegetables growing”

Organic vegetable. The situation on world food markets shows the increasing consumer interest in healthy nutrition and with the direct contribution to the preservation of the natural environment. Therefore, meet the growing demand for organic products continues to be one of the strategic directions of development of agriculture. In a course from the study of discipline the “Organic production of green-stuffs” questions light up from the study of bases of receipt ecologically of safe food, maintainance of fertility of soil and protecting stuffs from contamination and токсикації soils. Organic agriculture - the production system that supports the health of soils, ecosystems and people. It depends on ecological processes, biological diversity and natural cycles that are specific to local conditions, while don't use of resources that cause adverse effects. Organic agriculture combines tradition, innovation and science to improve the environment and promote fair relationships and adequate standard of living for this understanding.

Organic vegetables Protected Cultivated. This course is devoted to the methods of popular techniques in the modern practice – organic food or bioproducts. The methods of it growing, certification, biological methods according to the national terms are describes.

Varieties' study of the vegetable crops. This discipline devoted to Varieties' study of the vegetable crops and consists of three modules. In it's given origin, history of cultivating and inner species categorizations of (subspecies', varieties, and varieties type) vegetable and melons-field crops for group. The variety is the main object on which is directed cultivation technology. It was showed the analysis of the varieties resources' condition in Ukraine and their role in the production of agricultural output. Deeply motivated selection varieties and hybrids for determined of growing technology of vegetable crops and different directions of vegetable growing. On practically-laboratory lessons are studied certain varieties and hybrids of the vegetable and melons-field crops' of their different types of sort. They are study systems of approbations and identification sign, particularities of the expert operation of varieties on VOS - a test of vegetable and melons varieties. Lessons are conducted on the training-experimental areas and in laboratory condition using fresh examples. The pictures, slides, presentation, albums and catalogues are used.

**Master's course
in specialty "SELECTION AND GENETICS OF AGRICULTURAL CROPS"
branch of knowledge "Agriculture and Forestry"**

Form of Training, Licensed number of persons:

- | | |
|-------------|------------|
| – Full-time | 25 persons |
| – Part-time | 25 persons |

Duration of Training:

- | | |
|--|----------|
| – Full-time educational and professional program | 1,5 year |
|--|----------|

Credits:

- | | |
|--|---------|
| – educational and professional program | 90 ECTS |
|--|---------|

Language of Teaching

Ukrainian, English

Qualification

Selection and crop genetics
researcher

The concept of training

Preparation of masters in the field focused on the formation of students knowledge and practical skills in scientific principles of genetics and breeding of field crops, organization and conduct of state of scientific and technical examination of varieties and hybrids of Ukraine, theoretical bases and organization of seed work, development technologies of preserving resources of seed for further growth and stabilization of production of crop products in Ukraine.

A specialist trained to work in research institutions of Ukraine, station of variety testing and research centers, companies different ownership forms of cultivation, preparation and implementation seeds and planting material, as well as educational institutions.

Educational and professional Master's program

Specialization "State scientific and technical expertise of plant varieties and their legal protection"

The main objective of the program is the master of students' master necessary theoretical knowledge and practical skills for organizing and conducting the state of scientific and technical examination of varieties and hybrids of agricultural crops. The main section of the program is the goal and objectives of the state of scientific and technical examination of varieties and hybrids of agricultural crops in Ukraine, its types (BOC test and examination for fitness for distribution in Ukraine), the main steps of the methods and techniques cultivar, registration of varieties and hybrids in the Ukraine, post-registration study them. Chapter Master program is to develop national varietal resources of the country, the legal protection of varieties and hybrids in Ukraine and in the countries – members of UPOV, inspectorial supervision during the civil circulation varieties and hybrids. Students will be familiar with the organization and structure of the state system for the protection of plant variety rights in Ukraine, the legal framework.

Areas of employment for graduates

Ukrainian Institute of expertise plants, regional expertise centers national crop varieties state stations, industrial agricultural enterprises of different ownership.

Practical training

Students receive practical training in teaching and research farms National University of Life and Environmental Sciences of Ukraine, at research institutions of

Ukraine, at station of variety testing and research centers, companies different ownership forms of cultivation, preparation and implementation seeds and planting material and seed.

Proposed Topics for Master Theses

1. The studying of homozygotization on frequency of homologous recombination of *Arabidopsis thaliana*.
2. Morpho-biological characteristics of breeding lines of *Phaseolus vulgaris* L. and especially their inheritance.
3. Grade of samples of soybean advance variety testing on nursery garden.
4. Performance and stability of yield variety samples of *Phaseolus*.
5. Features exercise of quantitative characters of cleistogamous lines of maize on National University of Life and Environmental Sciences of Ukraine "Agronomic Research Station".
6. The value of Western European genetic plasma to selection for winter wheat in Ukraine.
7. Influence of abiotic factors and micronutrients on seed production of new intense varieties of winter rape.
8. Combinational ability of cleistogamous lines of maize.
9. Evaluation of alfalfa seed in the nursery garden competitive variety testing.
10. Effect of micronutrient Wuxal on seed production of winter wheat varieties of Artemis.

Academic rights of applicants entering Master course

Applicants with the Diploma of Bachelor can continue training in connected specialties including ones of the field of knowledge "Specific categories", (table 2) and other specialties (table 3) in accordance with the Terms of enrolment to higher educational institutions of Ukraine in 2015 approved by the Order of the Ministry of education and science of Ukraine on October 15, 2014 № 1172 and the Regulations of enrolment to National University of Life and Environmental Sciences of Ukraine (basic institution, Kyiv) for 2015.

Curriculum of Master training in specialty "Selection and genetics of agricultural crops" Educational and qualification Master program

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	Plant genetic resources	1	120	4
2	Modern methods for creating varieties and hybrids of crops	1	150	5
3	Genetics immunity against diseases and pests	1	120	4
4	Special genetic field crops	2	210	7
5	Ecological genetics	2	120	4
6	Special breeding and seed production of certain crops	2	240	8
7	Special breeding and seed production of vegetables and fruits	2	120	4
8	Examination of varieties on patentability	2	120	4
9	Genetics of quantitative traits	2	120	4
Total for standard part			1320	44
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by University				

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
1	Methodology and organization of scientific research on the basics of intellectual property	1	90	3
2	Business foreign language	1	150	5
3	Agricultural policy	2	90	3
Total (Disciplines offered by University)			330	11
2.2. Disciplines offered by students				
2.2.1. Specialization "Agrochemical service and quality management of soil"				
1	Breeding and Seed-growing heterosis hybrids	3	90	3
2	The legal protection of plant varieties	3	90	3
3	Ecological genetics	3	90	3
4	Modern methods of varieties and hybrids identification	3	90	3
5	State qualifying examination for fitness for spreading	3	90	3
6	Varietal Certification	3	90	3
Total (Disciplines offered by students)			540	18
Total for elective part			870	29
3. OTHER TYPES OF TRAINING				
1	Production Practice	1, 2	300	10
2	Preparation and defense of master's work	1, 3	210	7
Total			510	17
Total for Specialty			2700	90

Annotations educational plan disciplines

1. STANDARD ACADEMIC DISCIPLINES

Plant genetic resources. The main forms conservation of plant genetic resources. In situ – conservation in natural ecosystems. Preserve the local gene pool on farm – farming in the traditional way. Ex situ – conservation in gene banks and collection plantations. The UN Convention on biological diversity of plants. International Plant Genetic Resources Institute, its functions. International centers of agricultural research. The scientific and technical program of Ukraine "Plant Genetic Resources", its purpose, tasks. The creation of the National Center for Plant Genetic Resource of Ukraine. The system of plant genetic resources of Ukraine. Theoretical and practical bases of introduction. Form introduction: naturalization, acclimatisation, and domestication. The doctrine of initial material, the centers of origin of cultural plants. Methodological foundations of the formation, maintenance and use collections of plant genetic resources. The technology of preservation seeds and its regeneration. Biological basis for seed conservation. The concept of sources and donors of signs. Genetic donors of valuable traits in wild species. Certification of plant genepool samples. Inventory of collections. The national catalogue. Classifiers-references, its using for create a feature database of agricultural plants.

Modern methods for creating varieties and hybrids of crops. Discipline involves familiarize students with the current methods, which are used in the plant breeding worldwide. It includes the following sections: in vitro cultivation technology and its application areas, haploids and doubled haploids obtaining, intraspecific hybridization and polyploidy, genetic engineering and recombinant DNA techniques to obtain transgenic plants, DNA markers and their using in plant breeding, modern methods of gene mapping. Discipline involves listening to lectures, solving problems of molecular biology and genetic engineering, laboratory work, related to the topics of DNA technology.

Genetics immunity against diseases and pests. State study of the problem of immunity. Theories immunity. Immunity and stability. Passive and active immunity. The interaction of plants with pests. Types stability: vertical, horizontal. Tolerance. Genetic

bases of stability of agricultural crops to pathogens. Theory Flora "gene to gene." Interaction resistance genes: adaptive interaction, epistasis, complementarity, interaction with genes modifiers. Genetics pathogenicity pathogens. The immunity of plants to pests. Relations between the plants with insects – antofiliya and fitofahiya. Mechanisms of immunity of plants to pests: antyksenoz, antibiosis, tolerance. Genetics of resistance to pests. Initial material for resistance against pathogens and pests. Sources and donors resistance against diseases. Bank of resistance genes against pathogens. Hybrid analysis: diagram crosses, analysis hybrids F1 and F2, statistical data processing hybrid analysis. Methods creating original material resistant to pathogens and pests. Assessment of breeding material for resistance to diseases and pests.

Special genetic field crops. Total problems of the genetics of plants. Genetics determination and inheritance mechanisms of qualitative and quantitative traits. The specific nature of genetic systems to propagation of plants. Importance of grain, grain legume, cereal, feed, vegetable, horticultural crops. Genetical centers of origin, classification and karyology of the agricultural crops. The genetics of morphological, physiological and biochemical traits. The specific nature of propagation's systems of plants, occurrence of polyploidy row among species of genus. The genetics mechanisms of plants resistance control against the agents of disease and invaders. Principal directions of selection by grain, grain legume, cereal, feed, vegetable, horticultural crops.

Ecological genetics. Definition ecological genetics. Genetic approaches. Ecological relationships. Genetically active factors. Ecological and genetical problems of the modern crop production. Intensification of agricultural production and some lessons "green revolution". The features of system plant growing by relationships soil-climatic conditions and types agrobiocenosis. Ecological genetics of cultivated plants. The challenge of ecological genetics. The origin of cultivated plants and ecological genetics. The adaptive potential of the plant and its use. Features ontogenetic adaptation. Ecological firmness of plants. Features of plant adaptation to temperature, light, water stress, edaphic factors. Ecological and genetical characteristics of plant resistance to biotic stresses. Types of resistance against pathogens. The genetic nature of plant resistance against pathogens. The system "host-parasite-environment". Interaction with environmental conditions. Gene expression depending on environmental conditions. Temperature sensitivity of resistance genes.

Special breeding and seed production of certain crops. The discipline covers breeding technology of specific cultures with regard to their biological and genetic characteristics, as well as the existing gene pool. Tasks and directions of breeding. Model varieties. The original material. Intraspecific hybridization and selection hybrid descendants. Interspecific hybridization. Methods and equipment crossings. The use of mutagenesis and polyploidy. Methods and schemes of selection in mutant and polyploid populations. Features estimation of breeding material in productivity, length of growing period, the quality of products. The scheme of the breeding process. The achievement of breeding. The theoretical basis of seed production. The concept of varietal and sowing qualities of seeds. Causes of deterioration of seed quality. Categories of seeds. The system of seed production of major field crops. Seed production of primary links of grain, leguminous and cereal crops. The procedure of organization seed control by subjects of seed production in Ukraine. The methodology of approbation varietal sown cereal crops. Manual on approbation of variety sown of leguminous crops, perennial and annual forage grasses.

Special breeding and seed production of vegetables and fruits. The subject matter includes two modules. The first is dedicated to breeding varieties and heterosis hybrids of vegetable crops and especially their seed and the second - the breeding of fruit

crops and their rootstocks. In the first module served basis varieties and heterosis hybrids of vegetable crops and breeding processes, the doctrine of initial material, the study of signs. The special attention is given to methods of selection for heat resistance, cold resistance, drought tolerance, etc. The basis of the course selection is modern advances in breeding of cabbage, carrots, cucumbers, tomatoes and other crops. The second module is devoted to breeding varieties, clones and grape fruit crops - apples, pears, strawberries, raspberries, blackberries and other fruit and berry crops. In laboratory studies masters study varietal composition of vegetable and fruit crops and methods of their creation and reproduction in field and laboratory conditions.

Examination of varieties on patentability. Discipline involves studying the patentability of plant varieties criteria (novelty, distinction, uniformity, stability) by identifying – morphological description during complex field and laboratory studies necessary to prepare an expert opinion on the application for a plant variety, under which the decision on state registration of the variety and/or rights to it. Theoretical and practical course will discipline future professionals knowledge of methods of identification of plant varieties and their use in acquiring a property right for the variety as intellectual property. Study subjects contribute to acquiring skills morphological description of the variety of botanical taxa on criteria of patentability.

Genetics of quantitative traits. Theoretical and practical definition of genetic parameters. The arithmetic mean ($\bar{x}+sh$) and its error standard deviation ($sh+ss$), varying characteristics ($V+Sv$), amplitude variability (lim). Odds inheritance (H^2 i h^2), their definition and use. Definition of strategy selection on quantitative traits. Phenotype correlation coefficients (rp), genotype (rg), adaptive (ra). Their meaning and use in breeding. Correlation galaxy (clusters).

2. ELECTIVE ACADEMIC DISCIPLINES

2.1. Disciplines offered by University

Methodology and organization of research with the principles of intellectual property. The aim of the discipline is formation of the system of knowledge in methodology, theory of method and research process, methodical support of scientific and research activity at the stages of preparation of a Master paper, formation of the ability to organize research of a specific issue using the whole complex of the traditional methods of research including general and special methods. The main task of the theoretical part of the course is introduction to students the current concepts of research creation, the principles of methodology of scientific perception and methods of research. The main task of the practical part is the development of self-education ability, mastering skills of formation and application of perceived methodological position of research. In case of mastering the course students have to improve their skills of search, assortment and processing of scientific information, accurate formulation of a problem, aim, task, object, subject, methods of research. Introduction to students the principles of intellectual property and direction of them to gain knowledge and skills concerning registration of rights of ownership, their protection, commercialization, estimation and management are envisaged.

Business foreign language. The general aim of the program of teaching of foreign language for the professional purpose is formation students' professional linguistic competencies that will contribute to their efficient operating in cultural variety of training and professional environment. The methods of search of new information in another language sources, linguistic methods of analytical study of another language sources are learned. Students study published original literature in another language and increase their lexical and grammatical skills. Methods and linguistic peculiarities of annotation and

synopsis of another language sources, the principles of translation of professional oriented another language sources are studied.

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.

2.2. Disciplines offered by students

2.2.1. Specialization *“State scientific and technical expertise of plant varieties and their legal protection”*

Breeding and Seed-growing heterosis hybrids. Discipline provides knowledge features of breeding and seed-growing of hybrids F1 corn, sunflower, sugar beets, sorghums and synthetic varieties of winter-annual rye, buckwheat, clover, alfalfa. General bases of heterosis. Modern conceptions of heterosis and conformity to law of his display. Types of hybrids and technology of its creation. Types of initial material and methods creation of inbreed lines. The effect of Heterosis identifying and predicting by hybrids. Estimation of general and specific combination ability of inbreed lines. Application cross-test for the evaluation of plant-breeding material on GCA. Selection combinations of hybrids different genetic structure, and also synthetic varieties. Methodology and technique of plant-breeding process hybrids of F1. Methods of industrial production of hybrid seed of the field cultures on fertile and sterile basis. System of seed-growing. Seed-growing of inbreed lines. Growing of hybrid seed. Methodology of realization the field examination, field and collar inspections. Conduct of documentation. The procedure of organization seed control by subjects of seed production in Ukraine.

The legal protection of plant varieties. Discipline sort of like studying intellectual property, which is excellent, uniform and stable and suitable for dissemination in Ukraine that can be used to meet the needs of society and not for distribution prohibited grounds of threat to life and health of people harm flora and fauna, the preservation of the environment. Knowledge of international and domestic legal provision to regulate actions in the field of plant variety rights, will practically apply the scheme applicable laws and regulations, provided the acquisition, protection and realization breeder non-property and property rights for a plant variety. Theoretical and practical course will become acquainted with advanced achievements of registration and implementation of plant variety rights in Ukraine and in member countries of the International Union for the Protection of New Varieties of Plants (UPOV) and the European Union (CPVO).

Ecological genetics. Definition ecological genetics. Genetic approaches. Ecological relationships. Genetically active factors. Ecological and genetical problems of the modern crop production. Intensification of agricultural production and some lessons "green revolution". The features of system plant growing by relationships soil-climatic conditions and types agrobiocenosis. Ecological genetics of cultivated plants. The challenge of ecological genetics. The origin of cultivated plants and ecological genetics. The adaptive potential of the plant and its use. Features ontogenetic adaptation. Ecological firmness of plants. Features of plant adaptation to temperature, light, water stress, edaphic factors. Ecological and genetical characteristics of plant resistance to biotic stresses. Types of resistance against pathogens. The genetic nature of plant

resistance against pathogens. The system "host-parasite-environment". Interaction with environmental conditions. Gene expression depending on environmental conditions. Temperature sensitivity of resistance genes.

Modern methods of varieties and hybrids identification. Conventional methods for identifying varieties and hybrids are based on an assessment of morphological and agronomic traits. Using these methods is actually for a present time in a field collections, but there are some limitations for high-quality identifying of gene pool, which is stored in controlled conditions in vitro and cryopreservation. Using proteins and isozymes for the identification of varieties and hybrids is limited because proteins are characterized by low polymorphism, and the composition of isozyme spectra can be influenced by the physiological state of plants. These limitations are removed by using of DNA markers. In recent decades to study the genetic diversity and genotyping varieties and hybrids DNA markers, based on the use of polymerase chain reaction: RAPD, ISSR, AFLP, SSR are widely used, of which the most effective are microsatellite or SSR markers.

State qualifying examination for fitness for spreading. Discipline involves the study of complex evaluation of plant varieties for biological and morphological characteristics of economically valuable in the complex field and laboratory investigations, which resulted in the decision on state registration of a variety of further entering into the State Register of plant varieties suitable for dissemination in Ukraine. Discipline will form principles of scientifically proven market monitoring plant varieties. Theoretical and practical course to learn the discipline will enable varietal diagnosis quantitative and qualitative characteristics of varieties – candidate of its resistance to stressful environmental factors determine the plasticity, adaptive varieties in the transformation of their economic and biological, consumer and intellectual values.

Varietal Certification. The course provides disclosure schemes varietal seed certification requirements of the International Organization for Economic Cooperation and Development (OECD), which provide a set of procedures, methods and techniques to ensure high-quality and sowing qualities of seeds of all categories in the process of reproduction, the authenticity of varieties and varietal purity. Application of identification of plant varieties provides authentication of the variety, degree of homogeneity. Knowledge of discipline consolidate practical skills application of methods of identification of plant varieties (morphological description, electrophoresis, DNA-markers, PCR-analysis, etc.) in the varietal certification (field inspection and POSTcontrol) and further morphological, biochemical, genetic certification classes, which is the basis of international commercial seed treatment as import-export. The knowledge acquired in their practice breeder may apply, expert, researcher and manufacturer of seeds.

FACULTY OF PLANT PROTECTION, BIOTECHNOLOGY AND ECOLOGY

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Department in charge of graduate training:

Agricultural Sphere Ecology and Ecological Control

Tel.: (044) 527-81-95

E-mail: eco_dep@mail.ru

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

8.05140105 “Environmental biotechnology and bioenergetics”

Department in charge of graduate training:

Ecobiotechnologies and Biodiversity

Tel.: (044) 527-85-17

E-mail: eko_bio@nubip.edu.ua

Head of the Department – PhD in Biological Sciences, Associate professor, O.L. Iyachenko

8.09010501 “Plant protection”

Departments in charge of graduate training:

Entomology named after Prof. M.P. Diadechko

Tel.: (044) 527-89-78

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Head of the department – PhD in Agricultural Sciences, Associate professor, L.P. Yushchenko

Phytopathology named after Academician V.F. Peresyupkin

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Head of the department – PhD in Biological Sciences, Associate professor, M.Y. Pikovskiy

Integrated Protection and Plant Quarantine

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

8.09010502 “Quarantine of Plants”

Departments in charge of graduate training:

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Head of the department – PhD in Agricultural Sciences, Associate professor,
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M.Y. Pikovskiy

Integrated Protection and Plant Quarantine

Tel.: 527-82-12

E-mail: kaf.izkr@yandex.ru

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

Form of Training, Licensed number of persons:	
– Full-time	50 persons
– Part-time	50 persons
Duration of Training:	
– Full-time educational and professional program	1,5 year
– Part-time	2 years
Credits:	
– educational and professional program	90 ECTS
Language of Teaching	Ukrainian, English
Qualification	Ekologist, teacher university

The graded training of ecologists is realized through the continuous, integrated programs of basic and specific directions and the direction of national administration, including those which are adapted to the level of better world analogues, to the joint or simultaneous training at the universities-partners by means of integration into education and scientific complexes or international university consortiums and consists in the complete higher education qualification obtaining – Ecology Master, Academic (under the basic direction), Standardization, Certification and Quality Specialists, Environmental Management Experts (under specific directions) and Public Officer (under national administration direction).

Educational and professional Master's program

The training provides the study of purification technology and requirements to the quality of the sources of centralized and decentralized water supply; methodology of environmental assessment of the quality of agrarian sphere water resources; ecological certification of water bodies; ecological safety of water ecosystems; means of sustainable utilization and protection of agrarian sphere water resources and the quality control, ecological problems of irrigation and drained farming; formation of land and water ecosystems development and society economical development ecological bases.

The valedictorians of this Master program are engaged with the protection and regeneration of water ecosystems, the ecologically safe use of water bodies and sources and the carrying out of scientific support in scientific researches, planning and surveying

works for resource conserving water use in the sphere of water and land resources eco-management under the branches of national economy; they contribute to the improvement of general ecological education of the population, in particular, employing for National Agency of water Resources of Ukraine and its structural divisions (basin, regional department of water resources, channels department), Public Enterprise “Water Exploitation”

Specialization "Ecological control in agrarian sphere: monitoring, certification, expertise"

The training of ecologist, who gain the knowledge of agro-ecological monitoring of agrarian sphere territories; inspector inspections of economic entities, entities of ecological certification of industrial and agricultural enterprises, rural communities, hard domestic waste, land lots, fodder grounds and natural and recreation objects; landscape and ecologic expertise of the agrarian objects and the cultivation of crops technologies.

Areas of employment for graduates

The valedictorians activity of this master program concerns the organization, support, performance and observance of ecological control in the agrarian sphere of monitoring, audit, certification, examination for regulation of socio-economical and ecologically safe development of territories and enterprises of the agro-sphere. The places of employment for such valedictorians are the enterprises of the agribusiness industry of different property forms, in particular: LLC “Agrokhimservis”; PE “Agroresursy”, LLC Agrarian “Germes”, CJSC Stud Farm “Agro Region”, LLC “Druzhba-Nova”, Kraft Foods Ukraine etc.

Practical training

The practical training of the experts is held on the scientific and research farm units of SD of the National University of Life and Environmental Sciences of Ukraine: “Velukosnitynskyi scientific and research farm named after O. V. Muzychenko”, “Scientific and research farm “Vorzel”, “Agronomic research station”, and the Institute of Agroecology and Ecosystem Exploitation of the NAAS of Ukraine, the Institute of Plant protection of the NAAS of Ukraine, LLC “Svitanok-agrosvit”, Ukrainian Public Scientific and Research Institute “RESURS”, LLC scientific and Production Firm “Agroecosystems Ltd”.

Proposed Topics for Master Theses

1. Ecological certification of different origin and economic use water sources.
2. Assessment of lands appropriateness developing the ecologically safe raw materials zone for production of baby and diet food.
3. Ecological control of soils quality – territories ecological certification.
4. Ecological and hydroeconomic measures for water quality establishment.
5. Ecological management, marketing and audit on the agrarian enterprises.
6. Ecological policy: global, national (public), regional, field, corporative.
7. Water quality ecological assessment of different level occurrence on the farm or production district.
8. General environment impact assessment of the agribusiness enterprises and ecological situations characteristic in agrarian sphere.
9. Environmental approval of the agricultural products and raw materials production technologies.
10. Ecological inspection of the hazardous agrarian enterprises.

Academic rights of applicants entering Master course

Applicants with the Diploma of Bachelor can continue training in connected specialties including ones of the field of knowledge "Specific categories", (table 2) and other specialties (table 3) in accordance with the Terms of enrolment to higher educational institutions of Ukraine in 2015 approved by the Order of the Ministry of education and science of Ukraine on October 15, 2014 № 1172 and the Regulations of enrolment to National University of Life and Environmental Sciences of Ukraine (basic institution, Kyiv) for 2015.

Curriculum of Master training in specialty "Ecology and environmental protection" Educational and qualification Master program

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	Civil defense	2	60	2
2	Labor Safety in the industry	2	30	1
3	Pedagogy and Psychology of high school	1	60	2
4	Teaching methods at higher school	1	60	2
5	Methods and organization of scientific studies	1	60	2
6	Sustainable development strategy	1	90	3
7	Ecological management and audit	1	90	3
8	Systems analysis of environmental quality. GIS analysis of agrolandscapes.	2	150	5
Total for standard part			600	20
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by University				
1	Philosophy of science and innovation development	1	60	2
2	Business foreign language	1, 2, 3	120	4
3	Agricultural, Land and environmental Law	1	30	1
4	Agricultural and Ecological policy	1	90	3
5	Agricultural radio-ecology	2	120	4
6	Ecological standardization and certification	2	90	3
7	Problems of environmental safety and modern concepts of nature use	2	150	5
8	Information technologies	2	90	3
9	Intellectual property and world information resources	2	60	2
Total (Disciplines offered by University)			810	27
2.2. Disciplines offered by students				
2.2.1. Specialization “Ecology and protection of water resources of the agrarian sphere”				
1	Monitoring of water quality in the agricultural domain	3	90	3
2	Disposal of sewage, recovery and neutralization	3	180	6
3	Methodology of modern chemical analysis and chemistry of environmental analysis	3	180	6
4	Environmental safety of aquatic ecosystems	3	90	3
Total (Disciplines offered by students)			540	18
2.2.2. Specialization “Ecological control in agrarian sphere: monitoring, certification, expertise”				
1	Agroecology	3	180	6
2	Ecological expertise in agriculture (agro-biotechnologies)	3	90	3
3	Agro-ecological control and management (monitoring, certification, management, inspection)	3	180	6
4	Modern biotechnologies and bio-safety	3	90	3
Total (Disciplines offered by students)			540	18
Total for elective part			1350	45

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
3. OTHER TYPES OF TRAINING				
1	Practical training	1,2,3	600	20
2	Master Thesis processing and defense	4	150	5
Total			750	25
Total for Specialty			2700	90

Annotations educational plan disciplines

1. STANDARD ACADEMIC DISCIPLINES

Civil defense. The discipline studies the functions and tasks of a unified state system of prevention and emergency response, protection of subjects of economic activity, provides practical skills for the protection of subjects of economic activity and their surrounding area.

Labor Safety in the industry. The discipline generates knowledge of theoretical and practical training of students in creating safe working conditions of workers of agro industrial complex.

Pedagogy and Psychology of high school. The discipline examines the state, structure and methods of modern psychology and pedagogy, the development of creative personality. Generates knowledge of the principles and patterns of training and education of individuality, psychological characteristics of the formation and development of individuality and of individual psychological characteristics causing a specific personal-social behavior, activities and communication, helps to clarify the motives of human actions, to regulate interpersonal relationships.

Teaching methodology in higher education. The discipline provides acquisition of knowledge of the nature of teaching methods and their optimal choice in educational activities. Discloses methods of preparation of lectures and lecturing, giving seminars and workshops. We give a description of the most famous modern teaching methods, recommendations for study and use.

Methods and organization of scientific studies. The discipline creates in students a representation of self-creative, scientific thinking and develops the skills of scientific activity, promotes mastery of the latest environmental research methods allowing obtaining the quantitative and qualitative data needed for overall ecological characteristic of objects, processes in the environment leading to the right choice of technology, organizational and administrative decisions, ability to be oriented by the laws and regulations and clearly generate evidence-based conclusions.

Sustainable development strategy. The discipline generates knowledge of the principles and strategies of sustainable development as a harmonious process that ensures sustainable economic convergence, promotes environmental ecological culture - the preservation of natural resources, ensures the Biosphere space and environmental safety meeting the needs of human life. Learns provisions of practical implementation mechanisms, coordination and harmonization of social, economic and environmental strands of the development of sustainable society in the country, organizes plans and schedules of stages of sustainable development. Promotes mastery and skills of monitoring the indicators of sustainable development, identifies environmental risks and hazards for human development and sustainable development, promotes the use of international agreements and documents related to sustainable development, performance of plans and programs (region, city, town) in the transition to sustainable development in Ukraine and other countries in transition.

Environmental Management and Audit. Environmental Management examines managerial relationships in an institution ensuring its sustainable development, environmental protection, safety of human life, sustainable use of natural resources and environmental safety of the institution and its activity aimed to the implementation of environmental objectives and programs of environmental impact, and creates a knowledge of environmental strategy of social development, management of natural resources and environment-related activity, which are determined by biological and socio-economic characteristics of enterprises, strategic goals of the society and allow the enterprises to survive and achieve their goals in the long run. Environmental audit is a management tool which examines the effectiveness of management in preserving the environment and maintaining competitiveness through ecological production, creates knowledge of systematization, documentation, frequency of objective evaluation of conformity of environmental management, operation of equipment and its conformity with environmental objectives, creates the ability and skills for assessment of environmental regulations and environmental policies of the company.

Quality Systems analysis of environmental. GIS analysis of agrolandscapes. Systems theory in ecology is an interdisciplinary area of scientific research and eco-oriented disciplines that forms knowledge for developing generalized models of natural and anthropogenically-modified systems, constructing logical and methodological conceptual description of functioning and behavior at the ecosystem objects, generating the generalized theories (hypotheses, laws) of ecosystems (land, water - natural and anthropogenic) of different types (agro, urbo-, techno- systems), including the systems dynamic theory of purposeful behavior, genesis, evolution and historical development of the hierarchical structure, the governance processes of systems. System Analysis of the environmental quality examines the set of scientific, educational, industrial (technological) problems, which in their specificity and diversity are similar and are considered as a whole in terms of the object being tested in different types of ecosystems, generates skills for building scenarios of representation of ecosystems and means of the study of objects and their components (description, explanation, interpretation, modeling, prediction, prevention, design, construction).

2. ELECTIVE ACADEMIC DISCIPLINES

2.1. Disciplines offered by University

Philosophy of science and innovation development. Philosophical and scientific approaches to the study of science and innovation. Philosophy of science: ontological, gnoseological, epistemological dimension. Forms of organization of science. Classical, non-classical and postnonclassical ideals of scientism. Methodology of perception of scientific and innovative activity. Study of basic scientific forms. Value of basic and applied research strategies. Philosophical foundations of classification of sciences. Philosophy of technology: theoretical and methodological aspects. Philosophical understanding of scientific worldview. Logic of scientific research in the context of contemporary global issues (environmental, technological and social). Axiological dimension of science: the problem of responsibility of the scientist.

Business foreign language. The general aim of the program of teaching of foreign language for the professional purpose is formation students' professional linguistic competencies that will contribute to their efficient operating in cultural variety of training and professional environment. The methods of search of new information in another language sources, linguistic methods of analytical study of another language sources are learned. Students study published original literature in another language and increase their lexical and grammatical skills. Methods and linguistic peculiarities of annotation and

synopsis of another language sources, the principles of translation of professional oriented another language sources are studied.

Agricultural, land and environmental law. The purpose of the discipline is to explore the regulation of certain types of economic activity of agricultural enterprises and their legal environment as well as Contractual relationship of agricultural business entities, legal regulation of agricultural lands and other natural resources in agriculture in Ukraine. The discipline involves the study of law and state regulation of legal relationship in the field of environment, natural resources and environmental safety and environmental human and civil rights in Ukraine.

Agricultural and Environmental policy. Examines the documented and officially declared (approved) system of ecological concepts, principles, approaches, priorities and activities, that defines the relationship between the society, the state and the environment, generates knowledge and skills of future leaders in the development of environmental policies, systems of production, management of enterprises and corporations through which the adherence of the administration for environmental priorities shall be demonstrated.

Agricultural Radiology. The discipline learns concentration and migration of radio nuclides in environmental objects of environment and agricultural production, agricultural environment and their effects on plants, animals and agro-ecosystems as a whole. Generates knowledge of designing the principles for the development of agriculture in the contaminated territories, complex protective measures for ensuring production of agricultural products and raw materials meeting radiological standards, regulations, requirements.

Ecological standardization and certification. The discipline examines the system of mandatory functional and environmental requirements for products, technologies, management, is aimed to improving their environmental performance and implementing the system-wide identification for establishing compliance and certification. Provides the ability and skills in management, preparation and development of documents certifying conformity of environmental management of the enterprise to the requirements of standards and additional regulatory documents. Generates knowledge of basic provisions and terminology of the state control on the environment, the current state of the environment in Ukraine and Europe, environmental regulation of control parameters of the environment, methods and means of control of parameters of the environmental objects, transboundary pollution issues, accreditation of laboratories, using interlaboratory comparative trials.

Problems of environmental safety and modern concepts of nature use. The discipline generates knowledge about ecologically friendly environment provided by prevention of negative impacts leading to the environmental degradation and risks to human health, the ability to determine the types of environmental safety according to the territorial basis (global international, stat -national, regional, local), according to the means of ensuring: technological, ecological (radiological, socio-ecological, economic and natural environmental safety), according to the objects of the environmental safety: the environment and its components, environmental safety of human and human society; skills of development and introduction of modern concepts of management of natural resources aimed to the protection of the environment and public health. Optimization of management of natural resources. Generates knowledge about the conditions of balanced interaction of human society with all natural biomes of the biosphere. Provides the skills to achieve the effective results in management and obtain maximum economic benefit with minimal damage to the environment, consumption of natural resources and their restoration and protection of the environment from pollution and destruction.

Information Technology. Mastery of modern information technologies based on knowledge of technical components of computer systems and complex software needed to organize and implement information and perform the research complex in the ecology for processing textual, numerical and graphical information, conducting mathematical analysis of experimental studies and preparing advertising and promotional materials to highlight the research results.

Intellectual property and global information resources. The discipline generates knowledge about the latest technologies of the work with information data, study of legal aspects of their use, the use of the modern tools, production of digital content related master's research, information expertise, research expanded database of Internet resources, new approaches to processing the Information data and direction of research, quality of presentation of the results of independent research, legal aspects of copyright law, particularly for the use of Internet resources, protection of intellectual property rights at the national and international level, principles of organization and operation of computer networks, WWW systems and Web 2.0 technologies, composition, structure and principles of the search engines used in the global Internet, the main methods of finding information data, organization and expansion of conventional web search, the main agrarian resources, including FAO resources (electronic and depository libraries, AgroWEB and other Internet resources), concept of digital content formats and their main purpose, including media, formats, office documents, databases, spreadsheets, presentation of the principles of research results through publications, presentations, website, principles of social community and social services of the Internet - blogs, wikis, Geocaching, geographic information systems, principles of creating and using databases, expert systems, data processing using the spreadsheets. Provides the following skills after completing the course: conducting the effective information retrieval, including academic and professional direction, using traditional and electronic sources including the Internet resources, evaluating the resources found online, using professional and scientific information in compliance with the protection of copyright and Intellectual property, make out in compliance with the requirement of the WAC (the State Commission for Academic Degrees and Titles) of Ukraine the links to the Internet resources, experience of work with office applications for registration of research results, including word processors, presentation of packages, spreadsheets and database, using the e-mail, forums, blogs, wikis, geographic information systems, photography and video services to share information and to present the results of research on the net, making the publication of research results in the web-compatible formats; organizing the research work, choosing the best methods and tools for presentation of the results.

2.2. Disciplines offered by students

2.2.1. Specialization "Ecology and protection of water resources in the agrosphere"

Monitoring of water quality in the agricultural domain. Study of the discipline as a part of the final phase of the master's degree in the field of ecology and environment, creating the base of scientific outlook on current knowledge in monitoring of water quality. Mastering the techniques of water quality parameters and their evaluation.

Disposal of sewage, recovery and neutralization. Formation of theoretical and practical knowledge of the foundations of modern water treatment technologies with a focus on the problem of purification of agricultural wastewater. Examines and sets the composition of wastewater and pollution, physical and chemical foundations of water and wastewater treatment, water purification methods of waste products and the organization of closed water cycles. Related with the prevention and reduction of waste, its collection

and transportation, storage, processing, disposal and removal, disposal and burial, as well as preventing negative effects on the environment and human health.

Methodology of modern chemical analysis and chemistry of environmental analysis. The main purpose of the study of the theoretical part of methodology of modern chemical analysis is to provide knowledge about modern methods of analytical chemistry of the environment, the methodology of sample preparation for analysis, exploring mathematical processing of the results of chemical analysis, determination of heavy metals in water and soils and learning new techniques methods of environmental assessment.

Environmental safety of aquatic ecosystems. Study of environmental issues and general concepts of ecological status of aquatic ecosystems, the main factors of influence on them, sources of pollution, methods of treatment, transboundary sources of pollution, ecological features of small rivers, lakes, wetland ecosystems.

2.2.2. Specialization “Environmental management in the agricultural domain: monitoring, certification, expertise”

Agroecology. Developing the knowledge of the components and importance of the of agro ecology for the development of agro sphere and society, new approaches and methods of ecological safety of agricultural production, ecological agriculture methods, tools of performance and rehabilitation of modern agricultural landscapes, and ensuring the production of environmentally safe products, the main characteristics of the structure, function and types of modern agro-ecosystems, identifying, predicting and simulating the causes and consequences of destabilization, changes of energy and stamina, factors and prospects of stabilization, capturing the strategic direction of the agro sphere features of alternative agriculture, biotechnology and modern agriculture in the agro industrial complex in the world and in Ukraine.

Ecological expertise in agriculture (agro-biotechnologies). The discipline generates knowledge and skills on a comprehensive assessment of the impact on natural resources, human health and environmental quality of various innovations (projects of enterprises, buildings, structures, technologies, inventions, standards, materials, products, materials, projects for transforming the nature etc.) across selected areas of the region, and providing skills for pre-verification of compliance with the requirements of environmental protection projects of social and environmental areas, guarantees of environmentally friendly importation of products and technologies, research and management of human impacts on the environment for technology assessment and environmental risks.

Agro-ecological control and management (monitoring, certification, management, inspection). The discipline examines features of monitoring systems (observations) natural ecosystems, agricultural lands, urban areas and the formation of agroecological knowledge of database, instructional techniques of quality management of ecosystems, methods for optimal decision-making in the field of management of development of the agro sphere based on environmental laws, allows students-environmentalists acquiring knowledge and skills in the collection, analysis and processing systems, generalized, comprehensive information on the qualitative assessment of the environment and its documentary describing the natural, environmental, social, economic, energy, man-made characteristics of objects of environmental performance, territories, territorial-production complexes and groups, as well as commercial facilities for various purposes, forms the skills of development of evidence-based recommendations for the adoption of environmentally-oriented management solutions.

Modern biotechnology and biosafety. Examines the principles and methods of applied areas of environmental science and classical and modern biotechnology processes carried out by the use of living organisms or other biological agents, and are aimed to protecting and restoring the environment damaged by human, maintaining functional stability of the biosphere as a whole or certain components of natural ecosystems.

**Master's course
in specialty "ENVIRONMENTAL MONITORING AND AUDITING"
branch of knowledge "Natural sciences"**

Form of Training, Licensed number of persons:	
– Full-time	30 persons
Duration of Training:	
– Full-time educational and professional program	1,5 year
Credits:	
– educational and professional program	90 ECTS
Language of Teaching	Ukrainian
Qualification	Expert on ecology

The concept of training

The aim of education is learning theoretical bases and formation of appropriate practical skills: environmental control procedures and audit of environmental protection and balanced nature use, namely the monitoring of the environment (natural and artificially altered terrestrial and aquatic ecosystems, Hydroecological, geoecological, soil and environmental, phytosanitary, environmental reclamation, bioecological, agrarian forest-technical, socio-environmental, geoinformative); audit (risk, areas, industrial and environmental facilities); environmental passportisation (companies, territories, facilities management and natural reserve fund); inspection (of enterprises and organizations as sources of pollution); examination (activities, goods and services, draft laws and other legal acts pre, project materials and documentation from the introduction of new techniques, technologies, scientific research, software development areas) in environmental consulting, licensing, certification, which will be effectively used in the agricultural and environmental sector to the production of environmentally friendly products and materials.

Educational and professional Master's program

Specialization "Control and expert regulation in the agrosphere"

Preparation involves the formation of knowledge to solve natural and resource, environmental and ecological problems and anthropogenic issues of control in bio, agro, urbo-, technological, geosphere, recreational, tourist and social sectors. In particular, the development, planning, design and implementation of industrial and economic systems and controls; prediction, forecasting and modeling of natural systems and the development and technogenically disturbed natural-territorial complexes geosphere; identification of sources of environmental impact; establishment an acceptable level of risk for people and the environment now and in the future, and others.

Areas of employment for graduates

Graduates' of the specialty "Environmental monitoring and auditing" can work as an ecologist, engineer in restoration of natural ecosystems, protection of natural ecosystems, natural resources, environment, nuclear safety; specialist, environmental management, environmental education, standardization, certification and environmental quality spheres; Inspector: radiation safety, environmental protection, nature conservation reserve fund; environmental auditor and expert on ecology

Practical training

The practical training of the experts is held on the scientific and research farm units of SD of the National University of Life and Environmental Sciences of Ukraine:

“Velukosnitynskyi scientific and research farm named after O. V. Muzychenko”, “Scientific and research farm “Vorzel”, “Agronomic research station”, and the Institute of Agroecology and Ecosystem Exploitation of the NAAS of Ukraine, the Institute of Plant protection of the NAAS of Ukraine, LLC “Svitanok-agrosvit”, Ukrainian Public Scientific and Research Institute “RESURS”, LLC scientific and Production Firm “Agroecosystems Ltd.”.

Proposed Topics for Master Theses

1. Implementation of ecological expert assessment of the project documentation when making environmentally focused solutions for strategic planning and sustainable development of territories.
2. Implementation of ecological and socio-economic expertise of enterprises and objects on conservation areas.
3. Development of programs of sustainable development of agricultural areas in the optimization of social systems.
4. Implementation of environmental inspection of air-security, water management, reclamation and re cultivation work.
5. Determination of environmental risk and safety at the facilities management (by types of nature).

Academic rights of applicants entering Master course

Applicants with the Diploma of Bachelor can continue training in connected specialties including ones of the field of knowledge “Specific categories”, (table 2) and other specialties (table 3) in accordance with the Terms of enrolment to higher educational institutions of Ukraine in 2015 approved by the Order of the Ministry of education and science of Ukraine on October 15, 2014 № 1172 and the Regulations of enrolment to National University of Life and Environmental Sciences of Ukraine (basic institution, Kyiv) for 2015.

Curriculum of Master training in specialty “Environmental monitoring and auditing” Educational and qualification Master program

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	Civil defense	2	60	2
2	Labor safety in the industry	2	30	1
3	Sustainable development strategy	1	90	3
4	Methods and organization of scientific studies	1	120	4
5	Ecological inspection	1,2	210	7
6	Ecological management	1,2	210	7
7	Ecological audit	1,2	210	7
Total for standard part			930	31
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by University				
1	Ecological policy	1	90	3
2	High education and Bologna process	1	90	3
3	Intellectual property	2	60	2
4	Systems analysis of environmental quality	2	90	3
5	Business foreign language	2	180	6
6	Ecological control and safety	1	90	3
7	Regulatory and methodological support of control of	3	90	3

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
	expert activity of ecologist			
8	Ecological and low regulation of environment	2	60	2
9	Methods of environmental analyses	3	60	2
Total (Disciplines offered by University)			810	27
2.2. Disciplines offered by students				
2.2.1. Specialization "Control and expert regulation in the agrosphere"				
1	Ecological expertize and audit of areas and enterprises	3	120	4
2	Soil and environmental monitoring and management of land resources in the agrosphere	3	120	4
3	Professional ecological expert activity	3	90	3
4	Ecotoxicological estimation of pesticides, agrochemicals and technologies	3	90	3
Total (Disciplines offered by students)			420	14
Total for elective part			1230	41
3. OTHER TYPES OF TRAINING				
1	Practical training	1, 2	180	6
2	Master Thesis processing and defense	4	360	12
Total			540	18
Total for Specialty			2700	90

Annotations educational plan disciplines

1. STANDARD ACADEMIC DISCIPLINES

Civil defense. The discipline studies the functions and tasks of a unified state system of prevention and emergency response, protection of subjects of economic activity, provides practical skills for the protection of subjects of economic activity and their surrounding area.

Labor Safety in the industry. The discipline generates knowledge of theoretical and practical training of students in creating safe working conditions of workers of agro industrial complex.

Sustainable development strategy. The discipline generates knowledge of the principles and strategies of sustainable development as a harmonious process that ensures sustainable economic convergence, promotes environmental ecological culture - the preservation of natural resources, ensures the Biosphere space and environmental safety meeting the needs of human life. Learns provisions of practical implementation mechanisms, coordination and harmonization of social, economic and environmental strands of the development of sustainable society in the country, organizes plans and schedules of stages of sustainable development. Promotes mastery and skills of monitoring the indicators of sustainable development, identifies environmental risks and hazards for human development and sustainable development, promotes the use of international agreements and documents related to sustainable development, performance of plans and programs (region, city, town) in the transition to sustainable development in Ukraine and other countries in transition.

Methods and organization of scientific studies. The discipline creates in students a representation of self-creative, scientific thinking and develops the skills of scientific activity, promotes mastery of the latest environmental research methods allowing obtaining the quantitative and qualitative data needed for overall ecological characteristic of objects, processes in the environment leading to the right choice of technology, organizational and administrative decisions, ability to be oriented by the laws and regulations and clearly generate evidence-based conclusions.

Environmental inspection. Generates knowledge of the procedures of the influence of society on the environment, monitoring and evaluation of the impact of economic and social activity in the living environment (air, water, soil), the degree of environmental safety or environmental economic activity of the situation at the sites (areas), natural resources and human health across particular objects, preventing or stopping the negative impact of certain types of human activities on human health and the environment, mastering the methodology and procedures of state control in the sphere of environmental protection and use of natural resources, monitoring of compliance with environmental legislation, prediction, prevention and establishing the degree of environmental risks and ecological security study conclusions environmental control, environmental inspection entities (individuals and legal entities) of all shapes, forms, basic tasks, functions, structures and rights of Environmental Inspection, the procedure for organizing and conducting environmental inspections, order forms and types of prosecution of violators of international and national environmental legislation. Provides the skills of a comprehensive science-based control certain types of activities in order to determine the degree of environmental risk, the definition of sustainable activity in the course of matching the inspected object to the requirements and standards of environmental legislation, evaluating efficacy study of measures for the protection of the environment; training objective conclusions based on the results of environmental monitoring; clearance acts on the results of inspections and public awareness.

Environmental Management. Environmental Management examines managerial relationships in an institution ensuring its sustainable development, environmental protection, safety of human life, sustainable use of natural resources and environmental safety of the institution and its activity aimed to the implementation of environmental objectives and programs of environmental impact, and creates a knowledge of environmental strategy of social development, management of natural resources and environment-related activity, which are determined by biological and socio-economic characteristics of enterprises, strategic goals of the society and allow the enterprises to survive and achieve their goals in the long run.

Environmental Audit. Environmental audit is a management tool which examines the effectiveness of management in preserving the environment and maintaining competitiveness through ecological production, creates knowledge of systematization, documentation, frequency of objective evaluation of conformity of environmental management, operation of equipment and its conformity with environmental objectives, creates the ability and skills for assessment of environmental regulations and environmental policies of the company.

2. ELECTIVE ACADEMIC DISCIPLINES

2.1. Disciplines offered by University

Environmental policy. Examines the documented and officially declared (approved) system of ecological concepts, principles, approaches, priorities and activities, that defines the relationship between the society, the state and the environment, generates knowledge and skills of future leaders in the development of environmental policies, systems of production, management of enterprises and corporations through which the adherence of the administration for environmental priorities shall be demonstrated.

High education and Bologna process generates knowledge due to main tasks, principles and documents that are confirmed in terms of Bologna process, mastering the methods and means of their implementation in higher education Ukraine, formation of knowledge system of essence and content of the Bologna process as the basis for the

formation of a unified European Higher Education Area in a market economy, the problems of creating an unified European educational system.

Intellectual property The concept of intellectual property. Intellectual property as a result of creative activity. Intellectual Property as a law. The evolution of intellectual property. Objects of intellectual property laws. Classification of intellectual property laws. Objects of copyright and related rights. Subjects of intellectual property rights. The system of Ukraine legislation on intellectual property.

Quality Systems analysis of environmental. Systems theory in ecology is an interdisciplinary area of scientific research and eco-oriented disciplines that forms knowledge for developing generalized models of natural and anthropogenically-modified systems, constructing logical and methodological conceptual description of functioning and behavior at the ecosystem objects, generating the generalized theories (hypotheses, laws) of ecosystems (land, water - natural and anthropogenic) of different types (agro, urbo-, techno- systems), including the systems dynamic theory of purposeful behavior, genesis, evolution and historical development of the hierarchical structure, the governance processes of systems. System Analysis of the environmental quality examines the set of scientific, educational, industrial (technological) problems, which in their specificity and diversity are similar and are considered as a whole in terms of the object being tested in different types of ecosystems, generates skills for building scenarios of representation of ecosystems and means of the study of objects and their components (description, explanation, interpretation, modeling, prediction, prevention, design, construction). GIS analysis of agrolandscapes examines the foundations of geographic information systems and spatial analysis allowing the use of GIS in ecology for modeling, forecasting and monitoring.

Ecological control and safety. The discipline examines features of monitoring systems (observations) natural ecosystems, agricultural lands, urban areas and the formation of agroecological knowledge of database, instructional techniques of quality management of ecosystems, methods for optimal decision-making in the field of management of development of the agro sphere based on environmental laws, allows students-environmentalists acquiring knowledge and skills in the collection, analysis and processing systems, generalized, comprehensive information on the qualitative assessment of the environment and its documentary describing the natural, environmental, social, economic, energy, man-made characteristics of objects of environmental performance, territories, territorial-production complexes and groups, as well as commercial facilities for various purposes, forms the skills of development of evidence-based recommendations for the adoption of environmentally-oriented management solutions.

Business foreign language. The general aim of the program of teaching of foreign language for the professional purpose is formation students' professional linguistic competencies that will contribute to their efficient operating in cultural variety of training and professional environment. The methods of search of new information in another language sources, linguistic methods of analytical study of another language sources are learned. Students study published original literature in another language and increase their lexical and grammatical skills. Methods and linguistic peculiarities of annotation and synopsis of another language sources, the principles of translation of professional oriented another language sources are studied.

Regulatory and methodological support of control of expert activity of ecologist. The discipline examines the system of mandatory functional and environmental requirements for products, technologies, management, is aimed to improving their environmental performance and implementing the system-wide identification for

establishing compliance and certification. Provides the ability and skills in management, preparation and development of documents certifying conformity of environmental management of the enterprise to the requirements of standards and additional regulatory documents. Generates knowledge of basic provisions and terminology of the state control on the environment, the current state of the environment in Ukraine and Europe, environmental regulation of control parameters of the environment, methods and means of control of parameters of the environmental objects, transboundary pollution issues, accreditation of laboratories, using interlaboratory comparative trials.

Ecological and law regulation of environment. The purpose of the discipline is to explore the regulation of certain types of economic activity of agricultural enterprises and their legal environment as well as Contractual relationship of agricultural business entities, legal regulation of agricultural lands and other natural resources in agriculture in Ukraine. The discipline involves the study of law and state regulation of legal relationship in the field of environment, natural resources and environmental safety and environmental human and civil rights in Ukraine.

Methods of environmental analyses forms in students the idea of structure and elements of the environment, hydrosphere and lithosphere parameters to be measured and evaluated, methods and instruments for measuring the chemical, physical, mechanical and biological parameters, norms and standards for water quality and soil assessment, nature, objectives, types and methods of environmental monitoring, organizing and monitoring the features of geosphere, skills and abilities: measuring the chemical, physical and mechanical parameters of the environment in the field and laboratory during environmental assessments and examining the aquatic environment and soil, conducting the environmental monitoring, assessing by the results of the measurements and making the appropriate predictions about the state of the environment, use of environmental monitoring data, recommend specific types of monitoring the performance of environmental assessments and examinations territories and objects, predicting the environmental situation on the basis of monitoring data.

2.2. Disciplines offered by students

2.2.1. Specialization "Control and expert regulation in the agrosphere"

Ecological expertise and audit of areas and enterprises. Generates knowledge and skills of comprehensive assessment of the impact on natural resources, human health and environmental quality of various innovations (projects of enterprises, buildings, structures, technologies, inventions, standards, materials, products, materials, designs transform nature etc.) across selected areas of the region, and providing skills for pre-verification of compliance with the requirements of environmental protection projects of social and environmental guarantees of importation of environmentally friendly products and technologies, research and management of human impacts on the environment through the assessment of technology and environmental risks.

Soil and environmental monitoring and management of land resources in the agrosphere. Learns the basics of effective use of soil management in accordance with environmental legislation. The aim of the course is to explore the theoretical and practical assimilation of Land Management as a soil biotic complex, which is the basis of agro-ecosystems, the introduction of environmental friendly technologies aimed to restoring the soil fertility, use of intensive, extensive technologies for products and raw materials, and reducing anthropogenic nutrient loading on agroecosystems , implementation and development of alternative ("organic") agriculture, land management and reclamation in the dangerous areas due to the erosion. Meeting the relevant agricultural requirements of

applicable law, the applicable standards and regulations, standardization, certification, licensing the operation of land for various purposes in agricultural domain.

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

Ecotoxilogical assessment of pesticides, agrochemicals and technologies.

Explore toxic effects of pollutants on ecosystems, populations and living organisms, problems of current ecological and radiation threats to the population and territories, state system of environmental and radiation safety, estimation on all levels – from local to global, probability of occurrence of negative changes in the environment caused by man-made or other influence.

**Master's course
in specialty "ENVIRONMENTAL BIOTECHNOLOGY AND BIOENERGETICS"
branch of knowledge "Biotechnology"**

Form of Training, Licensed number of persons:	
– Full-time	30 persons
– Part-time	30 persons
Duration of Training:	
– Full-time educational and scientific program	2 years
– Part-time	2 years
Credits:	
– educational and scientific program	120 ECTS
Language of Teaching	Ukrainian, English
Qualification	Biotechnologist

The concept of training

The aim of studying is mastering the theoretical basis and formation of appropriate practical skills by researching biological objects considering classical and modern scientific approaches, which harmonically combine student's perception and understanding of biotechnological and ecological directions. Special part allows to master main methods of work with genetic material, which is necessary for preparing high-qualified specialists of branch subdivisions. Practical part allows students to master the use of newest biotechnologies that are based on the use of laws of live nature for creation and realization of the newest systems for agrarian- industrial complex, energetics, light, chemical, mining industries, oil refining complex, quality management of biotechnology products, problems of legislative regulations, management and marketing, problems of biosafety and bioethics.

**Educational and scientific Master's program
*Specialization "Biosafety and bioethics"***

The program is aimed at studying heredity and changeability of organisms with new, technically created features and their expansion and possible consequences for ecobiocenoses; studies the main legislative documents and agreements in the sphere of biosafety that are accepted in Ukraine and the range of other leading countries in the world; ethical aspects and problems of biosafety ethics while manipulating the cells, organs and organisms, principles and mechanisms of manipulating the genomes, achievements of gen engineering and therapy and also a range of modern biotechnologies, their benefit and risks for bioworld of the planet.

Areas of employment for graduates

Graduates work in institutions of environmental and health surveillance, in the control of production and control and analytical laboratories, centers of certification, commercial firms, post-graduate studies.

Specialization "DNA certification and genome mapping"

The essence of master's course lies in the studying of main methods of practical diagnostics and identification of genetically modified organisms in food, mastering the methodology and systems of DNA passport systems of precious agricultural plants with the help of modern biotechnologies and molecular-biological methods. The special part of the program gives an opportunity to master main techniques in the work with genetic material that is necessary for training highly qualified specialists of branch subdivisions.

Areas of employment for graduates

Graduates work in the enterprises of ecological and sanitary control, in control-producing and control-analyzing laboratories, centers of product certification, commercial firms, and scientific research institutions on the posts of chief specialist, microbiologist, laboratory manager, senior laboratory assistant, scientific employees, bacteriologist, virologist, mycologist etc., postgraduate studies

Proposed Topics for Master Theses

1. Biotechnology and the use of a biological product Tryphoderminu-R based on new strains of fungi of the genus Trichoderma.
2. Studies of the interaction and use of eubacteria Clostridium new-NT for the treatment of cancer kolorektal-tion in Mus Musculus.
3. Biological and molecular genetic characteristics of the viruses perennial legumes.
4. Development of molecular diagnostic systems for the diagnosis and identification of the virus holeness wood apple.
5. Biotechnological processes and modes of equipment for biological protection of corn in SE NUBiP Ukraine "Agronomic Research Station".
6. Pathological changes of fungi Pleurotus ostreatus Kumm. under conditions of bacterial infection in biotechnological processes.
7. Molecular genetic characteristics of the viruses of lucerne (Medicago sativa).
8. Biotechnological process of composting of agricultural waste.
9. Molecular genetic polymorphism raspberry varieties Ukrainian selection for DNA markers.
10. Development of molecular diagnostic system for diagnosis and identification of virus Sharkey plum (Plum Pox Virus).

Academic rights of applicants entering Master course

Applicants with the Diploma of Bachelor can continue training in connected specialties including ones of the field of knowledge "Specific categories", (table 2) and other specialties (table 3) in accordance with the Terms of enrolment to higher educational institutions of Ukraine in 2015 approved by the Order of the Ministry of education and science of Ukraine on October 15, 2014 № 1172 and the Regulations of enrolment to National University of Life and Environmental Sciences of Ukraine (basic institution, Kyiv) for 2015.

Curriculum of Master training in specialty "Environmental Biotechnology and Bioenergetics" Educational and scientific Master program

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	Philosophy of science and innovation development	1	60	2
2	Civil defense	2	90	3
3	World agriculture and food resources	1	60	2
4	Strategy of sustainable development of nature and society	1	60	2
5	Applied Genetics with the basics of Cytology	2	60	2
6	Ecology Biotechnology	2	90	3
7	Plant Biotechnology	2	90	3
8	Alternative energy: bioenergy and bioenergy conversion	2	90	3
9	Information Technology	2	90	3

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
10	Applied Ecology	1	90	3
11	Biological Statistics	3	90	3
Total for standard part			870	29
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by University				
1	Methodology and organization of scientific research on the basics of intellectual property	1	90	3
2	Business foreign language	1	120	4
3	Agricultural policy	1	90	3
4	Instrumental methods of analysis	1	90	3
5	Agricultural Radiobiology and Radioecology	1	90	3
6	Biosafety	2	90	3
7	Design bioprocess	3	120	4
8	Biotechnology in agriculture and biotechnology in environmental biotechnologies	2	90	3
9	Biomarketing of biotech products	3	60	2
Total (Disciplines offered by University)			840	28
2.2. Disciplines offered by students				
2.2.1. Specialization "Biosafety and Bioethics"				
1	Microclonal plant propagation	3	90	3
2	Technology in vitro in crop growing	3	90	3
3	Biotechnology Biosafety	3	90	3
4	Immune Biotechnology	3	90	3
5	Biology of individual	3	90	3
6	Cell selection for resistance	3	90	3
Total (Disciplines offered by students)			540	18
2.2.2. Specialization "DNA-certification and mapping the genome"				
1	Diagnosis and identification of GMO DNA Passport	3	120	4
2	Cell and Molecular Biology	3	120	4
3	Population genetics	3	90	3
4	Genetic Engineering	3	90	3
5	Molecular Virology	3	120	4
Total (Disciplines offered by students)			540	18
Total for elective part			1140	48
3. OTHER TYPES OF TRAINING				
1	Production Practice	1, 2	300	10
2	Implementation of research at the departments	4	900	30
3	Preparation and defense of master's work	4	150	5
Total			1350	45
Total for Specialty			3600	120

Annotations educational plan disciplines

1. STANDARD ACADEMIC DISCIPLINES

Philosophy of science and innovation. Studying the specifics of the philosophy of science and innovation development as a special type of human knowledge and as an academic discipline. The main stages of the historical development of the major trends and methodological techniques solve the main problems of philosophy of science based on the comparative characteristics of classical and nonclassical are considered. Postnonclassical ideals of scholarship. Studying ontological, epistemological, epistemological, methodological, structural and organizational, ideological, moral values and principles of measurement philosophy of science. Philosophical analysis of specific

current state of Ukrainian and world science, the prospects for their development and interaction with other spheres of social life, and basic problems of biology and ecology.

Civil defense. Examining the functions and tasks of a unified state system of prevention and emergency response, protection of economic activity, providing practical skills for the securing of economic activity and its surrounding area.

World agriculture and food resources. Economics of agriculture in developed countries. Globalization of the world and the problem of human food. Food and feed capabilities continents. Food resources of crop and livestock sector. Food of animal resources sector oceans. Food pyramid nutrition. The world market for crop production, animal husbandry and its trends. Features pricing of agricultural products and food resources in developed countries. International scientific and technological cooperation in agriculture and food resources.

Strategy of sustainable development of nature and society. Studying provision of practical implementation mechanisms, coordination and harmonization of social, economic and environmental sustainable society in the country, organizes plans and timing of stages of the objectives of sustainable development. It promotes mastery and skills monitoring of indicators of sustainable development, identifying environmental risks and hazards for human development and sustainable development, the use of international agreements and documents related to sustainable development, developing plans and programs (region, city, town) in the transition to sustainable development of Ukraine and other countries in transition economy.

Applied Genetics with the basics of Cytology Mechanisms of destruction of the biosphere, methods and techniques of environmental management. Geotechnological, socialeconomical technological ecological and environmental research, the specific relations between organisms and the environment they exist in different geographical areas. Features of natural resources, development of environmental regulations and technical means of environmental protection, restoration of destroyed ecosystems.

Ecology biotechnology. Biotransformation, biodegradation bioavailability of major biochemical pathways of microbiological transformation of organic xenobiotics and genetic bases of creation of recombinant microorganisms, degradation of organic xenobiotics, pollutants biodegradation of inorganic nature, natural or synthetic polymeric materials, environments, anaerobic biological treatment, systems design and construction of anaerobic biological treatment, bioremediation soil bioremediation «in situ», «off site», Biological removal of heavy metals and radionuclides, phytoremediation, biological purification and deodorization gas-emission microbiological processing of organic waste.

Plant Biotechnology. Studying basic directions and prospects of plant biotechnology, object and methods of biotechnology, culture of isolated cells and tissues, callus and suspension cultures, microclonal plant propagation and recovery from viral infections, morphogenesis and regeneration of plants under in vitro (organogenesis, embryogenesis), selection of plants under in vitro, cellular and genetic engineering methods for creating transgenic plants.

Alternative energy: bioenergy and bioenergetical conversion. Classification and properties of fuels, the essence of the process of burning fuels, technologies and technical means to bring solid biofuels to a condition ready for burning, especially the use of different types of biofuels, their advantages and disadvantages. Technical means for combustion of solid biofuels and biofuel pelletizing, control of key process parameters biodiesel installation, maintenance and repair of equipment for the production of biodiesel, granules and pellets.

Information Technology. Mastering the art information technology based on knowledge of technical components of computer systems and required complex software

to organize and implement information and research complex in ecology and biotechnology for processing textual, numerical and graphical information, conduct mathematical analysis of experimental studies, as well as preparation of advertising and promotional materials to highlight the research results, methods of mathematical models of the major abiotic and biotic processes, use of basic elementary functions and their combinations for constructing models.

Applied Ecology. The mechanisms of destruction of the biosphere, methods and techniques of environmental management. Geotechnological, technosocial economical and environmental research, the specific relationships of organisms and the environment they exist in different geographical areas. Features of natural resources, development of environmental regulations and technical means of environmental protection, restoration of destroyed ecosystems.

Biological statistics. Generates knowledge of basic methods of statistical data Math. Providing the skills of mathematical processing of the results of research, graphics.

2. ELECTIVE ACADEMIC DISCIPLINES

2.1. Disciplines offered by University

Methodology and organization of research with the principles of intellectual property. The aim of the discipline is formation of the system of knowledge in methodology, theory of method and research process, methodical support of scientific and research activity at the stages of preparation of a Master paper, formation of the ability to organize research of a specific issue using the whole complex of the traditional methods of research including general and special methods. The main task of the theoretical part of the course is introduction to students the current concepts of research creation, the principles of methodology of scientific perception and methods of research. The main task of the practical part is the development of self-education ability, mastering skills of formation and application of perceived methodological position of research. In case of mastering the course students have to improve their skills of search, assortment and processing of scientific information, accurate formulation of a problem, aim, task, object, subject, methods of research. Introduction to students the principles of intellectual property and direction of them to gain knowledge and skills concerning registration of rights of ownership, their protection, commercialization, estimation and management are envisaged.

Business foreign language. The general aim of the program of teaching of foreign language for the professional purpose is formation students' professional linguistic competencies that will contribute to their efficient operating in cultural variety of training and professional environment. The methods of search of new information in another language sources, linguistic methods of analytical study of another language sources are learned. Students study published original literature in another language and increase their lexical and grammatical skills.

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.

Instrumental methods of analysis. Studying the basic theoretical principles underlying physical, chemical and visual instrumental systematic study of biological objects in vitro and in vivo. Studying the basic techniques of electrophoresis, chromatography, colorimetry and spectrophotometry, the technique works on light, fluorescent, confocal and electron microscopes.

Agricultural Radiobiology and Radioecology. The general question of supply and migration of radionuclides in the environment and agriculture. The basics of specific sectors of agricultural production in the contaminated territories, technological methods of treatment of crop production and animal husbandry of radionuclides are considered. Studying the methodology of radiation monitoring in agricultural production.

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

Design. Bioprocess Studying the techniques of designing biotechnological equipment and techniques needed to master the development and introduction of new bioprocess.

Biotechnology in agriculture and biotechnology in environmental biotechnologies. The use of non-waste technologies and processes in agriculture, rational use of organic fertilizers, silage, feed additives, amino acids, enzymes, growth regulators, biological products, plant protection against pests without breaking agroecocenosis. Biotechnological processes in ecosystems that are created during the growth of environmentally friendly crop production are explained.

Biomarketing of biotech products are considered general principles and functions, basic categories and concepts of biomarketing of biotechnology products, pricing methods, methods of promotion and marketing, the organization and control of marketing activity that forms the basis of the marketing practices of biotech products. Attention is focused on the market research products or services biotechnological direction; range planning biotechnology products in enterprises; organization processes and sales promotion services or biotech company. The market economy makes new demands to specialist biotechnology. They must be qualified, have modern means of organization of industrial and commercial activities, timely adapt to changing of marketing environment, to ensure sustainable functioning of biotech companies.

2.2. Disciplines offered by students

2.2.1. Specialization “Biosafety and Bioethics”

Microclonal plants propagation Studying theoretical and practical aspects microclonal propagation of plants under in vitro, namely the principles and theoretical basis of preparation of culture media, the effect of growth regulators on the growth and development of plants, the physiological basis of morphogenesis, method and technique microclonal reproduction phenomenon of apical dominance. Attention is focused on microclonal propagation of herbaceous and woody plants (growing of tropical and subtropical plants, technical, cereal, vegetable, fruit, berry and tree crops).

Technologies In vitro in crop growing. The purpose of this course is to familiarize students with the principles of the use of biological knowledge in the production of valuable products virtually and gain an understanding of modern biotechnological processes based on genetic and cellular engineering.

Biotechnologies biosafety. Provides fundamental knowledge and practical aspects of ecological biotechnology industry, domestic and international legislation on biosafety biotechnology industries, the concept of the basic principles of design and selection of producers of biotechnology, biotechnological aspects of bakery, dairy, meat, alcohol, yeast, sugar, malt, beer and drinks.

Immune biotechnology. Masters get fundamental knowledge in immunology and immunochemistry, get acquainted with the latest developments in the field of science and technology for development of immunological products – vaccines, immunoglobulins, serum diagnostics including the use of genetic engineering. Get knowledge about methods of state control safety and quality of immunological agents. Special part involves mastering molecular genetic and immunochemical methods of analysis and purification method for obtaining biopolymers, for example proteins and nucleic acids.

Biology of individual The course focuses on the study of genetic information during ontogeny. During the course students are introduced to morphological aspects of development, as well as biochemical and molecular genetic mechanisms that accompany them during embryonic and postnatal development. Particular attention is paid to the molecular-genetic aspects of the determination and differentiation of cells and their stability during ontogeny.

Cell selection for resistant The foundations and methods of resistant plants producing to biotic and abiotic factors, especially the mutagenesis and selection of mutants *in vitro*, nature and mechanisms of somaclonal variability, obtain the resistant lines to pesticides, temperature stressors, pathogens are studied. The attention is focused on the principles of obtaining mutants, using cell technologies and their application in the cell engineering; effects of stressors on the plants, nature and mechanism of resistance to individual substances; *in vitro* selection methods and uses of resistant variants to salinity, ionic stress, pesticides and plant pathogens; types and selection auxotrophic and ts-mutants; creating new forms of plants with selective marker signs.

2.2.2. Specialization “DNA certification and mapping the genome”

Diagnosis and identification of GMO, DNA certification. The main purpose of discipline is the assimilation of theoretical foundations and practical formation of appropriate skills in the study of biological objects and genetically modified organisms, genotyping methods and techniques of agricultural plants and their DNA certification in accordance with modern scientific approaches, harmoniously combining the perception and understanding of practical and theoretical environmental knowledge for students and ecobiotechnological direction.

Cellular and molecular biology. The purpose of this course is to familiarize students with the current state of research and practical application fields of the discipline, course Objective is to build students' understanding of the unity of biological systems, resulting in structural and chemical similarities organization, and fundamental molecular processes that distinguish them from inanimate objects. Particular attention is given to mechanisms that ensure the preservation and realization of genetic information in the cell is the basic structure of any organism.

Population genetics. Discipline program provides an opportunity for students to expand knowledge and practical skills in basic and applied aspects of population genetics. Main topics of lectures and workshops include the study of population structure, variability of traits in plants, humans and animals, factors that alter the genetic structure of populations, natural selection, population genetics of modern methods used in agriculture, scientific research, biotechnology, ecology, medicine and genetic engineering.

Genetic Engineering. The purpose of this course is to familiarize students with current trends and challenges of genetic engineering methods of producing genetically modified organisms. Course description: creates a knowledge of methods of cloning DNA fragments structural features vectors from prokaryotes and eukaryotes, creating libraries genomes, restriction maps, obtaining drugs, obtaining transgenic plants and animals. As a result, the discipline master should be able to based on the latest achievements using the

guidelines, plan and choose the optimal conditions for transformation of recombinant DNA and genetic material.

Molecular virology. The acquisition of the teoretical foundations and practical skills appropriate formation in the study of biological objects based on classical and modern scientific approaches. Special part of the discipline makes it possible to learn the basic techniques of working with infectious materials, create diagnostic test kits for the identification of viruses, the diagnosis, identification of viruses using molecular biology techniques, to carry out genetic manipulation of viruses analyze genetic sequences and trace phylogenetic relationships, the need for training highly qualified specialists biotechnological areas.

**Master's course
in specialty "PLANT PROTECTION"
branch of knowledge "Agriculture and Forestry"**

Form of Training, Licensed number of persons:

- | | |
|-------------|------------|
| – Full-time | 75 persons |
| – Part-time | 45 persons |

Duration of Training:

- | | |
|--|----------|
| – Full-time educational and professional program | 1,5 year |
| – Full-time educational and scientific program | 2 years |
| – Part-time | 2 years |

Credits:

- | | |
|--|----------|
| – educational and professional program | 90 ECTS |
| – educational and scientific program | 120 ECTS |

Language of Teaching

Ukrainian, English

Qualification

Plant Protection Scientists

The concept of training

Experts in the field of plant protection should have interdisciplinary theoretical knowledge about future activities and development of practical skills application of knowledge gained in the process of production and training practices and master's work. During the program, students acquire knowledge in such areas: entomology, phytopathology, herbology and plant quarantine. Experts in Plant Protection should have profound knowledge of biology, ecology, distribution, and damage characteristics of plants, breeding of pests, ensure phytosanitary control of seed and planting material, plants, soil, air, holding science-based support on the integrated protection of agricultural crops from pests, providing counseling for professionals of agricultural companies, farmers and private owners in carrying out measures to protect crops from pests and controlling of the situation.

**Educational and professional Master's program
*Specialization "Phytosanitary monitoring and forecasting"***

The program provides training for work in the State regional and district alarm services and forecasting of harmful and beneficial biodiversity of phytocenosis; inspections of plant protection and quarantine, pest control services, scientific research institutions, control and toxicological laboratories and biological plant protection, in farms of different ownership.

Areas of employment for graduates

Graduates can work in supporting companies of forecasts and occurrence of pests, farms of different ownership, companies, associations, societies of agricultural direction, in the position of scientific-research institutions of plant protection in regional inspections of plant protection and related areas of work (agronomic and agrochemical service).

***Specialization "Biological justification of obligate and facultative
pathogens control"***

Demands obtaining by the experts of multilateral interdisciplinary knowledge regarding justification of environmentally friendly measures of restricting the development of the most common obligate and facultative parasites of major crops and development of the skills of practical application of the gained knowledge.

Areas of employment for graduates

Graduates can work as researchers in research institutions of Ukraine, as heads of laboratories, technicians, senior experts; in services for testing of plant varieties for resistance against pests, in seed inspections, etc.

Practical training

Teaching and research farms of NULES of Ukraine: PC of NULES "Agronomic Research Station", "Velykosnitynske TRF by the name of O. V. Muzychenko", TRF of NULES of Ukraine "Fruit and Vegetable Garden".

Research institutions of NAAS of Ukraine: Institute of Plant Protection, Institute of Microbiology and Virology, Institute of Horticulture, Institute of Ecological Hygiene and Toxicology by name of L.I. Medved, Institute of Zoology by name of I.I. Schmalhausen, Institute of Beekeeping, Institute of Agriculture, Institute of Bioorganic Chemistry, Research Center of the Institute of pomology by the name of L.P. Symerenko (Cherkasy reg., Horodyshe district, Mliev).

The State Veterinary and Phytosanitary Service of Ukraine and its regional units.

PC "Agro-Soyuz" Dnipropetrovsk region, CLL "Barishevsky Grain Company", Rivne Plant Protection Research Station, State Kostopolsky varietal station in Rivne region, agency of firms in Ukraine producing pesticides: Syngenta, Monsanto, BASF, Arysta Life Science, Bayer, JSC "Trans Oil" and others.

Proposed Topics for Master Theses

1. Optimization of useful insect culture in laboratory and production conditions.
2. Environmental peculiarities of leaf-eating fruit pests and influence of abiotic factors on the dynamics of their population.
3. Influence of anthropogenic factors on development of harmful insects.
4. Influence of biotical factors on development of herbivorous insects in green house terms.
5. Activity of ferments and their role in resistance to plant diseases.
6. Research of mikotoksin role in development of plant diseases.
7. Resistance of microbial cenoss structures of basic soil types while different use.
8. Comprehensive effect of herbicides on sowing of cereals, legumes, technical, oil and vegetable crops.
9. Specific composition and bio-ecological features of basic rodents at field crops and measures of their control.
10. Measures of imported vegetable material protection from managed quarantine and unquarantine herbivorous insects.

Academic rights of applicants entering Master course

Applicants with the Diploma of Bachelor can continue training in connected specialties including ones of the field of knowledge "Specific categories", (table 2) and other specialties (table 3) in accordance with the Terms of enrolment to higher educational institutions of Ukraine in 2015 approved by the Order of the Ministry of education and science of Ukraine on October 15, 2014 № 1172 and the Regulations of enrolment to National University of Life and Environmental Sciences of Ukraine (basic institution, Kyiv) for 2015.

**Curriculum of Master training in specialty “Plant protection”
Educational and qualification Master program**

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	Logistic and communications in Plant Protection	1	90	3
2	Standardization and jurisprudence in plant protection	2	30	2
3	Managing the number of weeds in agrophytocenoses	1	90	3
4	Complex systems of crop plant protection from diseases	1	90	3
5	Phytofagous insect management	1	90	3
6	Civil Defence	1	60	2
7	Toxicology of Pesticides	2	90	3
8	Technology of mass rearing of beneficial insects	2	120	4
9	Epiphytotiology	1	90	3
10	Crop Seed pathology	2	90	3
11	Labour protection in plant protection	3	60	2
Total for standard part			900	30
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by University				
1	Methodology and organization of scientific research on the basics of intellectual property	1	90	3
2	Business foreign language	1	150	5
3	Agricultural policy	2	90	3
4	Economic and organization of agricultural service	2	60	2
5	Biosafety in Plant Protection	2	90	3
6	Desinfection of Management objects	1	90	3
7	Methods of plant protectant testing	2	90	3
Total (Disciplines offered by University)			660	22
2.2. Disciplines offered by students				
2.2.1. Specialization “Phytosanitary monitoring and forecasting”				
1	Experimental research methods in entomology	3	90	3
2	Insect pathology	3	120	4
3	Insects ecology	3	120	4
4	Insect physiology	3	120	4
5	Technical entomology	3	120	4
Total (Disciplines offered by students)			570	19
Total for elective part			1230	41
3. OTHER TYPES OF TRAINING				
1	Production Practice	1, 2	330	11
2	Preparation and defense of master's work	4	240	8
Total			570	19
Total for Specialty			2700	90

**Curriculum of Master training in specialty “Plant protection”
Educational and scientific Master program**

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	Logistic and communications in Plant Protection	1	90	3
2	Standardization and jurisprudence in plant protection	2	30	2
3	Managing the number of weeds in agrophytocenoses	1	90	3
4	Complex systems of crop plant protection from diseases	1	90	3
5	Phytofagous insect management	1	90	3

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
6	Civil Defence	1	60	2
7	Toxicology of Pesticides	2	90	3
8	Technology of mass rearing of beneficial insects	2	120	4
9	Epiphytotiology	1	90	3
10	Crop Seed pathology	2	90	3
11	Labour protection in plant protection	3	60	2
Total for standard part			900	30
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by University				
1	Methodology and organization of scientific research on the basics of intellectual property	1	90	3
2	Business foreign language	1	150	5
3	Agricultural policy	2	90	3
4	Economic and organization of agricultural service	2	60	2
5	Biosafety in Plant Protection	2	90	3
6	Desinfection of Management objects	1	90	3
7	Methods of plant protectant testing	2	90	3
Total (Disciplines offered by University)			660	22
2.2. Disciplines offered by students				
2.2.1. Specialization "Biological justification of obligate and facultative pathogens control"				
1	Actinomycetes diseases of plant	3	90	3
2	Physiological and biochemical aspects of plant resistance to disease	3	120	4
3	Mycotoxicology	3	120	4
4	Methods for infectious backgrounds forming in phytopathology	3	60	2
5	Pathogenesis in plant production	3	90	3
6	Pathological process of plants' root system	3	90	3
Total (Disciplines offered by students)			570	19
Total for elective part			1230	41
3. OTHER TYPES OF TRAINING				
1	Production Practice	1, 2	300	10
2	Implementation of research at the departments	4	960	32
3	Preparation and defense of master's work	4	210	7
Total			1470	49
Total for Specialty			3600	120

Annotations educational plan disciplines

1. STANDARD ACADEMIC DISCIPLINES

Logistic and communication in Plant Protection. The course is focused at analyze of supply, transpiration and storage of plant protection products with identification factors effecting level of production and sells of microbial products, pesticides and agrochemicals in different regions of Ukraine. The course is a foundation for estimation of plant protection products effective transportation of by mean using logistical models and computer technologies, considering mechanism of synergetic efficient use of compounds in local, regional and state levels.

Standardization and jurisprudence in plant protection. Discipline "Standardization and jurisprudence in plant protection", including study thus questions, discusses the main normative documents that regulate effective implementation of various technological operations in the protection plants, the main legal aspects the application of

different pesticides in crop production. Compiling the content of courses taken into account the laws of Ukraine on standardization and safety of plant products

Managing the number of weeds in agrophytocenoses. Involves the study of factors that regulate the number of weeds in phytocenoses crops, environmental and economically sound principles of integrated crop protection from weeds.

Complex systems of crop plant protection against diseases. Using the newest informational and specialized technologies of plant protection against diseases. The control of development of diseases of field, vegetable and berry crops and grape plantings are.

Phytophagous insect management. Phytophagous insect management deals from one side with key agricultural pests and from another side provide foundation for the population dynamic forecast and management (regulation) of phytophagous insects pests which is the important part of crop production technology.

Civil defence. Is an effort to protect the state citizens from military attacks.

Toxicology of Pesticides. Contents discipline toxicology of pesticides involves voluminous factual material on the rational and environmentally safe use of pesticides in agriculture, given their biological activity and the impact on the environment. We study the mechanism of action of pesticides on pests, crops, mammals, humans and the environment in general.

Technology of mass rearing of beneficial insects. The course deals with modern technologies of mass rearing of beneficial insects. Course objective is to teach students about theoretical foundation and technologies of laboratory and mass rearing of useful insects, nematodes and mites that is commercially used in green houses and open fields.

Epiphytology. The program provides for familiarization of students with the science of epiphytology and different protective measures against diseases based on the intense increasing of infection and the interconnection between amount of infectious onset and disease development, to determine an influence of phytosanitation, selection of disease resistance, fungicides application and their influence on pathological process of limitation and abolition of epiphytologies.

Crop Seed pathology. The condition of seed infection, methods of phytopathological examination, ways of decrease of affect and damage of seed; seed pathology of basic groups of cultures, saprotrophic mycobiota of seed.

Labour protection in plant protection. It deals with studying of accident prevention at all types of works, which are related to application, transportation, storage of pesticides, and also laws of Ukraine and instructional materials concerning plant protection, as well as social and legal defense of specialists of this industry.

2. ELECTIVE ACADEMIC DISCIPLINES

2.1. Disciplines offered by University

Methodology and organization of research with the principles of intellectual property. The aim of the discipline is formation of the system of knowledge in methodology, theory of method and research process, methodical support of scientific and research activity at the stages of preparation of a Master paper, formation of the ability to organize research of a specific issue using the whole complex of the traditional methods of research including general and special methods. The main task of the theoretical part of the course is introduction to students the current concepts of research creation, the principles of methodology of scientific perception and methods of research. The main task of the practical part is the development of self-education ability, mastering skills of formation and application of perceived methodological position of research. In case of mastering the course students have to improve their skills of search, assortment and processing of scientific information, accurate formulation of a problem, aim, task, object,

subject, methods of research. Introduction to students the principles of intellectual property and direction of them to gain knowledge and skills concerning registration of rights of ownership, their protection, commercialization, estimation and management are envisaged.

Business foreign language. The general aim of the program of teaching of foreign language for the professional purpose is formation students' professional linguistic competencies that will contribute to their efficient operating in cultural variety of training and professional environment. The methods of search of new information in another language sources, linguistic methods of analytical study of another language sources are learned. Students study published original literature in another language and increase their lexical and grammatical skills. Methods and linguistic peculiarities of annotation and synopsis of another language sources, the principles of translation of professional oriented another language sources are studied.

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.

Economic and organization agricultural service. This objects economic efficiency of agricultural service in market relations. Future specialists know specification of economic and business relations between agricultural farms and another spheres of agricultural industry.

Biosafety in Plant Protection. Includes the study of the impact of pesticides on living objects environment, toxicological and hygienic characteristics of chemical classes of pesticides, safety requirements at work, what related with the use of pesticides.

Disinfestation of Management objects. Foresees the study of technologies of disinfection of imported vegetable materials and plant products with the purpose of prophylaxis or eliminations of quarantine species while export-import trading operations.

Methods of plant protectant testing. The basic theoretical principles, classification of plant protection products, testing and assessment of technical, commercial and economic efficiency of modern pesticides on major crops.

Educational and professional Master's program

2.2. Disciplines offered by students

2.2.1. Specialization “Phytopsanitary monitoring and forecasting”

Experimental research methods in entomology. They are lighted up the modern methods of experiment planning, supervision and accounts, as well as making book-marks, carrying out the experiments, peculiarities of statistical treatment of the research results.

Insect pathology. Morphological characteristics, pathogenesis and epizootiology of important pathogen species in each major taxonomic group with examples of use in biological control programs and disease mitigation methods. In the laboratory, participants can learn how to identify the pathogen groups by observing the gross pathology of infected insects and to use phase contrast microscopy to observe the isolated pathogens. Laboratory techniques for studying and archiving pathogens were demonstrated and practical training provided.

Insects ecology. Is based on the study of influence of the different factors of filament on the regulation of the number of insects, basis morphological and physiological species and means existence.

Technical entomology. Theoretical and practical skills of creating and controlling of insect culture during selection of initial material and introduction in artificial reproduction condition up to creation of initial population is considered.

Insect physiology. Insect physiology-is a study of internal and external structure and function of inspiration, extractor, digestion and circulatory systems, immunity reactions of hemicycle, functional organization of nervous system and chemoreceptor, endocrine organs, attractants and repellents and the role of hormones in reproduction and life cycle.

Educational and scientific Master's program

2.2. Disciplines offered by students

2.2.1. Specialization “*Biological justification of obligate and facultative pathogens control*”

Actinomitsetes diseases of plant. The study of their biological and ecological features will be instrumental in timely diagnostics of actinomycosis and conducting of protective measures. Monitoring of actinomitsetes diseases. Diagnostics of symptoms of actinomitsetes diseases, learning methods of agent recovery in pure culture.

Physiological and biochemical aspects of plant resistance to diseases. Physiological and biochemical features of plants, which increasing plant immunity to diseases, training with methods of studying anatomical, morphological, physiological, biochemical characteristics of infectious and healthy plants to determine plant resistance to disease.

Mycotoxichology. Discipline allows students to analyze the features of toxic substances micromycetes, to characterize toxicogenic ability of phytopathogenic fungi, to justify measures to reduce damage plants, to overtake of method for determining mycotoxins in plant products.

Methods for infectious backgrounds forming in phythopathology. Discipline is one of the main training disciplines for plant protection specialists and is based on using of infectious backgrounds in selection of new crop varieties with high resistance to diseases.

Pathogenesis in plant production. Discipline explores the main diseases of plant production in the post-harvest period, its loss through effect of pathogenic organisms and influence of external environmental factors on the pathogenic development.

Pathological process of plants' root system. The main purpose of discipline is a study of species composition of the ground pathogens, which cause diseases of plant root system, research of roots pathology symptomatology, methods of their monitoring, establishment of bioenvironmental properties of microorganisms and features of the pathological process at the defeat of plants rootage, development and improvement of measures on the increase of resistance of agricultural crops against ground micromycetes.

**Master's course
in specialty "QUARANTINE OF PLANTS"
branch of knowledge "Agriculture and Forestry"**

Form of Training, Licensed number of persons:	
– Full-time	50 persons
Duration of Training:	
– Full-time educational and professional program	1,5 year
Credits:	
– educational and professional program	90 ECTS
Language of Teaching	Ukrainian, English
Qualification	Inspector Plant Quarantine

The concept of training

Experts in the field of plant protection should have interdisciplinary theoretical knowledge about future activities and development of practical skills application of knowledge gained in the process of production and training practices and master's work. During the program, students acquire knowledge in such areas: entomology, phytopathology, herbology and plant quarantine. Experts in Plant Protection should have profound knowledge of biology, ecology, distribution, and damage characteristics of plants, breeding of pests, ensure phytosanitary control of seed and planting material, plants, soil, air, holding science-based support on the integrated protection of agricultural crops from pests, providing counseling for professionals of agricultural companies, farmers and private owners in carrying out measures to protect crops from pests and controlling of the situation.

**Educational and professional Master's program
*Specialization "Quarantine of Plants"***

Program provides training of specialists with knowledge of domestic and European phytosanitary legislation; skills of pest control object control of internal and external plant quarantine, phytosanitary thorough examination; pest risk analysis of pests on the possibility of acclimatization in Ukraine; potential environmental and economic impacts and measures on their localization and elimination.

Areas of employment for graduates

Graduates are able to work as inspectors in the State Veterinary and Phytosanitary Service of Ukraine and its regional branch; quarantine laboratories in positions entomologist, plant pathologist, herboloha, nematoloha; in research institutions of Ukraine as researchers, technicians and others.

Practical training

Teaching and research farms of NULES of Ukraine: PC of NULES "Agronomic Research Station", "Velykosnitynske TRF by the name of O. V. Muzychenko", TRF of NULES of Ukraine "Fruit and Vegetable Garden".

Research institutions of NAAS of Ukraine: Institute of Plant Protection, Institute of Microbiology and Virology, Institute of Horticulture, Institute of Ecological Hygiene and Toxicology by name of L.I. Medved, Institute of Zoology by name of I.I. Schmalhausen, Institute of Beekeeping, Institute of Agriculture, Institute of Bioorganic Chemistry, Research Center of the Institute of pomology by the name of L.P. Symerenko (Cherkasy reg., Horodyshe district, Mliev).

The State Veterinary and Phytosanitary Service of Ukraine and its regional units.

PC "Agro-Soyuz" Dnipropetrovsk region, CLL "Barishevsky Grain Company", Rivne Plant Protection Research Station, State Kostopolsky varietal station in Rivne region, agency of firms in Ukraine producing pesticides: Syngenta, Monsanto, BASF, Arysta Life Science, Bayer, JSC "Trans Oil" and others.

Proposed Topics for Master Theses

1. Optimization of useful insect culture in laboratory and production conditions.
2. Environmental peculiarities of leaf-eating fruit pests and influence of abiotic factors on the dynamics of their population.
3. Influence of anthropogenic factors on development of harmful insects.
4. Influence of biotical factors on development of herbivorous insects in green house terms.
5. Activity of ferments and their role in resistance to plant diseases.
6. Research of mikotoksin role in development of plant diseases.
7. Resistance of microbial cenosis structures of basic soil types while different use.
8. Comprehensive effect of herbicides on sowing of cereals, legumes, technical, oil and vegetable crops.
9. Specific composition and bio-ecological features of basic rodents at field crops and measures of their control.
10. Measures of imported vegetable material protection from managed quarantine and unquarantine herbivorous insects.

Academic rights of applicants entering Master course

Applicants with the Diploma of Bachelor can continue training in connected specialties including ones of the field of knowledge "Specific categories", (table 2) and other specialties (table 3) in accordance with the Terms of enrolment to higher educational institutions of Ukraine in 2015 approved by the Order of the Ministry of education and science of Ukraine on October 15, 2014 № 1172 and the Regulations of enrolment to National University of Life and Environmental Sciences of Ukraine (basic institution, Kyiv) for 2015.

Curriculum of Master training in specialty "Quarantine of Plants" Educational and qualification Master program

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	Civil Defence	1	90	3
2	Labour protection in plant	3	90	3
3	Desinfection of Management objects	2	120	4
4	External and internal quarantine	2	90	3
5	Methods for inspection and examination of objects of regulation	1	90	3
6	Quarantine pests	1, 2	210	7
7	Phytosanitary law and international cooperation	2	120	4
Total for standard part			810	27
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by University				
1	Methodology and organization of scientific research on the basics of intellectual property	1	90	3
2	Business foreign language	1	150	5
3	Agricultural policy	2	90	3

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
4	Economic and organization of agricultural service	2	90	3
5	Biosafety in Plant Protection	2	90	3
6	Desinfection of Management objects	1	90	3
7	Methods of plant protectant testing	2	90	3
Total (Disciplines offered by University)			690	23
2.2. Disciplines offered by students				
2.2.1. Specialization "Quarantine of Plants"				
1	International phytosanitary standards	3	150	5
2	Introductory pests	3	120	4
3	Quarantine pest risk evaluation	3	120	4
4	Geography quarantine organisms	3	150	5
5	Harmful organisms Ukraine in the international phytosanitary	3	150	5
Total (Disciplines offered by students)			690	23
Total for elective part			1380	46
3. OTHER TYPES OF TRAINING				
1	Production Practice	1, 2	330	11
2	Preparation and defense of master's work	4	180	6
Total			510	17
Total for Specialty			2700	90

Annotations educational plan disciplines

1. STANDARD ACADEMIC DISCIPLINES

Civil defence. Is an effort to protect the state citizens from military attacks.

Labour protection in plant protection. It deals with studying of accident prevention at all types of works, which are related to application, transportation, storage of pesticides, and also laws of Ukraine and instructional materials concerning plant protection, as well as social and legal defense of specialists of this industry.

Disinfestation of Management objects. Foresees the study of technologies of disinfection of imported vegetable materials and plant products with the purpose of prophylaxis or eliminations of quarantine species while export-import trading operations.

External and internal plant quarantine. The course examines the procedure of phytosanitary control of import and export objects adjustment at the state border of Ukraine, at home to prevent the importation into the country of quarantine organisms. And organization, methods, timing control surveys farmland to detect quarantine organisms.

Methods for inspection and examination of objects of regulation. The most responsible chain system of quarantine measures is to determine the quarantine status of goods imported from abroad, determined the review and phytosanitary examination. Mastering the technique of detection of quarantine and other hazardous pests, plant diseases and weeds, mastering the methods of production micropreparations, storage of samples and prevention of quarantine rules. methods of inspection and sampling of the regulated objects, vehicles and phytosanitary examination method of considering diversity import-export trading.

Quarantine pests. The main goal of discipline is to study the biology of quarantine features species of insects, diseases, weeds missing in Ukraine, scientific substantiation of pest risk in case of delivery and possible acclimatization in our country, their harmful for agriculture, forestry and landscape management, potential environmental and economic damages as a result of their life.

Phytosanitary law and international cooperation. Provides study phytosanitary rules of import from abroad, transportation within the country, and exports of agricultural

products. Study on plant quarantine laws in Ukraine and familiarization with foreign experience that the regulation in phytosanitary field.

2. ELECTIVE ACADEMIC DISCIPLINES

2.1. Disciplines offered by University

Methodology and organization of research with the principles of intellectual property. The aim of the discipline is formation of the system of knowledge in methodology, theory of method and research process, methodical support of scientific and research activity at the stages of preparation of a Master paper, formation of the ability to organize research of a specific issue using the whole complex of the traditional methods of research including general and special methods. The main task of the theoretical part of the course is introduction to students the current concepts of research creation, the principles of methodology of scientific perception and methods of research. The main task of the practical part is the development of self-education ability, mastering skills of formation and application of perceived methodological position of research. In case of mastering the course students have to improve their skills of search, assortment and processing of scientific information, accurate formulation of a problem, aim, task, object, subject, methods of research. Introduction to students the principles of intellectual property and direction of them to gain knowledge and skills concerning registration of rights of ownership, their protection, commercialization, estimation and management are envisaged.

Business foreign language. The general aim of the program of teaching of foreign language for the professional purpose is formation students' professional linguistic competencies that will contribute to their efficient operating in cultural variety of training and professional environment. The methods of search of new information in another language sources, linguistic methods of analytical study of another language sources are learned. Students study published original literature in another language and increase their lexical and grammatical skills. Methods and linguistic peculiarities of annotation and synopsis of another language sources, the principles of translation of professional oriented another language sources are studied.

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.

Economic and organization agricultural service. This objects economic efficiency of agricultural service in market relations. Future specialists know specification of economic and business relations between agricultural farms and another spheres of agricultural industry.

Biosafety in Plant Protection. Includes the study of the impact of pesticides on living objects environment, toxicological and hygienic characteristics of chemical classes of pesticides, safety requirements at work, what related with the use of pesticides.

Disinfestation of Management objects. Foresees the study of technologies of disinfection of imported vegetable materials and plant products with the purpose of prophylaxis or eliminations of quarantine species while export-import trading operations.

Methods of plant protectant testing. The basic theoretical principles, classification of plant protection products, testing and assessment of technical, commercial and economic efficiency of modern pesticides on major crops.

2.2. Disciplines offered by students

2.2.1 Specialization “Plant quarantine”

International phytosanitarian standards. Discipline studies the types of modern international phytosanitary standards and purposes of their creation, application and use.

Introductory pests. Discipline foresees the capture of student knowledge of distribution geography of adventive harmful organisms with the purpose of their identification and express-diagnosis of harmful organisms.

Quarantine pest risk evaluation. The harmful organisms of plants can make a risk which is added an estimation. He can be decreased by introduction of the technically grounded phytosanitary measures which will influence minimum on the free trading plants and plants materials.

Location quarantine organisms. Study centers of origin of pests and climatic conditions in which these species live in phytocenoses. Possible ways of their settlement and entry into Ukraine.

Harmful organisms Ukraine in the international phytosanitary. We consider the species that may be harmful to other countries. In case of detection in plant production need additional treatments.

FACULTY LIVESTOCK SCIENCE AND WATER BIORESOURCES

Dean – Kondratiuk Vadim Mikolayovich, Associated Professor, Candidate of Agricultural Science

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Location: Building № 1, Room. 80

The faculty organizes and coordinates the educational process of graduate degree in specialty:

8.09010201 “Technology of production and processing of livestock products”

Graduating departments:

Genetics, Breeding and Biotechnology of animals

Tel.: (044) 527-82-30

E-mail: krozgen@ukr.net

Head of Department – Andrey Hetia, candidate of Agricultural Sciences, Senior Researcher

Milk and Beef Production Technology

Tel.: (044) 527-83-93, (044) 527-82-32

E-mail: ugnivenko@i.ua

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

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

Tel.: (044) 527-85-55

E-mail: feeding_animals@ukr.net

Head of Department – Kryvenok Nikolai, Associated Professor, Doctor of Agricultural Science

Horse Breeding and Beekeeping

Tel.: (044) 527-82-68

E-mail: horse_chair@twin.nauu.kiev.ua

Head of Department – Skotsyk Vitaly, Candidate of Agricultural Sciences, Doctor of Economics

Technology in poultry, pig and sheep farming

Tel.: (044) 527-87-60, 527-84-78, 527-88-49

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Head of Department – Doctor of agricultural sciences, Professor Yuri Zasuha

8.09020101 "Water Bioresources"

Graduating departments:

Aquaculture

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

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

Ichthyology and Hydrobiology

Tel.: (044) 527-86-83

E-mail: gidrobio@ukr.net

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

**Master's course
in specialty "TECHNOLOGY OF PRODUCTION AND PROCESSING
OF LIVESTOCK PRODUCTS"
branch of knowledge "Agriculture and Forestry"**

Form of Training, Licensed number of persons:

- | | |
|-------------|------------|
| – Full-time | 90 persons |
| – Part-time | 60 persons |

Duration of Training:

- | | |
|--|-----------|
| – Full-time educational and professional program | 1,5 years |
| – Part-time | 2 years |

Credits

90 ECTS

Language of Teaching

Ukrainian, English

Qualification

Livestock products research
engineer

Concept of training

The concept of Master's degree training level 8.09010201 with major in "Technology of production and processing of livestock products" is to have combined theoretical studies, practical training and research to build professional skills in modern energy-saving technologies of high-quality animal products.

The aim of the concept is to satisfy the need for professionals possessing systematic knowledge and ability to solve problems of innovative nature in the livestock industry; scientific basis of research, data acquisition and data statistical analysis; forecasting animal productivity, ability to use inbreeding, improve and create animal branches and species, preserve the gene pool, develop animal breeding programs; design animal feeding trials; be able to analyze, organize and process scientific information on standardized animal feeding; develop and introduce new animal husbandry systems and methods; control physical, chemical and biological environmental factors; perform testing and sanitary-hygienic evaluation of new fodder varieties and additives, processing equipment, animal care products and study their behavior to obtain from them the maximum number of products in terms of their genetic potential; develop various models of technological livestock production processes; analyze populations, species and types of farm animals, determine their and commercial value by origin, individual qualities and progeny; optimize livestock breeding programs; manage milk production of cows based on deep knowledge of lactation physiology, dairy cattle husbandry, specifics of feeding high production cows, processing equipment of dairy companies and intensive technologies of breeding of young cattle stock, management and marketing principles of dairy farming; stimulate egg production of poultry, sheep wool production, yield of bee families, meat productivity of cattle, pigs, chickens and other farm animals; know how to use milk stimulants; manage meat productivity of cattle under market conditions of the industry based on a profound knowledge of beef cattle biology, husbandry and feeding systems, features of breeding environmentally friendly beef; develop competitive pig production and processing technologies; be able to maintain the modern production process and primary processing of table eggs and poultry meat, poultry marketing system; manage processes of procuring voluminous forage, preparation of animal feed and feed additives and know methods of their effective use to feed ruminants and monogastric animals; estimate and predict efficiency of farm animals, evaluate genetic resources in the riding, trotting and draft horse breeding, their rational use in the racing industry, equestrian sport and non-

traditional horse breeding, possess the skills of implementing modern methods of experimental studies.

Educational and professional Master's program ***Specialization "Animal's Genetic Resources"***

The main objective of the master program is to train specialists in animal breeding who are able to work in the Agency for Animal Identification at the Ministry of Agrarian Policy of Ukraine or its regional branches, in the Chief State Breeding Inspectorate of the Ministry of Agrarian Policy of Ukraine or its regional branches, in research institutions, in breeding farms dealing in setting up, improvement or breeding dairy, dual-purpose and beef cattle, sheep, goats, poultry and horses.

Areas of employment for graduates

Upon completion of the master's degree program, the managers/ specialists licensed to produce and process, improve and develop animal products can work in public and private breeding farms, provincial and district departments of agriculture, agriculture breeding centers of different levels, as heads of agricultural enterprises and also in higher educational institutions of I-II accreditation levels and in academic schools.

Specialization "Animal Feeding"

The program aims to provide future research engineers with current knowledge and skills in procuring voluminous forage, preparing fodder and feed additives and getting acquainted with methods of their effective use to feed ruminants and monogastric animals. The program is aimed at learning the basic aspects of performing animal feeding trials, systematization and analysis of scientific information and research results, which presumes knowledge in the following areas that define specialization of the master's programs: animal nutrition, feed resources in animal breeding; feeding of ruminant animals; feeding of monogastric animals; planning of trials and experiments. Studying of these sections contributes to solving practical problems related to production and processing of high quality and biologically safe animal products and to effectively using the acquired knowledge in professional activities to generate new innovative knowledge in animal feed area.

Areas of employment for graduates

After completion of the master's program the specialists/managers can work in production livestock and animal feed industries and companies, in feed and feed additives distributor companies, at NAAS of Ukraine's research institutions and apply for the post-graduate studies in graduate schools.

Specialization "Dairy cattle breeding"

This program provides students with modern deep knowledge of dairy cattle breeding under industry market conditions.

Areas of employment for graduates

After completion of the master's program the specialists/ managers can work in livestock production enterprises of different ownership forms, at II level of accreditation higher education institutions, NAAS of Ukraine's research institutions and apply for the post-graduate studies in graduate schools.

Specialization “Production and processing of pig breeding products”

The master's degree program considers the issues related to development of body systems and organs during ontogenesis, characteristics of gestation, generative processes, lactation and energy metabolism and thermoregulation in pigs; breeding biology; behavior of different gender and age groups; adaptation to the environment. The students also examine the issues of animal herding and selection, pure breeding and crossbreeding methods, hybridization and large-scale breeding; methods and ways of identifying estrus cycle in sows; breeding boars and sows; exploitation of breeding boars, methods of obtaining and preparing boar semen, artificial insemination.

Areas of employment for graduates

After having successfully completed the master's degree program, the specialists licensed to produce and process, improve and develop animal products can apply for employment with livestock production enterprises of different ownership forms, at higher education institutions of I and II accreditation levels, NAAS of Ukraine's research institutions as well as apply for the post-graduate studies in graduate schools.

Specialization “Poultry breeding”

The master's degree program provides students with the opportunity to obtain knowledge in biology of chickens, turkeys, ducks, geese, quail, guinea fowl, ostriches and morphophysiological patterns observed in growth of different bird species and to acquire skills of poultry breeding, egg incubation, feeding poultry and egg and poultry meat production by using modern technology and latest equipment, subject to strict observation of veterinary and sanitary measures and quality control through current poultry husbandry management system.

Areas of employment for graduates

After having successfully completed the master's degree program, the professionals can apply for employment with poultry breeding enterprises of different ownership forms, poultry incubation stations, poultry farms, animal feed mills, in the higher educational institutions of I-II accreditation levels, research institutions as well as apply for the post-graduate studies in graduate schools.

Specialization “Equine and horse-breeding”

The master's degree program provides specialist with knowledge in the field of breeding and feeding horses of various breeds and is aimed at studying racing industry, sports, organization of small and medium-sized businesses in the context of the industry's future development.

Areas of employment for graduates

After having successfully completed the master's degree program, the specialists can apply for employment with public and private breeding enterprises, zonal research institutes and stations, at racetracks and in equestrian centers, tourist bases and medical centers and may also apply for and attend graduate school.

Specialization “Apiculture”

The program focuses on studies in biology of bee colonies, basics of honey bee genetics, selection work in apiculture industry, bee breeding, breeding of queen bees and inseminating them to use breeding material for increasing productivity of bees and entomophile crops through their pollination. The students enlisted in this program acquire

deep knowledge in assessing nectar resources and ability to efficiently use them for improvement of honey harvest and various bee products, effectively use bees for pollination of crops. They will be able to introduce mechanization in bee production processes, know how to handle tools, equipment and automation means to maintain and reproduce bee colonies and reproduce breeding material; operate apiculture facilities. The students under this program will also acquire extensive knowledge about origins, composition, properties and processes of apiculture products and their manufacture, processing and storage processes, standardization and implementation in accordance with market needs.

Areas of employment for graduates

After having successfully completed the master's degree program, the specialists can apply for employment with the leading bee-breeding enterprises, NAS and NAAS of Ukraine's scientific research institutions.

Specialization "Production and processing of sheep breeding products"

The master's degree program considers the issues related to development of body systems and organs during ontogenesis, characteristics of gestation, generative processes, lactation and energy metabolism and thermoregulation in sheeps; breeding biology; behavior of different gender and age groups; adaptation to the environment. The students also examine the issues of animal herding and selection, pure breeding and crossbreeding methods, hybridization and large-scale breeding; methods and ways of identifying estrus cycle in sows; breeding boars and sows; exploitation of breeding boars, methods of obtaining and preparing boar semen, artificial insemination.

Areas of employment for graduates

After having successfully completed the master's degree program, the specialists licensed to produce and process, improve and develop animal products can apply for employment with livestock production enterprises of different ownership forms, at higher education institutions of I and II accreditation levels, NAAS of Ukraine's research institutions as well as apply for the post-graduate studies in graduate schools.

Practical training

The aim of practical training is to provide students with knowledge in modern methods, organization forms and tools they can use in their future profession, make them build knowledge and skills based on the knowledge base they have acquired in the University sufficient to make independent decisions in specific lines of work under real market conditions, educate in them the need for regularly replenishing their knowledge and applying it in practice.

Practical training is continuous and consistent and the students undergoing this it obtain the desired scope of practical knowledge and skills as required by qualification of the master's degree.

The main objective of practical training is to consolidate and expand students' theoretical knowledge and their practical skills in organization and management of basic agricultural production processes, and in scientific research.

While studying at the University, the students receive profound theoretical and practical training in modern laboratories equipped with new equipment, computer classes, as well as at the leading animal breeding enterprises, such as IP NUBiP of Ukraine "Agronomic Research Station," "O. Muzychenko Velykosnitynske NDH", "NDH Vorzel," SP "South Crimean Sheep Breeding," PE "Borodino-A," FE "Merino-Zahid," pig breeding

complex "Agroprime," AASO Agrokombinat "Kalita", JSC "Agro-Soyuz," Dibrovsky Stud Farm 62, Stud Farm "Shakhtar", JV "NIBULON," FE "Nina," FE "Medovi Polia," Pedigree Bee Breeding Farm "Pribuzki Medobory," JSC "Med Podillia," JSC "Poultry Farm Kiyvska," JSC "Nadia," SE "Nova Peremoha," CJSC "Complex Agromars" and others.

Proposed Topics for Master Theses

1. Optimization of cattle feeding techniques.
2. Improvement of replacement heifer nutrition.
3. Productiveness of quails at different levels of fat in feed.
4. Growth and utilization of feed nutrients in rabbits at different levels of fiber in their diet.
5. Effective use of enzymes in poultry nutrition.
6. Improvement of compound feed and premixes' recipes to ensure adequate nutrition of pigs.
7. Better exploitation of sows in conditions of using industrial technologies.
8. Comparative evaluation of performance exhibited by pigs of different genotypes in conditions of using industrial technologies.
9. Effect produced by milk production level on cow reproductive abilities.
10. Assessment of individual cow behavior elements during their milking with milking robots.

Academic rights of applicants entering Master course

Applicants with the Diploma of Bachelor can continue training in connected specialties including ones of the field of knowledge "Specific categories", (table 2) and other specialties (table 3) in accordance with the Terms of enrolment to higher educational institutions of Ukraine in 2015 approved by the Order of the Ministry of education and science of Ukraine on October 15, 2014 № 1172 and the Regulations of enrolment to National University of Life and Environmental Sciences of Ukraine (basic institution, Kyiv) for 2015.

Curriculum of Master training in specialty "Technology of production and processing of livestock products" Educational and qualification Master program

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	Civil Defence	1	30	1
2	Occupational Health in Livestock	1	30	1
3	Biological productivity of farm animals	1	120	4
4	Feed resources in animal husbandry	1, 2	150	5
5	Research methods in animal husbandry	1	90	3
6	Modeling of technological processes in animal husbandry	1	90	3
7	Organization of agribusiness	2	90	3
8	Processing of livestock products	2	120	4
9	Information technology in animal husbandry	2	90	3
10	Modern trends of selection in animal husbandry	2	120	4
11	Technology of meat and meat products	2	120	4
12	Technology of milk and milk products	2	120	4
Total for standard part			1170	39
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by University				

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
1	Methodology and organization of scientific research on the basics of intellectual property	2	90	3
2	Business foreign language	1	150	5
3	Agrarian policy	1	90	3
Total (Disciplines offered by University)			330	11
2.2. Disciplines offered by students				
2.2.1. Specialization "Animal Genetic Resources"				
1	Special genetics	3	150	5
2	Animal genetic resources	3	150	5
3	Biotechnology of animal reproduction	3	120	4
4	Information systems in animal breeding	3	180	6
5	Special breeding	3	150	5
6	Organization of livestock breeding	3	150	5
Total (Disciplines offered by students)			600	20
2.2.2. Specialization "Animal Feeding "				
1	Experiment planning	3	120	4
2	Feeding of ruminant animals	3	150	5
3	Management of bulky fodder	3	150	5
4	Feeding of monogastric animals	3	180	6
Total (Disciplines offered by students)			600	20
2.2.3. Specialization "Dairy cattle breeding"				
1	Maintenance of dairy cattle stock	3	150	
2	Feeding of high producing cows	3	150	
3	Management of milk production	3	120	
4	Production equipment in dairies	3	180	
5	Intensive technologies of rearing young cattle stock	3	150	
6	Management and marketing in dairy farming	3	150	
Total (Disciplines offered by students)			600	20
2.2.4. Specialization "Production and processing of pig breeding products"				
1	Production equipment in pig breeding enterprises	3	150	5
2	Reproduction and breeding of pigs	3	150	5
3	Slaughtering of pigs and processing of pig products	3	120	4
4	Industrial pig production technology	3	180	6
5	Management and marketing in pig breeding	3	150	5
Total (Disciplines offered by students)			600	20
2.2.5. Specialization "Poultry breeding"				
1	Incubation of eggs and embryology basics	3	150	5
2	Production of food eggs	3	150	5
3	Pure-strain stock-breeding in poultry farming	3	120	4
4	Feeding of agricultural poultry	3	180	6
5	Production of agricultural poultry meat	3	150	5
6	Management and marketing in poultry farming	3	150	5
Total (Disciplines offered by students)			600	20
2.2.6. Specialization "Equine and horse-breeding"				
1	Horse breeds	3	150	5
2	Racetrack and sports training in horse breeding	3	150	5
3	World genetic horse breeding resources	3	120	4
4	Reproduction of horses	3	180	6
5	Pure-strain stock-breeding of horses	3	150	5
6	Stud farming	3	150	5
Total (Disciplines offered by students)			600	20
2.2.7. Specialization "Apiculture"				
1	Technological equipment in apiculture	3	150	5
2	Breeding and keeping of bees	3	150	5
3	Bees' pathology	3	120	4

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
4	Honey resources and pollination of plants	3	180	6
5	Production, storage and processing of bee products	3	150	5
6	Management and marketing in apiculture	3	150	5
Total (Disciplines offered by students)			600	20
2.2.8. Specialization "Production and processing of sheep breeding products"				
1	Production equipment in sheep breeding enterprises	3	150	5
2	Reproduction and breeding of sheep	3	150	5
3	Slaughtering of sheep and processing of sheep products	3	120	4
4	Industrial production technology of sheep	3	180	6
5	Management and marketing in sheep breeding	3	150	5
Total (Disciplines offered by students)			600	20
Total for elective part			690	23
3. OTHER TYPES OF TRAINING				
1	Production Practice	1	360	12
2	Preparation and defense of master's work	3	240	8
Total			600	20
Total for Specialty			2700	90

Annotations educational plan disciplines

1. STANDARD ACADEMIC DISCIPLINES

Civil defence. The discipline examines the ways of setting up protection measures and protecting the public against the effects of economic, natural and environmental emergencies; prevent emergencies; reduce losses; disseminate threat alerts; provide life support during accidents, major fires, natural calamities and disasters, military conflicts; conduct rescue operations; forecast, monitor and control radioactive and chemical contamination; ensure sustainability of agricultural facilities in emergency situations.

Occupational Health in Livestock. Forms for future professionals the ability and competence to ensure effective management of labor and improve working conditions on the basis of scientific and technological progress and international experience, and promotes awareness of the unity of successful professional activity with mandatory compliance with all safety requirements in a particular industry. It studies the international standards on safety, the main legislative and normative acts on labor protection in the field of system safety management in the organization, accidents and occupational diseases in the industry, the investigation of accidents, basic fire prevention measures on industrial sites.

Biological productivity of farm animals. This discipline allows students to capture extensive knowledge of the problems related to digestion, physiological and biochemical mechanisms of nutrients' transformation in feed ingredients of milk, meat, eggs, wool; control methods and ways by which biologically active substances affect biosynthetic processes in animal tissues. It examines theoretical aspects of hydrolysis mechanisms and transport of proteins, fats, carbohydrates, aminoacids, macro-and microelements in the gastrointestinal tract, the impact of biologically active substances and growth promoters on those processes, and the ways of nutrients transformation in feed constituents of milk, meat, eggs, wool; control methods and ways of improving animal productivity.

Feed resources in animal husbandry. The discipline is aimed at creating a system of knowledge and skills of managing planning, production and use of basic feed varieties used in animal nutrition. The discipline curriculum provides for the study of bulky fodder process and operation control system; cattle, sheep and horse feeding systems;

management of animal feed and feed additives production and operation system; pig and poultry farming feed systems; information technology used to optimize calculated consumption of animal nutrition.

Research methods in animal husbandry. The discipline helps students to grasp modern physical, chemical, biochemical and other research methods used in biology and animal husbandry. It considers general and specific research methods in animal husbandry.

Modeling of technological processes in animal husbandry. This discipline studies advanced technologies of livestock production, concepts of model and modeling, types of models and basic modeling stages, theoretical and practical methodological foundations, methods, and objects of modeling production processes; economic-mathematical models and modeling processes in animal husbandry by using a personal computer. The students are taught to master modern theoretical concepts of modeling, get acquainted with typical economic-mathematical models of technological processes and their practical application in a production environment.

Organization of agribusiness. This discipline examines the economic substance, specifics of setting up and developing enterprises and businesses, an enterprise as part of business; type of management, business characteristics and functions; economic and legal foundations of business; legal forms of economic activities in agribusiness; business planning at enterprises; cost-effectiveness of small and medium business and methods of its assessment.

Processing of livestock products. This discipline focuses on the study of physicochemical and technological properties of animal products as raw materials used to manufacture a wide range of high-quality commodities and their changes under the influence of some technological factors; regulatory requirements to the quality of raw materials and manufactured products prepared from them by using existing technologies and manuals in conditions of processing plants and assessment of their quality in accordance with the requirements of regulatory documentation.

Information technology in animal husbandry. The discipline provides students with a system of theoretical knowledge and practical skills in modern software used in agricultural production sector, including livestock breeding industry.

Modern trends of selection in animal husbandry. The objective of discipline is to help students master the breeding theory to identify promising areas of animal husbandry and skills of applying animal assessment, screening and breeding methods in practice. It examines the methodology of selection process in animal husbandry, methods of measuring or determining the main selection parameters. The students examine the issues of using achievements made by population genetics in animal breeding; theoretical basis of selection; animal evaluation and selection methods; inbreeding and heterosis; selection and breeding. The students also learn the features of breeding milk and meat cattle, pigs, sheep, horses and poultry.

Technology of meat and meat products. The purpose of discipline is studying of the chemical composition, technological and biological properties of meat and slaughter products, the requirements of regulations for the quality of raw materials and products from it: sausages, sausage and semi-finished products; fodder and technical production of raw meat under existing technologies, guidelines in terms of processing plants and the evaluation of their quality in accordance with the requirements of regulatory documents.

Technology of milk and milk products. Discipline provides studying of physical-chemical and technological properties of milk as raw material for producing high-quality products and wide range of their changes under the influence of technological factors; the requirements of regulations for the quality of raw materials and products from it: drinking

milk, dairy and protein products, butter, cheese and ice cream, canned milk and casein by existing technologies, regulations in terms of processing factories and the evaluation of their quality in accordance with regulatory requirements documentation.

2. ELECTIVE ACADEMIC DISCIPLINES

2.1. Disciplines offered by university

Methodology and organization of research with the principles of intellectual property. The aim of the discipline is formation of the system of knowledge in methodology, theory of method and research process, methodical support of scientific and research activity at the stages of preparation of a Master paper, formation of the ability to organize research of a specific issue using the whole complex of the traditional methods of research including general and special methods. The main task of the theoretical part of the course is introduction to students the current concepts of research creation, the principles of methodology of scientific perception and methods of research. The main task of the practical part is the development of self-education ability, mastering skills of formation and application of perceived methodological position of research. In case of mastering the course students have to improve their skills of search, assortment and processing of scientific information, accurate formulation of a problem, aim, task, object, subject, methods of research. Introduction to students the principles of intellectual property and direction of them to gain knowledge and skills concerning registration of rights of ownership, their protection, commercialization, estimation and management are envisaged.

Business foreign language. The general aim of the program of teaching of foreign language for the professional purpose is formation students' professional linguistic competencies that will contribute to their efficient operating in cultural variety of training and professional environment. The methods of search of new information in another language sources, linguistic methods of analytical study of another language sources are learned. Students study published original literature in another language and increase their lexical and grammatical skills. Methods and linguistic peculiarities of annotation and synopsis of another language sources, the principles of translation of professional oriented another language sources are studied.

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.

2.2. Disciplines offered by students

2.2.1. Specialization "Animal Genetic Resources"

Special genetics. The discipline studies the genetics of basic farm animals: their chromotype features, hereditary anomalies, interbreed gene polymorphism; quantitative and qualitative features. The students acquire knowledge of modern genetic databases and ways of using them. The discipline also considers methods of bioinformatics and genomics of pets.

Animal genetic resources. The objective of this discipline is to provide students with theoretical and practical knowledge of industrial activity associated with management

of genetic diversity, development of effective breeding technologies, using agricultural animal species in production of agricultural products. It examines the methods used to select and monitor the genetic gene pool of farm animals; theoretical and methodological basis of preserving the genetic pool of animals, animal breeding stock, classification and characterization of animal husbandry genetic resources as well as genetic resources of pigs, cattle, poultry, sheep and horse breeding.

Biotechnology of animal reproduction. The discipline allows students to master the latest knowledge and achievement in reproductive biotechnology for intensification of breeding genetically valuable animals to promote selection and enhance livestock productivity and improve its reproductive functions. It examines theoretical and practical bases of embriobiotechnology in farm animals breeding industry, oogenesis, fertilization, embryogenesis, chimerism, transgenosis, cloning, sex determination and their importance for animal breeding; the use of DNA technology in farm animals breeding; identification of animals who are carriers of lethal mutant genes.

Information systems in animal breeding. The discipline promotes in students better theoretical and practical knowledge of methods that are currently applied to improve existing and create new herds and breeds of farm animals possessing high performance and better adapted to modern technologies of livestock production. The discipline examines theoretical and practical basis of genetic and mathematical analysis in animal breeding, method of calculating breeding value; considers the software “Baza”, the automated data processing systems in pig breeding, animal selection program “Orsek”, its capabilities and areas of applications; genetic and economic optimization of long-term animal selection programs.

Special breeding. The discipline considers the features of selection (evaluation, breeding) of milk and meat cattle, pigs, sheep, horses and poultry; rules of maintaining breeding records; controlling parameters, especially accounting, storage, processing and analyzing primary selection data when working with animals of various species; methods used to control the rate of breeding progress; specifics of using information systems.

Organization of livestock breeding. The discipline examines the legislative and regulatory framework of animal breeding in the country (Laws of Ukraine “On the livestock breeding”, “On the National Program in livestock breeding for the period till 2010”, etc.), as well as regulations setting out the general legal, economic and organizational basis for breeding livestock; state tribal registry; state livestock breeding certification; testing newly bred varieties; organization of breeding trials and tests; publishing books and catalogues, organization of exhibitions, auctions, contests.

2.2.2. Specialization “Animal Feeding”

Experiment planning. The purpose of this discipline is to help students acquire knowledge and skills in planning animal nutrition experiments as required by description of major discipline: “Technology of production and processing of animal products.” The subject of the study is focused on theoretical foundations of planning animal nutrition experiments, their methods and techniques, breaking down the experiments in stages and implementing research results into production or using them for design research.

Feeding of ruminant animals. The purpose of discipline is to help students develop a system of knowledge and skills in feeding ruminants as required by description of major discipline: “Technology of production and processing of animal products.” The subject of study is to know techniques of feeding cattle, sheep and goats; use feed products, diets, ensure nutrition adequacy, quality and safety; prevent animal diseases.

Management of bulky fodder. The discipline provides for the study of theoretical and practical issues associated with preparation, evaluation and use of bulky fodder to

increase fodder production, improve its quality and enhance the efficiency of livestock breeding industries. Subject of the discipline includes system of rational bulky fodder production, its evaluation and use, development of green fodder conveyor production and pasture management arrangements.

Feeding of monogastric animals. The objective of the discipline is to introduce the students to specifics of feeding monogastric animals; modern approaches to regulation and organization of animal feeding. The object of study is nutrition of hogs, horses, poultry, fur animals; feeding of monogastric animals; quality of products depending on nutrition by highlighting theoretical and practical aspects of monogastric animal feeding scientific basis; feeding of pigs and horses; feeding of poultry, rabbits, nutria (European beaver) and fur animals.

2.2.3. Specialization “Dairy cattle breeding”

Maintenance of dairy cattle stock. The discipline examines biological characteristics of animals, requirements to parameters of farmyard buildings and equipment, characteristics of materials that are used for manufacturing and constructing animal barns and sheds. During laboratory classes the students conduct analysis of living conditions provided to cows, calves and young cattle at operating enterprises and develop preliminary designs of new and renovated facilities for cattle.

Feeding of high producing cows. The discipline allows the students to master modern theoretical concepts of feed nutrition evaluation, rationing and feeding techniques by applying typical economic and mathematical models of optimized diets in a production environment.

Management of milk production. The discipline helps the students master the knowledge system underpinning science-based management of milk production through genetic factors and organization of modern milk production operations, based on which the future specialists can implement effective measures to obtain it in market conditions.

Production equipment in dairies. The discipline includes analysis of existing domestic and foreign production lines; new dairy processing technologies. It introduces students to the equipment and processes used to produce whole milk, butter, cheese and other products, adopt advanced milk and milk products preprocessing and processing technologies and their practical application in a production environment.

Intensive technologies of rearing young cattle stock. The discipline allows students to study the intensification level of animal body growth, development and formation at the early stages of ontogenesis and the influence produced by environmental factors on the process of breeding production animals.

Management and marketing in dairy farming. The discipline generates the system of knowledge about the nature and content of management and marketing as a business philosophy under conditions of market economy and competition. It examines the nature and concept of management, marketing and market research of dairy products market, system of marketing (mix-marketing) measures and international marketing.

2.2.4. Specialization “Production and processing of pig breeding products”

Production equipment in pig breeding enterprises. The discipline allows students to master the latest knowledge on European Union and Ukrainian process design standards related to modern pig breeding equipment, machines used to maintain and keep reproductive animals, idle, gestation and lactation sows, weaned piglets, fattening and replacement youngsters, equipment for feeding and watering pigs; for ensuring optimal microclimate conditions; removal and disposal of manure; for active exercise; disinfection, disinfestation and disease prevention.

Reproduction and breeding of pigs. The discipline provides the students with knowledge they can use to master modern problems of pigs reproduction and breeding depending on ontogenetic, paratypic and genotypic factors. It examines the structure of animal reproductive system, ovogenesis, spermatogenesis; breeding of replacement young pigs; collecting and storage of boar semen; artificial insemination of sows; specifics of breed formation and trends in pig selection.

Slaughtering of pigs and processing of pig products. The discipline allows the students to master methods of slaughter products' rational management; methods of slaughtering pigs and processing pig products. It also examines preparation, pre-processing and storage of raw pig products, pig transport, morphological and chemical composition and factors affecting the quality of meat.

Industrial pig production technology. The discipline is designed to teach students make rational choices when using various modern pork production technologies on industrial basis. It examines characteristics of one-, two- and three-phase technology of pork production, and system bioengineering in pig breeding.

Management and marketing in pig breeding. The discipline generates in students a system of knowledge about the nature and content of management and marketing as a business philosophy under conditions of market economy and competition. It examines the nature and concept of management, marketing and market research of pig products market, system of marketing measures and international marketing.

2.2.5. Specialization "Poultry breeding"

Incubation of eggs and embryology basics. The discipline allows students to gain knowledge about rules behind production, storage and transportation of standard hatching eggs, techniques of egg processing, treatment and biological control. Students acquire the organization and planning skills in incubation technology, and are introduced to the causes of possible disturbances in the development of embryos and methods of their prevention.

Production of food eggs. The discipline introduces students to modern food eggs production and primary processing based on the use of specialized layer chicken breeding crosses and breeds when using all-in-one feeds; full mechanization and automation of production processes subject to the system of veterinary and sanitary measures and quality control.

Pure-strain stock-breeding in poultry farming. The discipline introduces students to poultry breeds and breeding crosses; selection and cultivation techniques; types of poultry breeding farms as well as specifics of breeding egg and meat chickens, turkeys, ducks, geese, quails, guinea fowl and ostriches.

Feeding of agricultural poultry. The discipline studies the need in different poultry species, productivity and sex-age group trends in energy exchange, nutrients and bioactive substances. The obtained knowledge enables professionals to make recipes of all-in-one feeds, which allow achieving maximum productivity of poultry at lowest poultry feed cost.

Production of agricultural poultry meat. The discipline examines modern technologies applied to produce and process broiler chickens, turkeys, ducks, geese, guinea fowl, quail and ostrich meat and techniques to achieve optimal body weight in replacement chicks and poultry parent stock, as well as main factors affecting the growth rate in breeding poultry for meat and fattening for fatty liver.

Management and marketing in poultry farming. The discipline examines the system, concept, process, functions, key management factors and conditions of efficient administration in poultry farms; role played by quotes in enterprise marketing and

possibility of applying price methods of competition on the market; interrelations between economic, business and trade opportunities and poultry market conditions.

2.2.6. Specialization “Equine and horse husbandry”

Horse breeds. The discipline describes evolution of horse breeds in ancient times; introduces students to a world breeding center and its impact on Asian and European breeding; principles of breed classification; unpromising breeds and ways of their preservation for future breeding purposes; main horse breeds in Ukraine.

Racetrack and sports training in horse breeding. The purpose of this discipline is to help students study physiological bases of training fast and athletic horse breeds; indoors and racetrack training; rules of testing horses on racetrack; using the results of racetrack testing in breeding work. The discipline highlights the experience of Great Britain and the United States in improving technologies of training thoroughbred and standard bred horses.

World genetic horse breeding resources. The discipline introduces students to horse genetic resources as a factor fostering development of small and medium businesses. It examines characteristics, preservation and improvement methods of genetic resources in horse breeding.

Reproduction of horses. The discipline examines biological characteristics of horses associated with reproduction, preparation of stallions and mares to coupling; coupling of horses; control and progress of foaling; infertility of stallions and mares and its prevention; rearing the youngsters before weaning; adaptation to existence and operation conditions.

Pure-strain stock-breeding of horses. Key issues covered by this discipline are: the structure of horse breeding and brief description of its components, breeding process as a social demand; government measures to promote breeding.

Stud farming. The discipline introduces students to heredity and variations of basic selection traits in breeding horses of various breeds and species; relationship between major selection parameters; organization of breeding; specifics of matching mares and stallions in horse breeding; ways of evaluating stallions and mares by quality of their progeny and equine breeding base in the country.

2.2.7. Specialization “Apiculture”

Technological equipment in beekeeping. The objective of this discipline is to develop new and improve the existing methods of setting up the automated systems of controlling technological and production processes in beekeeping; methods and algorithms for maintenance and repair of complex electromechanical and computer-integrated automation systems. It highlights main provisions underlying manufacture and operation of beekeeping equipment, comb embedding foundation equipment, raw wax processing equipment, honey pumping, processing, and packaging equipment, equipment for preparation of other bee products, breeding of queen bees, bee disease control equipment, bees transport mechanisms, beekeeping structures.

Breeding and keeping bees. This discipline helps students to: study systems designed to monitor and sustain bees and their colonies, maintain them during the annual cycle; variability and heredity characteristics of individual bees and their colonies; organization and performance of breeding work in the industry; study theoretical foundations underlying natural reproduction of bee colonies and stasis bees, development and implementation on the basis of modern technologies and methods of breeding and bee breeding material output.

Bees' pathology. This discipline allows students to obtain necessary knowledge about importance of maintaining the bees' feeding, housing and breeding conditions; preventing diseases in bee colonies, know biology of infectious disease pathogens, the ways they spread, losses bees suffer from diseases and pests, especially pathogenesis; symptoms, course of illness and fight against them, as well as to acquire skills of detecting signs of changes in bee colonies' behavior under various diseases at apiary sites; select material for laboratory studies and introduce recreational measures.

Honey resources and pollination of plants. This discipline helps students to get better knowledge about food plants that bees use for their nutrition and provide a marketable products; characteristics of nectarous plants, their classification, using nectarous plants to create honey flow in different season periods; clarify the role of bees as pollinators of plants; machinery and pollination of various crops; effectiveness in increasing fruit and seed harvests.

Production, storage and processing of bee products. This discipline introduces students to technologies of producing honey, wax, pollen (bee pollen), bee-glue, royal jelly and bee venom; biology and chemistry of honey, wax and other biologically active products' making process. The discipline allows students to study properties of biologically active products, their effect on quality of different factors and methods of determining fraud; organization of production at the apiaries of different ownership; definition of quality; measures of enhancing apiculture economic efficiency.

Management and marketing in apiculture. The objective of this discipline is to generate knowledge and skills that the apiculture professionals need to be able to perform basic management functions and effective management of agricultural production. It studies management of modern social and economic systems of different organizational forms; comprehensive analysis and forecasting of agrarian market; ways of developing marketing strategies and their implementation: commodity, pricing, communication policy and distribution policy, analysis and control of marketing activities.

2.2.8. Specialization "Production and processing of sheep breeding products"

Production equipment in sheep breeding enterprises. The discipline allows students to master the latest knowledge on European Union and Ukrainian process design standards related to the modern equipment in sheep maintenance, machines used to maintain and keep reproductive animals, idle, gestation and lactation females, weaned sheep, fattening and replacement youngsters, equipment for feeding and watering the sheep, for ensuring optimal microclimate conditions; removal and disposal of manure; for active motion; disinfection, disinfestation and disinsectization.

Reproduction and breeding of sheep. The discipline provides the students with knowledge they can use to master modern problems of pigs reproduction and breeding depending on ontogenetic, paratypic and genotypic factors. It examines the structure of animal reproductive system, ovogenesis, spermatogenesis; breeding of replacement young pigs; collecting and storage of boar semen; artificial insemination of sows; specifics of breed formation and trends in pig selection.

Slaughtering of sheep and processing of sheep products. The discipline allows the students to master methods of slaughter products' rational management; methods of slaughtering of sheep and processing of sheep products. It also examines preparation, pre-processing and storage of raw sheep products, transport of sheep, morphological and chemical composition and the factors that affect the quality of meat.

Industrial production technology of sheep. Contributes to the of training professionals which could be able to rational using of various modern technologies of

sheep products production on industrial basis. Consider the characteristics of sheep production technology, system bioengineering in sheep breeding.

Management and marketing in sheep breeding. The discipline generates in students a system of knowledge about the nature and content of management and marketing as a business philosophy under conditions of market economy and competition. It examines the nature and concept of management, marketing and market research of sheep products market, system of marketing measures and international marketing.

**Master's course
in specialty "WATER BIORESOURCES"
branch of knowledge "Fisheries and Aquaculture"**

Form of Training, Licensed number of persons:

- | | |
|-------------|------------|
| – Full-time | 75 persons |
| – Part-time | 75 persons |

Duration of Training

- | | |
|--|-----------|
| – Full-time educational and professional program | 1,5 years |
| – Full-time educational and scientific program | 2 years |
| – Part-time | 2 years |

Credits 90 ECTS

Language of Teaching Ukrainian, English

Qualification Aquaculture researcher

Concept of training

In the process of their studies, the specialists in water bioresources familiarize themselves with biological resources of the hydrosphere: production of aquatic resources, productivity, raw water resources. They also study dynamics, abundance and biomass of aquatic organisms, fish productivity of water bodies, dynamics of fishing hydrocole (fish), predicting abundance and biomass of aquatic resources and levels of allowable catch. As a result, the students acquire technology of rational (sustainable) management of aquatic resources in fishery ponds.

Over the course of their training, the specialists in aquaculture study and master the techniques of artificial breeding and reproduction of aquaculture industrial facilities and production as well as technologies of restoring native, rare and endangered hydrocole (fish) species. By the end of the course, the students acquire the techniques of artificial and natural reproduction and production of aquatic resources in fishery ponds.

Finally, the future experts on protection, reproduction and rational use of hydro-bioresources acquire knowledge of hydrocole (fish) selection methods applied for their protection. They also study technologies used to protect and restore native, rare and endangered hydrocole (fish), as well as rational (sustainable) use of aquatic resources, predicting their abundance, biomass and levels of allowable catch. As a result, the master degree candidates acquire the techniques of artificial and natural restoration and protection of native, rare and endangered aquatic resources (AR) in fishery ponds.

Educational and professional Master's program

Specialization "Sturgeon Breeding"

The objective of the Master's degree program is to train sturgeon breeding specialists who will work at sturgeon fisheries, in specialized sturgeon fish farms of different types, and in research institutions focusing on preservation of sturgeon populations and breeding of its industrial stocks in natural waters and promote development of commercial sturgeon breeding; the graduate students will also be employed in agencies of the State Department of Fisheries of Ukraine and address issues related to restoration and monitoring the use of natural resources and ensuring further development of sturgeon commercial aquaculture.

Areas of employment for graduates

After having successfully completed the master's degree program, the specialists can apply for employment with the State Department of Fisheries of Ukraine, Ukrainian

sturgeon factories and private farms, Department of Aquatic Biological Resources Protection, Reproduction and Regulation of Fisheries in Kyiv Oblast, and the Research Institute of Fisheries, NAAS of Ukraine.

Specialization “Protection of Hydro-bioresources”

The main objective of the master's degree program is to prepare specialists of environmental protection who are able to work in the agencies under jurisdiction of the Ministry of Environment or the State Department of Fisheries of Ukraine, oblast or regional fisheries departments, in research institutions, public or private enterprises, whose business relates to protection and reproduction of rare and endangered fish species, moving them into the water in order to restore biodiversity, increasing biological and fish productivity of aquatic ecosystems. Implementation of these measures is based on the scientific substantiation of the main approaches used to optimize efficiency of water use and commercial utilization of water resources and on development of specific measures for protection of aquatic biodiversity, increasing its abundance and sustainable use.

Areas of employment for graduates

After having successfully completed the master's degree program, the specialists can apply for employment with the State Department of Fisheries of Ukraine, Department of Aquatic Biological Resources Protection, Reproduction and Regulation of Fisheries in Kyiv Oblast, territorial (oblast and district) fishery protection bodies, the territorial agencies of the Ministry of Environmental Protection of Ukraine, Research Institute of Fisheries, NAAS of Ukraine, the Institute of Hydrobiology, NAS of Ukraine, public and private fishery farms; the State Fishery Inspection in Kyiv and other Ukrainian Oblasts.

Educational and scientific Master's program

Specialization "Ichthyofauna of Mixed-Use Ponds"

The main objective of the master's degree program is to train ichthyology professionals who can work in the State Department of Fisheries of Ukraine, State Fishery Inspection, its oblast and district structures, research institutions and other public and private enterprises dealing with cultivation and fishing in the fish farms, particularly in mixed-use ponds.

Areas of employment for graduates

After having successfully completed the master's degree program the specialists can apply for employment in Ichthyological Service of the State Department of Fisheries of Ukraine, Water Bioresources Unit of the State Department of Fisheries of Ukraine, State Institution "Ukrryba"; ichthyological services of Aquatic Biological Resources Protection, Reproduction and Regulation of Fisheries oblast offices and as private entrepreneurs in specialized fish farms at mixed-use ponds.

Practical training

Practical training of Fisheries Department students is a component of the curriculum the students require to obtain necessary qualification, professional skills and abilities. This training is performed at the forefront of modern fishery enterprises under organizational and methodological guidance of Department of Aquaculture's faculty and specialists of the enterprises.

While studying at the University, the students receive a thorough theoretical and practical training in modern laboratories equipped with new equipment, in computer classes as well as at leading fishery enterprises such as PJSC "Kyyivrybhosp", SE "Irkliiv

Fishpond", SE "Ukrryba", DG "Great Lubin", PJSC "Hmelnytskrybhosp", PE "Aquarium Technologies", PJSC "Sumyrybhosp", PJSC "Hersonrybhosp", JSC "Vilshanka", ARC "Kherson Fishermen", PJSC "Poltavarybhosp", Fishing Farm "Nyvka", IRG NAAS of Ukraine, JSC "Chernihivrybhosp", Astrakhan State Technical University (Astrakhan, Russia) and the Louis Pasteur National Lyceum (France) and others.

Proposed Topics for Master Theses

1. Fish-breeding and biological rationale for the project of full-scale Lena Sturgeon (*Acipenser baeri* Brandt) pond fishery.
2. Features and methodological approaches to breeding domesticated stock of Russian Sturgeon (*Acipenser guldenstadty* Brandt) in sturgeon fisheries.
3. Aqua -design of South America aquasystem decorative freshwater habitat.
4. Innovations in Cichlid fish (*Cichlidae*) keeping and breeding technologies.
5. Methods to improve bioproductivity potential of industrial fishing farms.
6. Forecasting biological productivity of fishery ponds based on the aquatic environment's abiotic factors.
7. Methodological approaches applied to selection and breeding of rainbow trout (*Oncorhynchus mykiss*) in breeding farms.
8. Effective use of synthetic germ cell ovulation stimulants in artificial reproduction of the white carps (*Hypophthalmichthys molitrix*).
9. Current status of fish fauna in mixed-use fishery ponds and ways to improve their fish productivity.
10. Structural and functional characterization of plankton, benthic organisms, and macrophytes in changing aquatic environment conditions.

Academic rights of applicants entering Master course

Applicants with the Diploma of Bachelor can continue training in connected specialties including ones of the field of knowledge "Specific categories", (table 2) and other specialties (table 3) in accordance with the Terms of enrolment to higher educational institutions of Ukraine in 2015 approved by the Order of the Ministry of education and science of Ukraine on October 15, 2014 № 1172 and the Regulations of enrolment to National University of Life and Environmental Sciences of Ukraine (basic institution, Kyiv) for 2015.

Curriculum of Master training in specialty "Water Bioresources" Educational and qualification Master program

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	Civil Defence in fishing industry	1	60	2
2	Theory of fish population dynamics	1	90	3
3	Psychology of labour relations in fishery enterprises	1	60	2
4	Occupational Health in fish farming	1	60	2
5	Theoretical foundations of fish farming	1	90	3
6	Intensive aquaculture technologies	1	120	4
7	Acclimatization of hydrocole	2	90	3
8	Fisheries research methods	2	90	3
9	Modelling technological processes in fish farming	2	120	4
10	Environmental physiology and biochemistry of aquatic	2	120	4

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
	organisms			
11	Financial aspects of fishery business	2	60	2
12	Doing business in fish farming	2	60	2
13	World fisheries	2	60	2
14	Basics of aquatic organisms evolution theory	2	90	3
Total for standard part			1170	39
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by University				
1	Methodology and organization of scientific research on the basics of intellectual property	2	90	3
2	Business foreign language	1	150	5
3	Agricultural policy	1	90	3
Total (Disciplines offered by University)			330	11
2.2. Disciplines offered by students				
2.2.1. Specialization "Protection of hydrobioresources"				
1	Protection of aquatic organisms	3	150	5
2	Management of aquatic organisms	3	150	5
3	International fisheries regulation	3	120	4
4	Native ichthyofauna	3	180	6
Total (Disciplines offered by students)			600	20
2.2.2. Specialization "Sturgeon breeding"				
1	Biotechnology of sturgeon breeding	3	120	4
2	Selection of sturgeon breeding objects	3	150	5
3	Biological productivity of sturgeon species	3	150	5
4	Sturgeon husbandry in ponds	3	180	6
Total (Disciplines offered by students)			600	20
2.2.3. Specialization "Pond fish farming"				
1	Biology of productivity of pond fish	3	120	4
2	Selection of pond fish	3	150	5
3	Modern technology of pond fish farming	3	150	5
4	Modern technologies of untraditional pond breeding objects cultivation	3	180	6
Total (Disciplines offered by students)			600	20
Total for elective part			930	31
3. OTHER TYPES OF TRAINING				
1	Production Practice	1	360	12
2	Preparation and defense of master's work	3	240	8
Total			600	20
Total for Specialty			2700	90

**Curriculum of Master training
in specialty "Water Bioresources"
Educational and scientific Master program**

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	Civil Defense in fishing industry	1	60	2
2	Theory of fish population dynamics	1	90	3
3	Psychology of labor relations in fishery enterprises	1	60	2
4	Occupational Health in fish farming	1	60	2
5	Theoretical foundations of fish farming	1	90	3
6	Intensive aquaculture technologies	1	120	4

MASTER CURRICULA AND TRAINING PROGRAMS

7	Acclimatization of hydrocele	2	90	3
8	Fisheries research methods	2	90	3
9	Modeling technological processes in fish farming	2	120	4
10	Environmental physiology and biochemistry of aquatic organisms	2	120	4
11	Financial aspects of fishery business	2	60	2
12	Doing business in fish farming	2	60	2
13	World fisheries	2	60	2
14	Basics of aquatic organisms evolution theory	2	90	3
Total for standard part			1170	39
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by University				
1	Methodology and organization of scientific research on the basics of intellectual property	2	90	3
2	Business foreign language	1	150	5
3	Agricultural policy	1	90	3
Total (Disciplines offered by University)			330	11
2.2. Disciplines offered by students				
2.2.1. Specialization "Ichthyofauna of mixed-use ponds"				
1	Ichthyofauna of Ukrainian ponds	3	180	6
2	Modern methods of ichthyological research	3	180	6
3	Ichthyocenology	3	180	6
4	Ecotrophology of fish	3	210	7
5	Ichthyologytoxicology of continental waters	4	180	6
6	Prediction of fish harvest	4	210	7
7	Protection of continental waters' fish fauna	4	180	6
8	Fishing of continental waters of Ukraine	4	180	6
Total (Disciplines offered by students)			1500	50
Total for elective part			1830	61
3. OTHER TYPES OF TRAINING				
1	Production Practice	1	360	12
2	Preparation and defense of master's work	3	210	7
Total			600	20
Total for Specialty			3600	120

Annotations educational plan disciplines

1. STANDARD ACADEMIC DISCIPLINES

Civil Defense in fishing industry. The discipline examines the ways of setting up protection measures and protecting the public against the effects of economic, natural and environmental emergencies; prevent emergencies; reduce losses; disseminate threat alerts; provide life support during accidents, major fires, natural calamities and disasters, military conflicts; conduct rescue operations; forecast, monitor and control radioactive and chemical contamination; ensure sustainability of agricultural facilities in emergency situations.

Theory of fish population dynamics. The discipline offers an introduction into the science of sustainable fisheries management and quasi-natural reservoirs relying on the consistent patterns of dynamics in fish populations, estimation of the extent of their stocks and correlation between changes of this value and fishing intensity. The value of fish stocks and their composition undergo annual and long-period fluctuations that can be forecasted and planned by combination of such processes as replenishing industrial fish herds, nutrition, fertility, growth and maturation, mortality from fishing and natural reasons.

Psychology Labor Relations in in fishery enterprises. The discipline focuses on the facts, and psyche consistent patterns and mechanisms. The master degree candidates are taught to understand the nature and specifics of mental processes, states, personality

traits of managers as the basis of their development in the process of training and education, assimilation of basic terms and concepts pertaining to psychology of management.

Occupational health in fish farming. This is a regulatory discipline that is taught to develop in the future professionals holding the master's degree the knowledge about current status and issues in the field of labor safety in the fishery sector adjusted to the priorities of their basic training. It summarizes organizational requirements of inter-sectoral and industrial safety regulations (NPAOP – Ukrainian Labor Protection Regulations) to be implemented in fishery enterprises at safety management units; requirements to setting up and operating at businesses and enterprises the labor protection services; ways, methods and means of enforcing environment and labor protection regulations during technological processes in the fishing industry to adopt managerial decisions to prevent accidents, injuries and occupational diseases in the industry.

Theoretical foundations of fish farming. This discipline focuses on basics of breeding theory, evidence-based methods and techniques underpinning the modern farming and reproduction of fish stocks under specific environmental conditions in order to improve existing technologies applied in artificial reproduction of rare and endangered species; develop science-based methods enhancing vitality of fish stocking material at different stages of ontogenesis; grow high-quality commercial fish farming products; create optimal conditions for breeders in factory conditions; develop new sustainable resource-breeding technologies.

Intensive aquaculture technologies. This discipline completes the cycle of special courses and focuses on the most recent world and national achievements and scientific research in the field of freshwater and marine aquaculture. Future professionals studying this discipline must get acquainted with the latest global and domestic research and foster their creativity in future careers.

Acclimatization of hydrocole. This is an important discipline for professional training of ichthyologists/ fish breeders and research personnel targeting such subjects as protection and reproduction of hydrobio-resources and increasing biological productivity and fish productivity of reservoirs. The objective of this discipline is to teach future professionals clearly identify the need for acclimatization works with certain types of aquatic organisms, consider all the risks associated with migration of species into new reservoirs, correctly choose acclimatization objects given their economic value and environmental safety, avoid concomitant pollution with biological material that is dangerous for native fauna, evaluate the effectiveness and profitability of operations.

Fisheries research methods. The discipline combines general methods and techniques of hydrological, hydrochemical, hydrobiological, ichthyological and fisheries research aimed at enhancing sustainable use of natural and artificial hydrobiocenoses.

Modelling technological processes in fish farming. Studying this discipline is aimed at developing science-based solutions of process control in fish production, learning measures to increase efficiency of technological processes, develop production plans and evaluate their effectiveness through modeling techniques. Knowledge of methodological approaches to development of mathematical models improve qualification of fishery engineers, help them develop a scientific understanding of technology and enable with new opportunities of improving it in their future careers.

Environmental physiology and biochemistry of aquatic organisms. This discipline studies physiological and biochemical processes occurring in the body of aquatic animals at different stages of embryonic and postembryonic development and during their growth in ontogenesis under normal conditions and under the influence of natural aquatic environment factors (temperature, gas treatment, water salinity, etc.). The curriculum of

this discipline provides also for studying age-related characteristics and seasonal peculiarities of metabolism in fish at different periods of their annual cycle, as well as physiological and biochemical mechanisms of fish adaptation to natural factors.

Financial aspects of fishery business. This discipline considers the trends and challenges of financing activities in fishery enterprises. Particular attention is paid to methodological aspects of financial support in the fishing industry. By the end of this course the master's degree candidates shall be aware of accounting regulations (standards); loans; source documents required for loans; methods of economic analysis (liquidity, profitability, solvency), basic financial statements (balance sheet, income statement).

Doing business in fish farming. This discipline is included in the final phase of training the students with major in "Water Bioresources." Students studying this discipline will acquire qualities required of managers and professionals with a firm grasp of business theory and methodology fundamentals and practical skills of doing business in fishing industry. The task of the course "Doing business in fish farming" is to provide solid theoretical and practical business training for students.

World fisheries. This discipline provides for a clear understanding of modern methods used in fisheries management, the current state of fish production in the world and in Ukraine, the ability to assess the prospects of the fishing industry in the current environment with regard to trends in global fish market, available resources, increasing fishery production and aquaculture.

Basics of aquatic organisms evolution theory. This discipline represents a combination of theoretical and practical knowledge base about evolution based on knowledge of the main evolutionary theory provisions, driving forces behind evolution, study of contemporary perspective on development of wildlife especially the evolution of fishes. It summarizes and organizes knowledge from the standpoint of evolutionary views, introduces students to the history of the different views on science and development of wildlife and synthetic theory of evolution, mechanisms of micro evolutionary processes, speciation, concept of macroevolution, characteristics and main evolution paths of fish and other aquatic organisms.

2. ELECTIVE ACADEMIC DISCIPLINES

2.1. Disciplines offered by University

Methodology and organization of research with the principles of intellectual property. The aim of the discipline is formation of the system of knowledge in methodology, theory of method and research process, methodical support of scientific and research activity at the stages of preparation of a Master paper, formation of the ability to organize research of a specific issue using the whole complex of the traditional methods of research including general and special methods. The main task of the theoretical part of the course is introduction to students the current concepts of research creation, the principles of methodology of scientific perception and methods of research. The main task of the practical part is the development of self-education ability, mastering skills of formation and application of perceived methodological position of research. In case of mastering the course students have to improve their skills of search, assortment and processing of scientific information, accurate formulation of a problem, aim, task, object, subject, methods of research. Introduction to students the principles of intellectual property and direction of them to gain knowledge and skills concerning registration of rights of ownership, their protection, commercialization, estimation and management are envisaged.

Business foreign language. The general aim of the program of teaching of foreign language for the professional purpose is formation students' professional linguistic competencies that will contribute to their efficient operating in cultural variety of training and professional environment. The methods of search of new information in another language sources, linguistic methods of analytical study of another language sources are learned. Students study published original literature in another language and increase their lexical and grammatical skills. Methods and linguistic peculiarities of annotation and synopsis of another language sources, the principles of translation of professional oriented another language sources are studied.

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.

Educational and professional Master's program

2.2. Disciplines offered by students

2.2.1. Specialization “Protection of hydrobioresources”

Protection of aquatic organisms. This discipline examines the scientific basis underlying development and implementation of substantiated hydrosphere protection measures where hydrosphere is regarded as an environment inhabited by aquatic organisms, biological balance of aquatic ecosystems is restored, aquatic biodiversity is maintained, sustainable use of water resources is provided and human impact on water bodies of different types is reduced.

Management of aquatic organisms. This discipline studies basic fisheries management principles and structure of fish farming legislation, a specific activity of the state agencies that can be of executive and prescriptive nature and produces an organizing effect on social relationship through public authorities. The students will learn regulations concerning fishery and other aquatic resources and acquire skills of creatively using in each new transaction the corresponding updated regulatory and technological documentation in order to apply this knowledge in their professional activity.

International fisheries regulations. This discipline examines the issue of jointly using bioresources in the international water bodies, and the role that Ukraine plays as a sovereign state in regulation of these processes based on Ukraine's foreign and domestic policy priorities in the field of aquatic resources protection, use and reproduction taking into account the country's course towards integration into the European Union and, in particular, harmonization of its national legislation with the EU directives and international environmental regulations.

Native ichthyofauna. The goal of this discipline is to introduce students to a variety of fish species in ponds and reservoirs that have appeared and evolved in certain areas, and to its indigenous inhabitants. The study of this discipline is needed to prevent mass loss of fish, improve technologies of artificially reproducing industrial, rare and endangered species, creating optimal conditions for natural and artificial reproduction of fish in order to restore, preserve and protect industrial shoals of native fish species.

2.2.2. Specialization “Sturgeon breeding”

Biotechnology of sturgeon breeding. This discipline examines the organizational structure of sturgeon fish farms, their arrangement, biological basis of comprehensive measures applied to intensify pond sturgeon aquaculture, enhance the biological productivity of water bodies and fish productivity, foster spawn in sturgeon breeding farms, and breed fish stocking material and commodity sturgeon species in the warm pond aquaculture, taking into account systems, forms and cycles of fisheries management.

Selection of sturgeon breeding objects. This is the discipline that studies theory and practice of selection and breeding in sturgeon farming. The students will obtain knowledge about sturgeon’s biological characteristics and commercial traits in order to develop theoretical and practical foundations for development and operation of domesticated reproduction sturgeon stock, identifying areas of sturgeon selection and breeding work.

Biological productivity of sturgeon species. This discipline studies biological and economic features of sturgeon, the current state of sturgeon stocks in the world, population structure and life cycle of most valuable species, the impact produced by natural and anthropogenic factors on performance and techniques of sturgeon artificial reproduction in order to increase the abundance of this species.

Sturgeon husbandry in ponds. This is the discipline that completes the cycle of special courses and provides students with knowledge about the most recent world and national research in the field of sturgeon husbandry in ponds, examines organizational structure of sturgeon fish farms, their arrangement, biological basis of comprehensive measures to intensify pond sturgeon aquaculture, enhance biological and fish productivity of ponds, technologies for fostering spawn in sturgeon breeding farms, technologies of building the reproduction sturgeon stock and stock of commodity pond sturgeon in warm-water aquaculture, taking into account systems, forms and cycles of fisheries management.

2.2.3. Specialization “Pond fish farming”

Biology of productivity of pond fish. The discipline generates in students a system of knowledge about the of productivity of pond fish; the biological characteristics of fish due to their reproduction; biological basis of sexual cycle management of pond fish; the biological characteristics of males and obtaining from them sexual products; Biological providing of conditions of incubation of caviar and rearing of youth fish; increasing of fish productivity in reservoirs.

Selection of pond fish. The discipline generates in students a system of knowledge about the traditional and modern methods and techniques of selection; organization breeding in pond fish culture; the role of genotype and environment in forming of the quality traits. Consider the importance of taxonomy and genetics of fish as a theoretical basis for their selection.

Modern technology of pond fish farming. The discipline generates in students a system of knowledge about the based on traditional technologies of reproduction and cultivation of aquaculture facilities; pond innovative technologies in fish culture; new methods of fish farming in the European Union, the USA, Canada, China, etc .; economy and trade fish farming technology; integrated technologies in fish farming.

Modern technologies of untraditional pond breeding objects cultivation. The discipline generates in students a system of knowledge about the peculiarities of biology of unconventional objects pond fish farming; technology of untraditional objects reproduction; growing of untraditional objects in mono- and polyculture fish-breeding ponds; foreign experience of untraditional objects of aquaculture growing in conditions of pond farms.

Educational and scientific Master's program**2.2.1. Specialization “Ichthyofauna of mixed-use ponds”**

Ichthyofauna of Ukrainian ponds. This discipline is part of professional and practical training of master's degree students with major in “Water Bioresources”; upon completion of this course, the students will master modern data on fish biodiversity of Ukraine's inland waters, Azov and Black Seas, and the current classification system for ichthyoid and fish, their biological characteristics; fundamentals and principles of Ukrainian ichthyofauna's systematics.

Modern methods of ichthyological research. This is a comprehensive professional applied discipline for ichthyologists and fish breeders. It generalizes and extends the hydrological, hydrochemical, ichthyological research methods in fish husbandry.

Ichthyocenology. This discipline provides knowledge about fish grouping habits and patterns of such grouping in water reservoirs of different types, dependence of fish communities (ichthyocenosis) on environmental factors. Particular attention is given to groups dominated by commercial fish species and some rare and endangered species of Ukrainian fauna.

Ecotrophology of fish. Explore processes of food organisms for fish in different ecological conditions and their impact on processes of various kinds of fish supply and productive potential of reservoirs. As well as the chemical composition of food objects, formation of matter and energy and their transformation processes in fish organism. Influence of food quality feed on productive characteristics of fish, various forms of metabolism in their body and the quality of sexual products and progeny viability.

Ichthyologytoxicology of continental waters. Consider toxicological status of inland waters: the main river basins, reservoirs and lakes. As well as modern toxicological problems of inland waters' aquatic ecosystems, influence of water quality on the quality of fish products, noxemia of native fish fauna, their features in waters of various types. Management of ichthyologytoxicological situation in inland waters.

Prediction of fish harvest. This is the professional applied discipline targeting the audience of ichthyologists and fish breeders. Its main task is to teach students make industry forecasts that are necessary to achieve rational planning of fishing industry and ensure its sufficiency of raw materials. The discipline generalizes and extends the knowledge of laws applicable to fish population dynamics, as well as ichthyological and commercial fishery research methods in fish husbandry.

Protection of continental waters fish fauna. It combines a system of legal, organizational and economic, logistical, educational and other measures to preserve, and improve living conditions, reproduction and rational using of water biological resources, enforcement of legal and natural persons legislation. Examines natural or artificial (breeding, relocation, etc.) size renovation of water bioresources (transformation) that decreases in the using or natural death. It is aimed on preserving and acclimatization of fish fauna organisms and feed conditions', creating for them for their industrial using.

Fishing of continental waters of Ukraine. Included in the final phase of training for the specialty "Water Bioresources". Studying of discipline aimed at acquiring management of fishing in continental waters of Ukraine, obtaining ability to evaluate the prospects of complex purpose reservoirs in fishery purposes of considering the legal aspects and mechanisms of removal of fish living resources.

FACULTY OF VETERINARY MEDICINE

Dean – Doctor in Biology, Professor, Academician of NAAS of Ukraine Mykola Ivanovych Tsvilikhovskyy

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Location: Building № 12, room №324 “G”

The faculty organizes and coordinates training of Masters majoring in:

8.11010101 “Veterinary medicine” (by specialties)

Graduating departments:

Obstetrics, Gynecology and Animal Reproduction Biotechnology

Tel.: (044) 527-83-46

E-mail: akusherstvo@nubip.edu.ua

Head of Department – Doctor of Veterinary Sciences, Professor Lubetskiy Vitaliy Josephovich

Veterinary-sanitary examination

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Head of Department – Doctor of Veterinary Sciences, Professor Yakubchak Olga Mykolaivna

Epizootiology and organization of veterinary medicine

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Head of Department – Doctor of Veterinary Sciences, Professor Nedosekov Vitaliy Volodymyrovych

Parasitology and Tropical Veterinary Medicine

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E-mail: parazitologia@nubip.edu.ua

Head of Department – Doctor of Veterinary Sciences, Professor Soroka Natalia Mykhaylivna

Pathological anatomy

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Head of Department – Doctor of Veterinary Sciences, Professor Borisevich Boris Vladymirovych

Therapy and clinical diagnosis

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Head of Department – Candidate of Veterinary Sciences, Associate Professor Kostenko Vilaliy Mykhailovych

Surgery named after prof. I.O. Povazhenko

Tel.: (044) 527-88-68

E-mail: chirurgia@nubip.edu.ua

Act. Head of Department – Candidate of Veterinary Sciences, Associate Professor Doroschuk Victor Oleksandrovych

8.11010102 “Veterinary-sanitary inspection, quality and safety of livestock products”

Graduating departments:

Veterinary-sanitary examination

Tel.: (044) 527-88-41

E-mail: vse@nubip.edu.ua

Head of Department – Doctor of Veterinary Sciences, Professor Yakubchak Olga Mykolaivna

**Master's course
in specialty "VETERINARY MEDICINE" (by specialties)
branch of knowledge "Veterinary"**

Form of training, Licensed number of persons:

- | | |
|-------------|---|
| – full-time | 250 (based on secondary education) |
| – part-time | 25 (based on the educational level
"Specialist") |

Duration of training

6 years

Credits

360 ECTS

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 and professional Master's program
*Specialization "Methods of biochemical research"***

Preparation of masters in applied biology specializing on "laboratory work" in the MA program provides training of specialists capable to perform modern biochemical, physicochemical and molecular biological research methods in order to conduct biochemical analysis of the environment and the macro system, analytical, biochemical, physic-chemical analysis of raw materials, food and forages in production laboratories for various purposes.

Areas of employment for graduates

Ukrainian Laboratory of Quality and Safety of Agricultural Products and its affiliates, state analytical and diagnostic centers for standardization and certification of agricultural products, research institutes and laboratories of veterinary medicine, analytical laboratories of companies engaged in production, processing, storage and marketing of agricultural products.

Specialization "Microbiological diagnostic methods in veterinary medicine"

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 for 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.

Specialization “Veterinary-sanitary examination of agricultural and food products”

State veterinary-sanitary inspection of agriculture and food products under the patronage of veterinary control. Control of quality and safety of animal products, methods of their determination in Ukraine and the EU.

Consider the problems of hygienic assessment and food safety, prevention of potential dangers related to food, determine the degree of risk to the consumer, mastery of modern methods of veterinary-sanitary examination of foods.

Areas of employment for graduates

Achievement mastery of program enables graduates to carry out expert-monitoring function in veterinary medicine and food processing industry, at the custom offices (control of the import/export) Animal raw materials and finished products, trade establishments (supermarkets). The place of employment may be Ukrainian Laboratory of Quality and Safety of Agricultural Products, State Research Institute of Veterinary Medicine and Veterinary expertise, state laboratory of veterinary-sanitary examination of agro-food markets, meat enterprises, processing plants of animal products, veterinary border posts and supermarkets.

Specialization “Pathomorphological diagnostics of animal diseases”

The program involves the study of the structure of government veterinary laboratories, the main methods of histological studies, pathomorphological diagnostics of diseases of different etiology (bacterial, viral, parasitic, noncontagious, poisoning) in animals of different species.

We study the methodological and methodical features of pathoanatomical diagnostics and formulating of conclusion about the cause of death of the animal based on done preventive and therapeutic measures. The program includes the following courses: quality management laboratory activities, basis of histological techniques and research methods; pathomorphology of animal diseases of different etiologies.

Areas of employment for graduates

Professional activity of veterinary medicine doctor under this program will be carried out in the field of veterinary medicine in positions veterinary pathologist in the regional offices of Veterinary Medicine, Institute of Laboratory Diagnostics and Veterinary Examination, State Veterinary Laboratory of regional and district levels, pig, poultry other types of industrial enterprises, as well as provide solutions for forensic veterinary medicine.

Specialization of “Veterinary preventative technologies of animal health support”

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 for 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.

Specialization “Veterinary service in livestock, 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 for 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.

Specialization “Providing of pig breeding”

The program includes training of professional doctors of veterinary medicine who have knowledge of modern technologies of production of pig welfare, veterinary ensuring of specialized high-tech pig complexes and became capable to improve processes, veterinary and sanitary, preventive and diagnostic measures aimed the economic indicators of the industry.

Areas of employment for graduates

The field practical activity which is specified in graduate programs are complex and specialized farms producing pork, breeding, reproducers fattening centers and research institutions engaged in scientific accompaniment of the industry, innovational and advisory activities in pig industry.

Specialization “Providing horse breeding”

Training of specialists of veterinary medicine involves material development of undergraduates related on biotechnology of horse reproduction and other hoofed animals, modern technologies of breeding, housing, feeding and maintenance. During the training masters acquire the latest methods of diagnosis, treatment and prevention of animal diseases.

Areas of employment for graduates

Professional activity of graduates by certain program will be associated with the veterinary maintenance of industry in large state stud farms, horse farms, equestrian sports schools, racetracks, divisions of Ministry and border guards, maintenance of individual horse owners and collective farms and wild hoofed animals in nature reserves, innovation and advisory activities.

Specialization “Providing poultry farming”

The program provides training for doctors of veterinary medicine who possess theoretical knowledge and practical skills for work in the field of modern poultry farming (technological processes of production, methods ecological safe methods, poultry waste

utilization, health and safety requirements for poultry farms, technological schemes of prevention of contagious and noncontagious diseases of poultry, economy of modern poultry farming).

Areas of employment for graduates

Practical activities of graduates encompasses national and regional industrial associations poultry farming, National Centre for specialists of veterinary medicine poultry raising, Regional Departments of Veterinary Medicine, commercial egg and poultry meat plants , Incubator stations poultry processing plant etc.

Specialization “Veterinary care 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 for 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.

Specialization “Veterinary care about exotic and wild animals”

The aim of program is to train a doctor of veterinary medicine who has knowledge of biology of exotic and wild animals, their housing, feeding and breeding, diagnosis and prevention of contagious and non-contagious diseases , treatment of animals in conditions of wild fauna or kept in zoos, apartments owners.

Areas of employment for graduates

The field of graduate`s practice may be state-owned enterprises which affiliated to the Ministry of Environment and the State Forestry Committee (national parks, forestry, hunting, nature reserves and wildlife sanctuaries, zoos) research zoological institutions and veterinary clinics for small animals.

Specialization “Veterinary support of pisciculture”

The master's program provides graduate students to master the knowledge of the fundamentals of development and reproduction, cultivation of fish and other aquaculture objects, quality and safety of fish products, sanitary requirements for water and food for growing fish, diagnosis and prevention of noncontagious diseases and poisonings, infectious and parasitic diseases, carrying out therapeutic measures for diseases of fish and other aquatic organisms, providing hygienic standards and veterinary-sanitary requirements for the technological processes on fish processing plants.

Areas of employment for graduates

Doctor of Veterinary Medicine by the Master's program "Veterinary service of pisciculture" is ready for work on the corresponding positions in the system of the fishing industry of Ukraine, such as fishery, fish processing plant, fishing farm, breeding plants for veterinary welfare of aquaculture of objects.

Specialization “Veterinary-sanitary inspection, safety and quality of foodstuffs and fodder”

Program is aimed to train masters who have theoretical knowledge and practical skills to carry out veterinary-sanitary inspection and control over the quality and safety of food and fodder.

The program studies hygiene requirements for the production of milk and dairy products, meat and meat products, fish and fish products, honey, eggs, vegetables and fodder products on all stages the technological process in order to produce safe and qualitative products.

Areas of employment for graduates

Mastering of program will provide training of veterinary-sanitary expert, the field of which may be the State Veterinary Service, food and fodder industry (official doctors of meat processing and milk processing plants, fishing plants, cold storage facilities , doctors of veterinary-sanitary expertise of state veterinary laboratories, food laboratories and laboratories of mixed fodder factories).

Specialization “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 for 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.

Specialization “Veterinary Hygiene and Sanitation”

Training of doctors of veterinary medicine for the Master's program "Veterinary Hygiene and Sanitation" involves the formation in students of theoretical knowledge and skills in veterinary hygiene and sanitation to solve practical problems in production of animal products, milk and meat enterprises on border and transport and other objects of veterinary medicine.

Areas of employment for graduates

Training of Masters in frame of program will provide training of doctor of veterinary hygiene and sanitation for the relevant positions of the State Veterinary and Phytosanitary Service, companies of fodder industry, milk and of meat processing plants, customs and in production and processing of various types of livestock.

Educational and scientific Master's program

Specialization “Physiology of higher nervous activity of animals”

The program aims to train veterinary-scientist who has knowledge about the properties and function of the cerebral cortex, brain's innate and conditioned reflex activity of the organism, classical and modern investigation methods of higher nervous activity,

methods of correction of physiological processes towards improving animal productivity and evaluation methods of behavioral acts. In the study is focused on the pathology of higher nervous activity, micro-and ultrastructure of the nervous and endocrine systems, as well as the pharmacodynamics and pharmacokinetics of medicines that act on the nervous and endocrine systems.

Areas of employment for graduates

Further study in graduate school for fundamental scientific specialties of veterinary and biological profiles, professional activity in research institutions of biological, veterinary and medical standpoints, veterinary clinics for small and exotic animals, breeding and training centers of small and exotic animals, zoos, parks and reserves.

Specialization "Cellular technology in 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 for 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.

Specialization "Biomorphology and plastination of vertebrates"

This program aims to train veterinary-scientist who has knowledge and understanding of the morphological component of the life phenomena knowledge. Assimilation of the Master's program will give the opportunity to shape future professionals synthetic approach to the issues of the organization of animal organisms, that is, to combine holistic organism with its place of existence and way of life with the help of biomorphological researches. Assimilation of the plastination technology or moderate embalming will give opportunity to prepare specialist who is able to make educational and scientific collections of morphological preparations that can be stored for a long time.

Areas of employment for graduates

Further postgraduate study on research specialty pathology, oncology and morphology of animals, professional work in research veterinary oriented institutions that are dealing with comparative morphology and forensic veterinary medicine problems, Institute of zoology NAS of Ukraine, zoological museums, ornithological stations, dolphinariums, serpentariums and scientific expeditions to investigate wildlife.

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.

Proposed Topics for Master Theses

1. Management in dairy farming and monitoring indicators of safety and quality of milk.
2. The organization of veterinary support in pig farming using Dutch technology.
3. Development of quality management system in production of veterinary drugs.
4. Obstetric and gynecological clinical examination of mares at stud-farm.
5. Monitoring the spread of genetically modified food products in Ukraine.
6. Veterinary preventive measures in the system of preventing respiratory diseases in calves.
7. Substantiation of treatment methods for pets in case of poisonings by components of health care animal feed.
8. Anaesthetization in surgery of wild feline.
9. Forensic veterinary examination the causes of death in poultry farming of industrial type.
10. Clinical and pharmaceutical approaches to the selection of drugs in pathologies of the cardiovascular system.

Academic rights of applicants entering Master course

Applicants with the Diploma of Bachelor can continue training in connected specialties including ones of the field of knowledge "Specific categories", (table 2) and other specialties (table 3) in accordance with the Terms of enrolment to higher educational institutions of Ukraine in 2015 approved by the Order of the Ministry of education and science of Ukraine on October 15, 2014 № 1172 and the Regulations of enrolment to National University of Life and Environmental Sciences of Ukraine (basic institution, Kyiv) for 2015.

Curriculum of Master training in specialty "Veterinary Medicine"

№	Name of Academic Discipline	Semester	Number	
			Hours	Credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	History of veterinary medicine	1	60	2
2	Inorganic chemistry	1	120	4
3	Biophysics	1	120	4
4	Latin (terminology)	1	90	3
5	Organic chemistry	2	90	3
6	Medicinal plants	2	60	2
7	Genetics	2	60	2
8	Ecology in veterinary medicine	2	90	3
9	Animal anatomy	1-3	330	11
10	Cytology, histology, embryology	2-3	210	7
11	Basics of breeding	3	90	3
12	Veterinary microbiology	3	150	5
13	Biochemistry of an., bas. of phys. and colloid chem.	3-4	240	8
14	Physiology of animals	3-4	240	8

№	Name of Academic Discipline	Semester	Number	
			Hours	Credits ECTS
15	Animal alimentation	4	120	4
16	Informatics and computer engineering	4	60	2
17	Veterinary immunology	4	60	2
18	Veterinary virology	4	120	4
19	Hygiene of animals	4-5	210	7
20	Biotechnology in veterinary medicine	6	90	3
21	Pathophysiology of animals	5-6	240	8
22	Operative surgery, topographic anatomy and anesthesiology	5-6	240	8
23	Clinical diagnostic of internal diseases	5-6	240	8
24	Pharmacology	5-6	240	8
25	Pathological anatomy, autopsy and forensics	6-8	300	10
26	Parasitology and invasive disease	6-7	270	9
27	Veterinary radiobiology	7	150	5
28	Clinical biochemistry	9	120	4
29	Obstetrics, gynecology and animal reproduction biotechnology	7-9	330	11
30	Veterinary toxicology	8	120	4
31	General and special surgery	7-9	270	9
32	Veterinary-sanitary examination	7-8	240	8
33	Domestic animal diseases	8-10	330	11
34	Epizootology and infectious diseases	8-10	330	11
35	Organization and economy of veterinary affairs	9	120	4
Total for standard part			6150	205
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by University				
1	History and ethnoculture of Ukraine	1	120	4
2	Ukrainian language (prof. Direction)	1	90	3
3	Philosophy	2	90	3
4	Foreign Language	1-2	180	6
5	Physical education	1-4		
6	Agricultural policy	4	90	3
7	Life safety	5	90	3
8	Methodology and organization of scientific research on the basics of intellectual property	10	90	3
9	Business foreign language	10	150	5
10	Zoology	1	60	2
Total (Disciplines offered by University)			960	32
2.2. Disciplines offered by students				
Educational and professional Master's program				
2.2.1. Specialization "Methods of biochemical research"				
1	Quality management of the laboratory	12	300	10
2	Modern methods and instruments biochemical studies	11	540	18
3	Special biochemistry	11-12	600	20
2.2.2. Specialization "Microbiological diagnostic methods in veterinary medicine"				
1	Quality management of the laboratory	12	300	10
2	Biology of microorganisms	11-12	540	18
3	Methods for microbiological testing	11-12	600	20
2.2.3. Specialization "Veterinary-sanitary examination of agricultural and food products"				
1	Quality management of the laboratory	12	360	12
2	Hygiene of food and feed	11	300	10
3	Methods of veterinary-sanitary inspection of food and feed	11	360	12
4	Analysis of microbiological hazards in food and feed	12	420	14
2.2.4. Specialization "Pathomorphological diagnostics of animals diseases"				
1	Quality management of the laboratory	12	300	10
2	Pathomorphology animal diseases by type	11-12	540	18

№	Name of Academic Discipline	Semester	Number	
			Hours	Credits ECTS
3	Fundamentals of histological techniques and histological research methods	11-12	600	20
2.2.5. Specialization "Preventive veterinary technologies providing animal health"				
1	Preventive technologies to ensure the health of productive animals	11-12	480	16
2	Preventive technologies to ensure the health of horses	12	480	16
3	Preventive technologies to ensure the health of small animals	11	480	16
2.2.6. Specialization "Veterinary welfare of cattle, sheep and goats"				
1	Innovative technologies nutrition, genetics and breeding of cattle, sheep and goats	11	240	8
2	Preventive veterinary technology non-communicable diseases of ruminants	11-12	600	20
3	Preventive veterinary technology communicable diseases of ruminants	11-12	600	20
2.2.7. Specialization "Veterinary welfare in swine breeding"				
1	Innovative technologies nutrition, genetics and breeding pig	11	240	8
2	Preventive veterinary technology non-communicable diseases of pigs	11-12	600	20
3	Preventive Veterinary Technology contagious disease of pigs	11-12	600	20
2.2.8. Specialization "Veterinary equine welfare"				
1	Innovative technologies nutrition, genetics and horses breeding	11	240	8
2	Preventive veterinary technology non-communicable diseases of horses	11-12	600	20
3	Preventive veterinary technology contagious disease of horses	11-12	600	20
2.2.9. Specialization "Poultry veterinary welfare"				
1	Innovative technologies nutrition, genetics and poultry breeding	11	240	8
2	Preventive veterinary technology non-communicable diseases of poultry	11-12	600	20
3	Preventive veterinary technology contagious disease of poultry	11-12	600	20
2.2.10. Specialization "Dogs and cats veterinary support"				
1	Innovative technologies nutrition, genetics and dogs and cats breeding	11	240	8
2	Preventive veterinary technology non-communicable diseases of dogs and cats	11-12	600	20
3	Preventive veterinary technology contagious disease of dogs and cats	11-12	600	20
2.2.11. Specialization "Exotic and wild animals veterinary support"				
1	Housing, feeding and reproduction of exotic and wild animals	11	360	12
2	Modern diagnosis and treatment of non-communicable diseases exotic and wild animals in the non-contagious diseases	11-12	360	12
3	Infectious diseases of exotic and wild animals	11-12	360	12
4	Parasitic diseases of wild and exotic animals	11	360	12
2.2.12. Specialization "Veterinary fish farming welfare"				
1	Sanitation and hygiene in fish farming	11	360	12
2	Diseases of fish farming	11-12	360	12
3	Hygiene and Sanitation fish farming processing enterprises	11-12	360	12
4	Aquaculture	11	360	12
2.2.13. Specialization "Veterinary-sanitary inspection, safety and quality of food and feed"				
1	Hygiene of milk and milk products	11-12	480	16
2	Hygiene primary processing of animals and products of slaughter	11-12	480	16

№	Name of Academic Discipline	Semester	Number	
			Hours	Credits ECTS
3	Dental products of animal and plant foods	11	480	16
2.2.14. Specialization "Veterinary Pharmacy"				
1	Pharmacognosy, Pharmaceutical Chemistry and Toxicological Chemistry	11-12	360	12
2	Pharmacy and pharmaceutical technology	11	360	12
3	Clinical Veterinary Pharmacology and Clinical Pharmacy Veterinary	11	360	12
4	Preclinical and clinical studies of drugs	11-12	360	12
2.2.15. Specialization "Veterinary Hygiene and Sanitation"				
1	Waste of animal husbandry and their recycling	12	360	12
2	Veterinary and sanitary facilities	11	360	12
3	Animals ethology	11	360	12
4	Animals health	12	360	12
Educational and scientific Master's program				
2.2.16. Specialization "Physiology of higher nervous activity of animals"				
1	Physiology of higher nervous activity and zoopsychology	11-12	480	16
2	The pathophysiology of higher nervous activity	11-12	480	16
3	Pharmacodynamics and pharmacokinetics of drugs	11	240	8
4	Histology of the nervous and endocrine systems	12	240	8
2.2.17. Specialization "Cellular technology in veterinary medicine"				
1	Clinical animal pathophysiology	11-12	360	12
2	Molecular biology of the cell	11	360	12
3	Theory and practice of using stem cells in veterinary medicine	11-12	180	6
4	Oncology and transplantology in veterinary medicine	12	180	6
5	Molecular mechanisms of cellular and humoral immunity in animals	11	360	12
2.2.18. Specialization "Biomorphology and plastynation of vertebrates"				
1	Anatomical museum appliances	11	240	8
2	Evolutionary biomorphology of vertebrates	11-12	600	20
3	Methods of scientific and morphological studies	11-12	600	20
Total (Disciplines offered by students)			1440	48
Total for elective part			2400	80
3. OTHER TYPES OF STUDY				
1	Teaching practice		600	20
2	Practical training		420	14
3	Preparation and defense of master work		90	3
Total			1110	37
Total for Specialty			10800	360

Annotations educational plan disciplines

1. STANDARD ACADEMIC DISCIPLINES

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.

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.

Medicinal plants. The flora of planet and Ukraine, medicinal and poisonous flora; Collecting and harvesting of medicinal plant raw materials, elaboration technology and processing, chemical composition, pharmacological action, purpose, dosage forms, dosage, indications and contraindications for use.

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.

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. 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.

Informatics and computer engineering. The main goal of discipline is to master modern information computer technologies used in veterinary medicine to highlight the research results with sufficient validity and clarity.

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.

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.

Biotechnology in veterinary medicine. The genetic and cellular engineering, Immunobiotechnology, applied biochemistry, enzymology engineering, industrial engineering or microbiology. Transplantation of embryos, early sex determination and regulation of animal cloning and transgenic reception, monozygotic and bizarre animals. Hybridoma technology for monoclonal antibodies and their use.

Pathophysiology of animals. 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. 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, autopsy and forensics. General patanatomy. Death and posthumous changes. Compensatory and recovery processes. Inflammation. Immunomorphology and Immunopathology. Special pathological anatomy, diseases of the respiratory, digestive, cardiovascular, genitourinary and nervous systems. Diseases of skin. Pathomorphology of infectious diseases. Sectional course. Forensic veterinary examination. Processual part. Special part.

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 .

Veterinary-sanitary examination. Rules and methods of veterinary-sanitary assessment of animal origin products and basis of technology and standardization of production. Examination of slaughter products from healthy and sick animals, food poisoning and toxicity. Fundamentals of technology and health preservation; production hygiene, veterinary-sanitary inspection of eggs, milk and milk products, meat, wild industrial animals, birds, fish and meat of marine mammals. Veterinary-sanitary inspection of food in the markets.

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.

Organization and economy of veterinary affairs. 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.

2. ELECTIVE ACADEMIC DISCIPLINES

2.1. Disciplines offered by University

History and ethnoculture of Ukraine. Study of development objective laws, Ukrainian state. Acceptance of Constitution of Ukraine. Analysis of common problems of Ukraine's transition to a market-driven 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. Development of physical culture skills and hygiene of body.

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.

Zoology. Studies fauna from the simplest to the chordate animals, patterns of occurrence and development of animal organisms, body structure, reproduction in different types of individual animals.

2.2. Disciplines offered by the students

Educational and professional Master's program

2.2.1. Specialization "Methods of biochemical research"

Quality management of the laboratory. Discipline examines national and international standards for the organization of chemical analytical laboratories, evaluation of fitness techniques, traceability and uncertainty of the results. The knowledge gained will enable professionals already sufficiently understood in the laboratory and safely perform analytical measurement techniques.

Modern methods and instruments biomedical research. Discipline is studying advanced electrochemical, spectrometric and chromatographic techniques and instrumentation laboratory tests used to monitor the quality and safety of agricultural products, food products and environmental objects. It provides basic knowledge for laboratory professionals.

Special biochemistry. There is a basic discipline within which we study in depth knowledge of the biochemical processes occurring in living organisms, the pathological changes poisoning chemicals and manufacturing techniques and keeping livestock production. Deepening knowledge of biochemistry play a special role in the formation of professional biology and contribute to better learning of sciences master's program.

2.2.2. Specialization “Microbiological diagnostic methods in animal husbandry and Veterinary Medicine”

Quality management of the laboratory. Discipline examines national and international standards for the organization of chemical analytical laboratories, evaluation of fitness techniques, traceability and uncertainty of the results. The knowledge gained will enable professionals already sufficiently understood in the laboratory and safely perform analytical measurement techniques.

Biology of microorganisms. Discipline provides for the formation of future professionals in environmental and biological thinking, knowing their possible effect phenomena caused by microorganisms (viruses) in animals, raw foods and various environmental objects.

Methods for microbiological studies. The basic goal of discipline is to master modern methods of detecting microorganisms and viruses. Diagnosis of bacterial and viral infections in animals. Modern immunological (serological) methods for diagnosis of infectious diseases, determine the tension immunity.

2.2.3. Specialization “Veterinary-sanitary examination of agricultural and food products”

Quality management of the laboratory. Discipline examines national and international standards for the organization of chemical analytical laboratories, evaluation of fitness techniques, traceability and uncertainty of the results. The knowledge gained will enable professionals already sufficiently understood in the laboratory and safely perform analytical measurement techniques.

Hygiene of food and feed. Discipline involves learning the basics of health legislation in the production of food and feed in the EU and Ukraine, hygiene and quality control of meat and meat products, milk and dairy products, fish and fish products, eggs, vegetable and feed products to all stages of production.

Methods of veterinary-sanitary inspection of food and feed. The discipline involves the examination requirements of legal acts of Ukraine regarding the research in the laboratories of veterinary-sanitary examination. Studies also accelerated (screening) and arbitration methods of veterinary-sanitary inspection of food and feed sampling procedure.

Analysis of microbiological hazards in food and feed. In the discipline presents an analysis of microbiological risks associated with animal products, information on infections and food poisoning arising from the use of food, microorganisms that cause them and lead to spoilage of food and feed; microbiological methods for their detection.

2.2.4. Specialization “Pathological diagnostics”

Quality management of the laboratory. Discipline examines national and international standards for the organization of chemical analytical laboratories, evaluation of fitness techniques, traceability and uncertainty of the results. The knowledge gained will enable professionals already sufficiently understood in the laboratory and safely perform analytical measurement techniques.

Pathomorphology animal diseases by type. In the discipline of data considered pathomorphological changes in diseases of different etiology (bacterial, viral, parasitic etc.) in different species of animals, large and small ruminants, horses, pigs, dogs, cats, exotic animals and birds. We study the method of organizing and conducting postmortem autopsy of animals of different species on the basis of the current legislation of Ukraine. Methodological and methodical features performances postmortem diagnosis and

formulating a conclusion about the cause of death of the animal performed based preventive and therapeutic measures.

Fundamentals of histological techniques and histological research methods.

In the discipline of data examined histological laboratory equipment, preparation utensils, tools, devices, fixing agents, dyes and reagents for histological studies and data about the stages of making histological preparations (selection of material, its fixation, washing, drying, packing, production cuts and coloring different methods), the creation of the painted sections in balsam or other medium. In addition, students are introduced to the safety at work in histological laboratory microscopy technique made histopreparations and documentation of research results.

2.2.5. Specialization “Preventive Veterinary Technology of Animal Health Providing”

Preventive health technologies of farm 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 health technologies of small domestic and exotic 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.

2.2.6. Specialization “Animal welfare of livestock, sheep and goat farming”

Innovative technologies of nutrition, genetics and breeding of cattle, sheep and goats. Discipline is aimed at in-depth study of the properties of feed nutrients absorption and conversion in the body of ruminants. The nutrient requirements depending on the direction and production technology, innovative technologies of feeding ruminants.

Preventive veterinary technologies of noncontagious diseases of ruminants. Discipline studies preventive veterinary measures for the emergence of diseases related with metabolic disorders, hormonal disorders, vitamin and mineral nutrition. Prevention of infertility and obstetric pathology in cows, sheep and goats, modern methods of reproduction of ruminants. Prevention of surgical pathology and modern technology in veterinary surgery.

Preventive veterinary technologies of contagious diseases of ruminants. Discipline is studying advanced technological schemes of diagnostic tests and prevention of infectious and parasitic diseases of ruminants. Vaccine prophylaxis of infectious diseases of ruminants, the use of serum, immunoglobulin, preparations which have interferonogens action. Prevention of helminthoses and diseases caused by protozoa.

2.2.7. Specialization “Veterinary welfare in swine breeding”

Innovative technologies nutrition, genetics and breeding pig. Discipline is aimed at in-depth study of the properties of feed nutrients absorption and conversion in the body of pigs. The nutrient requirements according to age-sex groups of pigs and production technology, innovative technology feeding pigs. Genetics and breeding in pigs. The theoretical basis of breeding pigs. The task of selection due to the intensification of the industry. Features karyotypes, hereditary anomalies interbreed gene polymorphism, quantitative and qualitative features. Modern genetic database in the pig and their use. Veterinary Genetics.

Preventive veterinary technology non-communicable diseases of pigs. Discipline studies preventive veterinary measures for the emergence of diseases associated with metabolic disorders, hormonal disorders, vitamin and mineral nutrition. Preventive measures for prevention of non-communicable diseases calves. Prevention of obstetric pathology in pigs, modern methods of pig reproduction. Prevention of surgical pathology and modern technology in veterinary surgery.

Preventive Veterinary Technology contagious disease of pigs. Discipline focused on the study of modern technological schemes diagnostic tests and preventive measures for infectious and parasitic diseases of pigs. Vaccine Infectious Diseases adult pigs and calves, the use of biological products that enhance the natural resistance of the body (serum immunoglobulins preparations possessing interferonogens action). Prevention of helminthoses and entomoses, acaroses, diseases caused by protozoa.

2.2.8. Specialization “Equine veterinary welfare”

Innovative technologies nutrition, genetics and breeding horses. Discipline aims to provide future professionals in-depth knowledge about the properties of an innovative nature nutrient feed control full feeding horses. The nutrient requirements depending on the direction of the industry (breeding horse breeding, stud, sport horse breeding, horse jobs). Modern technologies of breeding horses. Genetic database breeding and their use. Veterinary Genetics.

Preventive veterinary technology non-communicable diseases of horses. Discipline studies preventive veterinary measures for the emergence of diseases associated with metabolic disorders, hormonal disorders, vitamin and mineral nutrition. Prevention of infertility and obstetric pathology in mares, modern methods of breeding horses. Features surgical pathology horses and their prevention. Modern Veterinary Surgery and Anesthesiology especially horses.

Preventive veterinary technology infectious diseases of horses. Discipline focused on the study of modern technological schemes diagnostic tests and preventive measures for infectious and parasitic diseases of horses. In the course of study students will learn morphological features and life cycle of pathogens and their systematic position, epizootology, pathogenesis and formation of immunity in horses. Prevention helminthoses, acaroses, entomoses and diseases caused by protozoa.

2.2.9. Specialization “Poultry veterinary welfare”

Innovative technologies nutrition, genetics and breeding of poultry. The discipline studying poultry need the nutrient feed, modern technology feeding of different species (chickens, ducks, geese, turkeys, pheasants, guinea fowl, quail), depending on the direction of production (meat or poultry egg) control full feeding. Features of breeding birds. Methods for determining the performance and value of poultry breeding, Creating lines and crosses. Veterinary Genetics. Methods for genetic studies, chromosomal and genomic mutations determining mutagenic environment.

Preventive veterinary technology non-contagious diseases of poultry.

Discipline is studying advanced circuit techniques and means of preventing non-communicable diseases during the growing broiler poultry and egg productivity directly (prevention of metabolic disorders, vitamin and mineral nutrients). Poisoning prevention of poultry from harmful air substances (ammonia, hydrogen sulfide, carbon dioxide) and feed components of natural and anthropogenic approval (mycotoxins, heavy metals, sodium chloride, urea).

Preventive Veterinary Technology contagious poultry diseases. Discipline focused on the study of modern technological schemes diagnostic tests and preventive measures for infectious and parasitic diseases. Vaccine Infectious Diseases parent flock birds, chickens and egg productivity when growing broilers. Application of biological products that enhance natural resistance and resistance (immunoglobulins preparations possessing interferonogens action). Prevention of helminthoses, acaroses, entomoses, diseases caused by protozoa.

2.2.10. Specialization “Veterinary welfare of dogs and cats”**Innovative technologies nutrition, genetics and breeding of small animals.**

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 infectious 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.

2.2.11. Specialization “Veterinary care of exotic and wild animals”

Housing, feeding and reproduction of exotic and wild animals. The discipline studying the characteristics of a place in the animal world and the importance for humanity and environment at all major species of exotic and wild animals (wild Artiodactyles and odd-toed, primates, animals, rodents, reptiles birds). Features of housing, feeding, reproduction in captivity.

Modern diagnosis and treatment of non-communicable diseases exotic and wild animals in the non-contagious diseases. Learn the latest methods of research animals, such as endoscopy (laparoscopy, gastroscopy, esophagogastroduodenoscopy, cystoscopy, renoscopy, uteroscopy, laryxbronchoscopy, thoracoscopy, rectokolonoscopy, visual biopsy), ultrasound (U.S.), magnetic resonance imaging (MRI) features cardiography, phonocardiography and radiological studies. Peculiarities of non-communicable diseases of organs and body systems and general principles of surgery in different species of exotic and wild animals.

Infectious diseases of wild and exotic animals. The discipline studies the most common dangerous general and specific for each type of animal diseases of viral, bacterial, and fungal origin and neglected diseases that threaten livestock in general.

Parasitic diseases of wild and exotic animals. Discipline introduces undergraduates from diseases that are caused by worms, mites, insects, especially their distribution, clinical manifestation in different species of exotic and wild animals, and measures to combat them.

2.2.12. Specialization “Fish farming welfare”

Hygiene and Sanitation in fish farming. The study involves the development of students' discipline of modern techniques, methods and techniques of veterinary and sanitary requirements for breeding, cultivating, maintaining and gain that fish in ponds, lakes, rivers, reservoirs and estuaries, as well as artificial water bodies, the organization of veterinary reliable quality control water, feed and feed additives and protection of water bodies from toxic pollutants, the use of modern means of disinfection and decontamination and desinvasion of fishery ponds, compliance with veterinary and sanitary measures to protect public health against diseases common to man and animals.

Diseases of fish. Discipline shaping students' knowledge of complex etiology, pathogenesis and methods of prevention and treatment of infectious and parasitic diseases of freshwater and marine fish and other aquaculture facilities through the use of various drugs, disinfectants, improve water quality, aquatic immune prophylaxis and acclimatization. Special attention is paid to the diagnosis and prevention of non-communicable diseases freshwater fish related to changes in gas composition and hydrochemical regime of water, metabolic disorders, negative impact on the body of xenobiotics, heavy metals, radionuclides, sewage livestock enterprises.

Hygiene and Sanitation fish processing companies. Discipline provides knowledge to provide veterinary hygiene and sanitation requirements for basic technological processes of fish and other aquatic organisms and aquatic plants in fish processing plants for frozen fish and seafood, canning, smoked, dried, drying and pickling fish, making preparations. The questions on the use of different disinfectants, schemes and methods of disinfection for storage and processing of fish and seafood, as specified risks reducing the quality of aquaculture products processing facilities, discusses how to prevent poisoning of people substandard food processing.

Aquaculture. Discipline examines organizational structure ponds and industrial farms use biological basis of complex measures of intensification of aquaculture aimed at increasing biological productivity and fish productivity of ponds and technology for seed cultivation facilities, production of planting material and commercial fish in the warm-water and cold-water ponds and industrial aquaculture with regard systems, forms and cycles of fisheries management.

2.2.13. Specialization “Veterinary-sanitary inspection, safety and quality of food and feed”

Hygiene of milk and dairy products. Discipline regards health requirements for: livestock animals used are milk, livestock buildings, stalls, equipment, identification of animals and herds, Hygiene during milking, reception and transportation of persons involved in the production of raw milk supply. Highlights the veterinary inspection dairy farms, milk collecting centers and other entities engaged in the primary production of milk. Requirements for obtaining good quality milk. Veterinary requirements concerning import into Ukraine of milk and dairy products. Hygiene in the use of modern technologies for drinking kinds of milk and dairy products.

Hygiene primary processing of animals and products of slaughter. Discipline regards veterinary and sanitary requirements for primary processing of animals and slaughter products at all stages from breeding animals and ending production of meat products. Discipline studies sanitary requirements processes: slaughter, primary processing of animal carcasses and different types of poultry technological processing hides, intestinal raw materials, by-products, endocrine-enzyme raw food animal fats, sausages, canned Jar. Considered as hygiene requirements for storage facilities, refrigerators and transport of meat and meat products, household facilities, personal hygiene of staff.

Dental products of animal and plant foods. Discipline highlights issues of health of fish and fish products, honey, eggs, plant products, animal feed, to ensure their safety, ability to prevent potential hazards associated with the consumption of these products, analysis and mastery of modern methods of veterinary-sanitary examination.

2.2.14. Specialization “Veterinary Pharmacy”

Pharmacognosy, Pharmaceutical Chemistry and Toxicological Chemistry.

Pharmacognosy provides the knowledge, skills and working knowledge of medicinal raw materials of plant origin, the composition of biologically active compounds and methods for their identification, the establishment of high quality and purity of practical use as a source of modern effective drugs for the treatment of animals in various pathologies. Pharmaceutical Chemistry occupies a leading position in the sector of pharmaceutical sciences, as trains professionals to address the twin problems: the creation of new medicines and quality control of drugs. Its main aim is to create a methodology and quality assessment of drugs based on general and specific patterns of pharmaceutical chemistry as an applied discipline to perform professional tasks of Veterinary Medicine degree. Toxicological Chemistry provides the basic knowledge, skills, skills for working in the field of chemical toxicology, forensic toxicology, hygiene research, forms the basis of knowledge of the biotransformation of xenobiotics, toxicodynamics toxicokinetics and toxic substances, mechanisms of toxic action of poisons, the differential diagnosis of poisoning animal natural and artificial methods of detoxification and specific antidote therapy.

Pharmacy and pharmaceutical technology. Pharmacy, a discipline that aims to deepen the theoretical knowledge, familiarity with regulatory and legislative documents regulating the development, production, sale and use of veterinary drugs, get practical skills and prepare graduates to work independently. The subject of discipline is the system of veterinary pharmaceutical drugs, particularly Licensing Terms pharmacy business, retail sales rules, regulations, governing state control and supervision over the quality veterinary preparations and substances regulations transportation and storage of veterinary drugs. Pharmaceutical technology – the science of the theoretical foundations and production processes of processing medicinal products prepared medication storage and dispensing. The objectives of the discipline is the study of the theoretical foundations and practical issues of making drugs in pharmacy and industrial production; familiarization with equipment and instrumentation used in pharmacies and pharmaceutical companies, identifying the right kind of packaging, exploring the normative documentation in the finished product.

Clinical Veterinary Pharmacology and clinical veterinary pharmacy. Clinical Pharmacology and Pharmacy – integrated applied science that combines pharmaceutical and clinical aspects knowledge about medicines. Its main task is to establish the theoretical foundations and methodological approaches of rational use of medicines. In studying the discipline, students will be acquainted with the basic principles of medical and veterinary ethics, basic types of documentation, mastering the basic techniques of

laboratory and instrumental examination of patients, total absorption syndromology and clinical sympatology of most common internal diseases, learning general methodology and principles of selection of drugs for effective drug therapy, the study of clinical manifestations of drug side effects.

Preclinical and clinical studies of drugs. Purpose of nonclinical studies is to determine the toxicity and therapeutic efficacy of future drug, its effects on major body systems, and installation of the possible adverse effects on laboratory animals and test facilities. Implementation of Good Laboratory Practice (GLP), which guarantees the quality of the emerging drugs of high therapeutic effectiveness; GLP – a system of rules that cover the organizational process and the conditions under which non-clinical studies are planned, performed, provided their monitoring, a registration and storage provided a report on the test results. Clinical studies conducted to identify or confirm the clinical pharmacodynamic effects of the investigational drug or detect all adverse reactions to it, and to study absorption, distribution, biotransformation and excretion of the drug. Such studies should be conducted in compliance with Good Clinical Practice (GCP), which are governed by the rules of the advanced clinical trials.

2.2.15. Specialization “Veterinary Hygiene and Sanitation”

Waste of animals and recycling. The discipline studies the composition, properties and sanitary evaluation of animal waste, modern methods of waste management facilities, sanitary and veterinary-sanitary requirements for systems and methods for their transportation, storage, recycling and safe disposal.

Veterinary and sanitary facilities. Discipline provides students with knowledge of the latest tools and equipment used for disinfection, disinfection, disinfestation, deodorants and other methods of animal sanitation facilities. The purpose of discipline is also of students' skills in today's job disinfection facilities and sanitary facilities for livestock territory of the objects and the environment from infectious and parasitic diseases of animals.

Ethology animals. Discipline is studying animal behavior, her life signs, the impact of genetic factors, housing conditions, feeding, operation in different species, sex and age groups of animals and technology, their adaptation, acclimatization, social behavior in the herd, depending on the technology of animal production environment, anthropogenic factors on animals.

Animal Health. Discipline measures and exploring ways to ensure animal health companies in the intensive technologies of milk, meat, chicken, table eggs and receipt of breeding material. Among the issues to be considered, prevention of animal diseases caused by violation of housing, feeding, breeding, care and use.

Educational and scientific Master's program

2.2.16. Specialization “Physiology of higher nervous activity of animals”

Physiology of higher nervous activity and zoopsychology. Discipline provides an in-depth study on the functioning of the cerebral hemispheres and subcortical masses basic cortical processes, congenital and acquired forms of individual, integrative brain activity, research methodology of higher nervous activity, methods of testing conditioned reflex activity in animals of different species, and mechanism of localization called temporary bonds, inhibition of conditioned reflexes, neural mechanisms of information processing in sensory systems, analytical and synthetic brain activity, genetics and typology of higher nervous activity, types and properties instincts categories of perception analyzers.

The pathophysiology of higher nervous activity. Discipline studying disorders of the nervous activity at different levels, pathological changes of mobility of nervous processes, forms of abuse of higher nervous activity, the initial functional state of the cerebral cortex of the brain that leads to neurosis, changes in the functional state of higher central nervous system effects of certain biological factors (starvation, age-related changes), endocrine-autonomic (hyper-, hypo thyroid, gonads, the impact of "pituitary-adrenal"), environmental factors (poisoning, toxicity, infection), induction inhibition of pathological processes, the role of the brain in systemic change orientation pathological processes.

Pharmacodynamics and pharmacokinetics of drugs. Discipline considering the mechanism of action of drugs on the central and peripheral nervous system of animals based on typological characteristics of higher nervous activity in order to regulate basic cortical processes in the intact organism.

Histology of the nervous and endocrine systems. Discipline is studying the development, structure and histophysiology nerve fibers, micro-and ultra microstructure and myelin free fibers, the general characteristics of endocrine organs and their classification, division into central and peripheral endocrine organs, development, structure and function of neurosecretory nuclei of the hypothalamus, pituitary, pineal, thyroid, parathyroid, adrenal glands, and interrenal, suprarenal system dissociated endocrine system, the relationship of the endocrine and nervous systems.

2.2.17. Specialization "Cellular technology in veterinary medicine and biology"

Clinical animal pathophysiology. Discipline provides in-depth knowledge of the pathogenesis of common pathological processes and morphological disorders of organs and systems. Clinical aspects of treatment of pathogenic changes and their significance in the diagnosis of disease and strategies pathogenetic treatment of animals.

Molecular biology of the cell. Discipline provides training for master-researcher who has knowledge of the evolution and ontogeny of cells, its molecular organization; role of subcellular structures and structural mechanisms of regulation of cell activity in intact mammal organism.

Theory and practice of using stem cells in veterinary medicine. Discipline is examining the biological characteristics of stem cells (SC), methods of their production, identification, cultivation, storage and application of SC to restore damaged structure abnormal tissue of animals; features directed differentiation SC compatibility mechanisms of cell body animal-recipient.

Oncology and transplantology in veterinary medicine. Discipline studies basic patterns of occurrence and development of tumor; main provisions of Experimental Oncology; strategy for the treatment of cancer of animals; basic rules of transplantation of tissues and cells; requirements for graft and recipient animals.

Molecular mechanisms of cellular and humoral immunity in animals. It studies the molecular mechanisms of immune responses based on the latest achievements of molecular biology and immunochemistry methods assess the immune status of the body; factors and mechanisms of cell (transplant) and humoral immunity in animals; the theoretical aspects of the formation, regulation and implementation of the immune responses in animals and practice of immunoassay in the laboratory diagnosis of diseases and major disturbances of the immune system of animals with the evaluation of the results based on modern achievements of domestic and foreign immunology; application for research and to produce genetically engineered immune recombinant DNA, monoclonal

antibodies; biological properties of the preparation and use in the practice of alpha, beta and gamma interferons, synthetic antigens, various modern vaccine preparations.

2.2.18. Specialization "*Biomorfology and plastynation of vertebrates*"

Anatomical museum appliances. The purpose of discipline is to develop future researchers deep theoretical knowledge and practical skills of making and preserving anatomical specimens with systems of vertebrates and to create educational and scientific base, as well as making original aesthetic museum exhibits.

Evolutionary biomorfology of vertebrates. The purpose of discipline is to develop deep theoretical knowledge and practical skills in preparation of various systems and organs of different classes of vertebrates, as well as methods of comparative anatomical and functional studies, making it possible to find general relations of the organization by examining the similarities, analogies and transformation of bodies and their systems.

Methods of scientific and morphological studies. Discipline studies and analyzes various macro-, micro- and ultramicroscopic methods and techniques of research body structure of domestic animals and poultry. It has a shape research and scientific approach to the selection of complex methods and techniques of research of various materials of animal origin depending on the goal and expectations of future veterinarians and scientists training lays the foundation of a scientific specialty – pathology, oncology, animal morphology.

**Master's course
in specialty "VETERINARY-SANITARY INSPECTION, QUALITY AND SAFETY
OF LIVESTOCK PRODUCTS"
branch of knowledge "Veterinary"**

Form of training, licensed number of persons:	
– full-time	25 persons
Duration of training:	
– full-time educational and professional programs	2 years
Credits:	
– educational and professional programs	120 ECTS
Language of teaching	Ukrainian, English
Qualification	doctor of veterinary medicine on safety and quality of agricultural and food products

The concept of training

Provides training of highly qualified specialists for security and quality of agricultural and food products by world standards. Implementation of the state veterinary and sanitary control over the technological processes of production, processing, storage, transportation and circulation of products of animal and vegetable origin in order to prevent spread of diseases, toxico-infections, infections, which occurring with symptoms of poisoning, toxicoses, etc. Control of safety and quality of food and feed, compliance by the entity proper production and introduction of the official audit of the management system of food safety.

**Educational and professional Master's program
*Specialization "The safety and quality of food and feed"***

Training specialists in safety and quality of food and feed involves studying the problematic issues of the hygienic assessment of food and feed, safety of food and feed, warning of potential hazards in food and feed, determine the degree of risk to the consumer, analysis and mastering of modern methods of veterinary-sanitary examination of food and feed.

Areas of employment for graduates

According to the obtained knowledge and skills doctor of veterinary medicine on safety and quality of agricultural and food products EQL "Master" can carry out veterinary inspection, work as official doctor of veterinary medicine and doctor of veterinary medicine of production capacities, processing, storage and circulation of food and feed etc. In the state and other laboratories that are conducting research of safety and quality of food and feed.

The place of employment may be Ukrainian laboratory of quality and safety of agricultural products, State Research Institute of Laboratory Diagnostics and Veterinary Expertise, state laboratories of veterinary-sanitary examination of agro-food markets, meat combines and enterprises of product processing animal and vegetable origin, veterinary border points, supermarkets.

The most gifted graduates after ending of a magistracy have prospect of joining the postgraduate study and a candidate's degree and doctor of science with further employment in research institutions of NAS, NAAS of Ukraine and other academies, universities III-IV level of accreditation State Scientific Research Institute of Laboratory

Diagnostics and Veterinary Expertise (SSRILDVSE), state scientific control institute Ministry of Agricultural Policy and Food of Ukraine, Ukrainian laboratory of quality and safety of agricultural products (ULYAB Agroindustrial complex).

Proposed Topics for Master Theses

1. Standard and advanced control of quality and safety of milk produced in private farms.
2. Monitoring indicators of safety and quality management in the milk and dairy farming.
3. Obtaining adequate milk qualities in SU NUBiP of Ukraine "Velykosnitynske educational and experimental farm "
4. Veterinary-sanitary examination _ guinea fowls and quails eggs.
5. Monitoring concerning the presence of bacteria of the genus Salmonella in poultry and feed. Ветеринарно-санітарна експертиза продуктів забою страусів.
6. Veterinary-sanitary examination of products of slaughter pigs by echinococcosis.
7. Analysis of the production of rennet cheese of good quality.
8. The quality and safety of raw milk of cows obtained at different technological conditions
9. The criteria for quality and safety of chicken eggs
10. The quality and safety of meat products

Academic rights of applicants entering Master course

Applicants with the Diploma of Bachelor can continue training in connected specialties including ones of the field of knowledge "Specific categories", (table 2) and other specialties (table 3) in accordance with the Terms of enrolment to higher educational institutions of Ukraine in 2015 approved by the Order of the Ministry of education and science of Ukraine on October 15, 2014 № 1172 and the Regulations of enrolment to National University of Life and Environmental Sciences of Ukraine (basic institution, Kyiv) for 2015.

Curriculum of Master training

in specialty "Veterinary-sanitary examination, quality and safety of animal products"
Educational and qualification Master program

№	Name of the course	Semester	Amount	
			hours	Credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	Foreign language in professional activity	1	60	2
2	Information technology in veterinary medicine	1	60	2
3	Philosophy of science and innovation development	1	30	1
4	Civil protection	1	30	1
5	Comparative morphology, special pathomorphology and judicial Veterinary Medicine	1	60	2
6	Veterinary legislation in Ukraine	1	60	2
7	Research Methodology	1	60	2
8	Hygiene of milk	2	90	3
9	Hygiene of dairy products	2	90	3
10	Hygiene of primary processing of animals and products of slaughter	2	90	3
11	Hygiene of meat and meat products	2	90	3
12	Hygiene of food oils and animal fats	2	90	3

№	Name of the course	Semester	Amount	
			hours	Credits ECTS
13	Hygiene of meat and poultry eggs	2	90	3
14	Hygiene of hydrobionts	2	90	3
15	Hygiene of apiculture products	2	90	3
16	Hygiene of vegetable food	2	90	3
17	Hygiene of feed and feed additives	2	90	3
Total for standard part			1260	42
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by University				
1	Intellectual property and patent law	1	30	1
2	Strategy for the sustainable development of nature and society	1	60	2
3	Business foreign language	1	90	3
4	Standardization and certification of food and feed	1	60	2
5	The microstructure of meat and meat products	1	60	2
6	Sanitary microbiology	1	90	3
7	Quality management of laboratory	1	30	1
8	Analysis of microbiological risk food and feed	2	90	3
9	The system of food safety and feed	2	90	3
10	Commodity research of food and feed	2	90	3
11	Ekotrofology	2	90	3
Total (Disciplines offered by University)			780	26
2.2. Disciplines offered by students				
2.2.1. Specialization "Safety and quality of food and feed"				
1	Methods of veterinary and sanitary examination	3	90	3
2	Risk analysis of food and feed	3	90	3
3	Official audit system of providing the safety of food and feed	3	90	3
4	State veterinary supervision and monitoring of food and feed	4	90	3
Total (Disciplines offered by students)			360	12
Total for elective part			1140	38
3. OTHER TYPES OF STUDIES				
1	Educational practice	2	300	10
2	Production practice	4	720	24
3	Preparation and defense of master's work	4	180	6
Total			1200	40
Total for Specialty			3600	120

Annotations educational plan disciplines

1. STANDARD ACADEMIC DISCIPLINES

Foreign language in professional activities. The purpose of discipline is formation of communicative skills which would allow carry out professional contacts in a foreign language in various areas and situations, namely in formal and informal ways, in the individual and group contacts in the form of speeches at conferences, during the discussion contracts, projects, drafting business letters.

Information technology in veterinary medicine. Discipline involves computer mastery of modern information technologies used in veterinary medicine in order to highlight research results with sufficient degree of validity and visibility.

Philosophy of science and innovation development . Studying the history of philosophy and its organic component, of the complex of principles of knowledge as a general method of cognitive activity, the development of abilities to logical thinking, an independent analysis of the complex phenomena of the social life, the ability to link general philosophical problems with solving problems of economic theory and practice.

Civil protection. Studying discipline involves formation the ability to think creatively, solve complex problems of innovative character and make productive decisions in civil protection, for the future professional activity.

Comparative morphology, special pathomorphology and judicial veterinary medicine. The course studies the species for animal identification by bones parameters , internal structure, organoleptic characteristics, morphological structure of muscles and their changes , (special) patanatomy and Pathomorphology as part of judicial veterinary examination.

Veterinary legislation in Ukraine. Study the system normative and legal acts containing legal norms that govern legal relations which arising in the field of veterinary affairs, namely, public-legal relations to ensure the health of domestic animals and to avoid hazards for humans associated with animal diseases, as well as private-legal relations to improve the economic efficiency of agricultural livestock by providing quality services for the treatment of animals.

Research Methodology The course studies the main stages of development of Ukrainian science and higher education, their current state, especially degreel reform of higher education with a focus on training of masters, candidates and doctors of sciences. Methods of research (historical, biological, zootechnical, veterinary, special) used in veterinary medicine, bioethics of behavior of the doctor, researcher, scientist, choosing the topic and forming tasks of research, invention and patent.

Hygiene of milk. Discipline examines the hygiene requirements for _ herd of mammary animals, keeping of animals, premises, stalls, equipment, animal identification and herds, hygiene during the milking, reception and transportation of milk, people who participate in the production of raw milk, supply. Highlights question of veterinary inspection of dairy farms, milk collecting stations and other facilities that carry out in primary production of milk.

Hygiene of dairy products. Discipline involves familiarization with international legislation and the main legal documents of Ukraine for security of dairy products. Examines hygiene of processes in production of dairy products in terms of the use of modern technology. Also planned study of the basic indicators of quality and safety of dairy products, cheese, butter, canned milk, ice cream and methods for their control.

Hygiene of primary processing of animals and products of slaughter. The course studies the veterinary and sanitary requirements for primary processing of animals and slaughter products at all stages from growing animals to obtain raw meat. The course studies the sanitary requirements to technological processes: slaughter, primary processing of carcasses of different species of animals and birds; technological processing of hides, intestinal raw materials, by-products, endocrine-enzyme raw materials, food animal fats.

Hygiene of of meat and meat products. Discipline involves study of the foundations of sanitary requirements during the production of meat and meat products in the EU and Ukraine, hygiene and quality control and safety of meat and meat products at all stages of production. Also, considering the basis of technology of meat productions and hygienic factors that influence on their quality and safety. Also considered hygienic requirements for storage facilities, refrigerators and transportation, domestic premises, personal hygiene of staff.

Hygiene of food oils and animal fats. Discipline involves study of the foundations of sanitary requirements during the production of food oils and animal fats in the EU and Ukraine, hygiene and quality control and safety of food oils and animal fats at all stages of production. Also, considering the basis of technology of obtaining of the product.

Hygiene meat and poultry eggs. Discipline involves learning the basics sanitary requirements during the production of meat and eggs of poultry in the EU and Ukraine, hygiene and quality control and safety of meat and poultry eggs at all stages of production. Also, considering the fundamentals of products from poultry and hygiene factors that influence on its quality and safety.

Hygiene of hydrobionts. Studies the sanitary basics of growing, fishing, transportation, processing of fish and other hydrobionts and sanitary requirements for fish processing enterprises, ships, that produce fish products and products from other of hydrobionts.

Hygiene of apiculture products. Discipline involves studying of bases of sanitary requirements during the production of honey and other bee products in the EU and Ukraine, hygiene and quality control and safety of bee products at all stages of production.

Hygiene of vegetable foods. Highlights issues of hygienic assessment of products of plant origin, ensuring their quality and safety, the possibility of preventing of the potential dangers associated with the production, processing, storage, transportation, sale and consumption of these products, analysis and mastery of modern methods of determining safety and quality.

Hygiene of feed and feed additives. The course envisages an in-depth study of legal, organizational and methodological foundations of the system of state regulation of safety and quality of feed, feed additives and premixes for food security at the national and international levels, and practical skills in the organization of monitoring all feed products for feeding productive and unproductive animals taking into account the entire production chain.

2. ELECTIVE ACADEMIC DISCIPLINES

2.1. Disciplines offered by University

Intellectual property and patent law. Mastering the basic elements of intellectual property, legal relationships between concepts, values, principles and rules regarding intellectual property, knowledge and understanding of wider legal base in different countries, skills of legal protection of trademark protection under common law and the stages of registration. The course allows to obtain theoretical understanding and knowledge of the main provisions of copyright, patents and the use of digital signatures in the legal dispute, skills acquisition, analysis and transmission of information and legal questions.

Strategy for the sustainable development of nature and society. The course aims at forming basic knowledge on the interaction between man and the environment required for decision-making in the future professional activity according to the principles of sustainable development.

Business foreign language. Complex learning of language profession activity. Types of language activity: reading, listening, speaking. Formation of skills of dialogue and monologue speech and to prepare students for professional communication in speech and writing in a foreign language. Learn how to translate special texts as a means of presenting adequate scientific information . Formation of knowledge, skills and abilities that provide for 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 and partners .

Standardization and certification of food and feed. The course includes an in-depth study of legal, organizational and methodological foundations of standardization, metrology, certification and food safety management at the national, regional and

international levels and practical skills of development and practical application of normative documents (ND) of various categories of animal products, harmonized with international (ISO) and European (EN) standards.

The microstructure of meat and meat products. Study meat components at various stages of processing, as well as in finished form, methods of control of production technology of meat products and compliance with the quality of the finished products to recipe, quantitative analysis of individual components of in the products and detection of falsification of products and their microbial contamination.

Sanitary microbiology. Provides studying of the main provisions of health assessment of the environment (air, soil, water, etc.) and food products; under the control of development of microorganisms in various stages of production and processing of products of animal and vegetable origin, during the investigating of food poisoning, for quality control and disinfection measures at facilities, subject to veterinary inspection; in the study of patterns of life of microorganisms of the environment both in the ecosystem and in relations with a man.

Quality management of the laboratory. Generates the theoretical and practical knowledge of application of national and international standards for the organization of the production laboratories in the chemical-analytical, biochemical, microbiological and other studies; understand the general principles of quality assurance and quality control production laboratories; be able to create documents for quality management; carry out internal and external evaluation of the quality of research; organize technical and methodological support of production laboratory; take into account the impacts on the accuracy of test results, including the ability to conduct the validation of analytical methods and the implementation of rules of quality control testing laboratory.

Microbiological risk analysis of food and feed. Disciplines study analysis of microbiological risks concerning animal products; information about the food infection and poisoning that occur during the the use of food; microorganisms which cause them damage of food and feed; microbiological methods for their detection.

The system of safety of food and feed. Studies the issue of food safety, generalizes the features of the development and implementation of food safety management within the principles of HACCP. Fundamentals of the concept of national food security in the context of Ukraine's integration into the EU.

Commodity of food and feed. Studies physical, chemical and biochemical properties of products and change of these properties at all stages of the way from production to consumer. Provides knowledge and ability to determine the quality of product to requirements of valid normative documentation, level of quality, grade, and compliance with consumer properties and social needs.

Ekotrofology. The course studies the foundations of a systematic approach to healthy and balanced diet. The conditions that ensure the needs of the different population groups in a rational and balanced diet, adequate to national traditions and habits, occupation, health, economic situation and environmental situation in accordance with the requirements of modern medical science.

2.2. Disciplines offered by students

2.2.1. Specialization "Safety and quality of food and feed"

Methods of veterinary andsanitary examination. The discipline involves the study of the requirements of normative legal acts of Ukraine concerning support of research in the laboratories of veterinary-sanitary examination. Studies also accelerated (screening) and arbitration methods of veterinary-sanitary examination of food and feed sampling procedure.

Risk analysis of food and feed. Studying discipline involves consideration of issues relating to the establishment of a system of food safety and feed based on hazard analysis throughout the production chain, including key steps in developing the system. In the training course highlights the main aspects of the preparation for the identification and analysis of hazards, considered the procedure of analysis, and a list of potentially dangerous factors and preventive actions.

Official audit of system of providing the safety of food and feed. The course provides an in-depth study of procedures, which subject to official (state) control (audit) during production, processing, transportation, storage and marketing of food and feed. Consider the audit criteria, the principles of auditing, management of the program of audit, performance of audit.

State veterinary and sanitary supervision and control of food and feed. Studies the organization of internal (production) and state veterinary and sanitary control of food and feed. Includes in-depth study of normative legal acts that govern the state veterinary and sanitary control, the responsibility for violations in this area and organizational support of the competent authority.

**FACULTY OF ALIMENTARY TECHNOLOGIES AND MANAGING
OF QUALITY OF PRODUCTS OF AGRICULTURAL COMPLEX**

Dean – doctor of technical sciences, professor Bal'-Prylypko Larissa Vatslavivna
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The faculty organizes and co-ordinates the process of training of masters of sciences by specialties of:

8.05170104 “Technologies of Preservation, Conservation and Processing of Meat”

The chair responsible for organization of training:

Technologies used in production of meat-, fish products and seafood

Tel.: (044) 527- 88-85

E-mail: t_lebskaya@ukr.net

Chief of the chair – doctor of technical sciences, professor Lebc'ka Tetiana Kostiantynivna

8.05170105 “Technologies of Preservation and Processing of Water Bioresources”

The chair responsible for organization of training:

Technologies used in production of meat-, fish products and seafood

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Chief of the chair – doctor of technical sciences, professor Lebc'ka Tetiana Kostiantynivna

8.18010010 “Quality, standardization and certification”

The chair responsible for organization of training:

Standardization and certification of agricultural production

Tel.: (044) 527-82-78

E-mail – standardization@ukr.net

Chief of the chair – doctor of technical sciences, professor Nesterova Lidiya Oleksandrivna

Master's course
in specialty "TECHNOLOGIES OF PRESERVATION, CONSERVATION
AND PROCESSING OF MEAT"
branch of knowledge "Alimentary industries and reprocessing of products
of agriculture"

Form of Training, Licensed number of persons:	
– Full-time	30 persons
– Part-time	30 persons
Duration of training	
– Full-time educational and professional program	1.5 years
– Part-time	2 years
Credits:	
– educational and professional program	90 ECTS
Language of training	Ukrainian, English
Qualification of graduates:	masters of sciences by specialty of "Technologies of storage, preservation and reprocessing of meat"

Concept of training

To organize the qualitative managing of technological processes of storage, preservation and reprocessing of meat basic materials, it is necessary to expand the net of organizations, which would train and retrain the persons, who are specialized in this sphere of technique. It is seen now the steady raising of effectiveness of existing technologies. Therefore, that the principal prerequisite of the effective practical realization of problems of optimization of work of enterprises that reprocess meat in Ukraine is training of qualified engineers-technologists specialized by the program of training masters of sciences by the program of "Technologies of storage, preservation and reprocessing of meat".

The determinative factors in training of masters by specialty "Technologies of preservation, conservation and processing of meat" are: augmentation of assortment of fabricated qualitative traditional and novel foodstuffs, introduction and evolution of new intense technologies based on intense use of results of fundamental R&D works in sphere of biotechnology, and realization of modern technical and technological solutions. The basic principle to be put in the base of modern meat-processing industry both in our country and abroad is use of modern norms of biotechnologies representing itself the complex of measures by the purposeful conversion of materials of animal origin in the concrete foods in use of specific apparatus and advanced systems of control and management. The principal problem in realization of such program is absence of skilled specialists, who will be capable to solve the dual problem of ensuring of safe storage, preservation and reprocessing of meat by norms of existing technologies, and raise sufficiently their technological level. The proposed program of training permits to study in details all problems existing in this sphere and train effectively the specialists capable to solve the listed problems.

Educational and professional Master's program
Specialization "Technology of meat and meat-products"

The program has the purpose of familiarization of masters of sciences with the complex of theoretical and practical information on problems of modern technologies of

storage, preservation and reprocessing of meat, as well as train them to adapt the domestic norms of quality of crude materials and finished production to international and European norms.

Areas of employment for graduates

The principal goal of the educational program is training of engineers-technologists specialized in works in storage, preservation and reprocessing of meat. They would work at the meat-processing plants and enterprises of similar specialization, in organizations and firms, which operate in spheres of management, manufacturing, pedagogic, as well as in R&D and projecting institutions, which develop novel and refine the existing technologies of fabrication of half-stock and finished meat products.

Specialization “Technology of alimentary products”

The leading specialization of graduates, who finished their training by specialty of “Technologies of storage, preservation and reprocessing of meat” is work in spheres of development and operation by norms of technologies of fabrication of alimentary products. Having such qualification, the specialists possess with the full set of professional knowledge and are capable to work in spheres of organization, management, marketing, R&D and other type activities, including the work in enterprises of public catering of all forms of property.

Areas of employment for graduates

The specialists are capable to work at positions of professional specialists (managers of lower, average and upper level of employment) in enterprises specialized in servicing, trade, public catering (including the work in their structural departments) of all sizes, forms of property and organizational and legal forms of operation, as well as in organizations and enterprises, which exercise the external economic operation etc. they work also in firms specialized in marketing, consulting, information technologies, centers proposing occupancy, trusts, investing and insurance companies.

Practical training

Practical training of student is the indivisible part of educational process of training of masters of sciences by specialty of 8.05170104 “Technologies of preservation, conservation and processing of meat”.

The future specialists obtain the basic experience of practical work and necessary qualification of specialist of meat-processing industry in process of carrying out of practical training at the specialized enterprises.

In process of training, the pretender on obtaining of the master’s degree passes two practical works. All these practices differ by their purposes, content and terms of doing.

Each practice occurs at the advanced enterprises of meat-processing industry and is carried out after the pretender would obtain the necessary knowledge in fundamental, engineering, social and economical problems of the industry.

The students pass their practical training at the meat-processing enterprises of all forms of property. Choose of concrete places of passing of practices is carried out in observance of concrete specialization, technical and technological supplying of the manufactures, and their orders on training of specialists, who will be engaged at enterprises used as the base of practice.

The enterprises, which are the major applicants for engagement of specialists are: Producing enterprise NULES of Ukraine, Scientific and research enterprise “Velykosnitynske named after O. Muzychenko” (slaughter shop; scientific, training and

producing laboratory of technology of meat and meat products), NULES Producing enterprise “Nemishayevskii agrotechnical college, “Polis” Ltd., Producing enterprise “Marshalok”, Producing enterprise “Drygalo” (Kyiv province, city of Bila Tserkva), “Globinskii meat-processing industrial complex (Poltava province), “Cherkassy’ company by producing of foods” Ltd. (Cherkassy province), JSC “Koziatinskii meat-processing industrial complex, “Gaisin’ meat-processing industrial complex (Vinnitsa province), “Chernigiv meat-processing plant” Ltd.

Proposed Topics for Master Theses

1. Optimization of technology of fabrication of products made of meat of poultry and multicomponent brines at the “Cherkassy company by producing of foods” Ltd. (city of Cherkassy).
2. Development of technology of fabrication of the producing of composition of meat and vegetable masses at the industrial complex of “Globinskii meat-processing plant” (Poltava province).
3. Use of albuminous preparations of animal origin in technologies of producing of meat products at “Polis Ltd.” (Kyiv province).
4. Optimization of the technology of fabrication of cooked and smoked porcine products at “Agrotekhsplira of Ukraine Ltd.” (Kyiv province).
5. Analysis of influence of enzyme preparations on structural characteristics of half-finished products of natural origin at JSC “Koziatinskii meat-processing industrial complex” (Vinnitsa province).
6. Optimization of technology of fabrication of porcine products in use of multicomponent brines at “Koziatinskii meat-processing industrial complex” Ltd. (Vinnitsa province).
7. Effectiveness of use of vegetative extracts in preparation of pastes at JSC “Koziatinskii meat-processing industrial complex” Ltd. (Vinnitsa province).

Academic rights of applicants entering Master course

Applicants with the Diploma of Bachelor can continue training in connected specialties including ones of the field of knowledge “Specific categories”, (table 2) and other specialties (table 3) in accordance with the Terms of enrolment to higher educational institutions of Ukraine in 2015 approved by the Order of the Ministry of education and science of Ukraine on October 15, 2014 № 1172 and the Regulations of enrolment to National University of Life and Environmental Sciences of Ukraine (basic institution, Kyiv) for 2015.

Curriculum of Master training in specialty “Technologies of preservation, conservation and processing of meat” Educational and qualification Master program

№	Name of the course	Semester	Amount	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	Modern methods of research in the meat-processing industry	2	120	4
2	Occupational safety in the meat-processing industry	1	180	6
3	Urgent problems of the meat-processing industry	1	300	10
4	Technology of preservation and reprocessing of meat	2	300	10
5	Biologically active substances produced of raw materials of animal origin	3	120	4

№	Name of the course	Semester	Amount	
			hours	credits ECTS
6	Exploitation of technological equipment	2	150	5
Total for standard part			1170	39
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by University				
1	Business foreign language	1	90	5
2	Agricultural policy	3	90	3
3	Philosophy of science and innovative progress	1	90	3
4	Agricultural and environmental legislation	1	90	3
Total (Disciplines offered by University)			360	12
2.2. Disciplines offered by students				
1	Problems of supply of energy in the branch	3	90	3
2	Optimization of processes of manufacture	2	90	3
3	Radiative safety	1	90	3
4	Analysis of microstructure of meat and meat products	1	120	4
5	International and regional standardization and certification	1	90	3
Total:			480	16
2.2.1. Specialization "Technology of meat and meat products"				
1	Technology of forages to be used in feeding of domestic animals	3	150	5
2	Supply of heat for enterprises of the branch	3	90	3
3	Technology of producing of functional meat products	3	90	3
4	Biotechnological processes used in production of meat products	3	90	3
5	Wasteless technologies of reprocessing of meat	3	90	3
6	Technologies of fabrication of meat products intended for the prolonged term of storage	3	90	3
7	Innovative ingredients of foods used in fabrication of meat products	3	90	3
8	Logistic systems and monitoring	3	90	3
9	Management of consumption of energy and effective expending of energy in exploitation of technical and technological objects	3	90	3
10	Technological expertise of manufactures of meat products	3	90	3
11	Instrumental methods of execution of R&D works	3	90	3
12	Informative technologies used in R&D work	3	90	3
Total for specialization:			240	8
2.2.2. Specialization "Technology used in fabrication of foods"				
1	Special technologies used in fabrication of foods	3	150	5
2	Modern level of global science in sphere of fabrication and consumption of foods	3	90	3
3	Special technologies used in fabrication of culinary products in restaurants	3	90	3
4	Nutriciology	3	90	3
5	Technological discipline used in restaurants	3	90	3
6	National cuisines	3	90	3
7	Logistic systems	3	90	3
8	Marketing analysis	3	90	3
9	Instrumental methods used in execution of R&D works	3	90	3
10	Informative technologies used in execution of R&D works	3	90	3
11	Management of consumption of energy and effectiveness of use of energy in exploitation of technical and technological objects	3	90	3
12	Supply of heat to enterprises of the branch	3	90	3
Total for specialization:			240	8
Total (Disciplines offered by students)			720	24

№	Name of the course	Semester	Amount	
			hours	credits ECTS
Total for elective part			1080	36
3. OTHER TYPES OF TRAINING				
1	Practical training	2	150	5
2	Writing and presentation of master's diploma	3	300	10
Total:			450	15
Total for Specialty			2700	90

Annotations educational plan disciplines

1. STANDARD ACADEMIC DISCIPLINES

Modern methods of investigation used in the meat-processing industry. The training program presumes learning of basic principles of carrying out of investigation typical for food industry, modern classification of experiments, as well as methods of selection, systematization and analysis of scientific information and results obtained in it, methods of legalization of results of R&D works and rights of intellectual property obtained in it.

Norms of occupational safety used in the branch. Methods and means of retaining of health, prevention of illnesses and assurance of professional efficiency. Principle of choose of methods of physical training, their arrangement and continuity of execution by the set destination. Healthy mode of life. Methods and means of perfecting of professional skill. Methods of psychical and physical training. Rules of prevention of occurring of physical defatigation, overstress and other critical states of organism. Methods of self-control of state of health, grade of physical maturity and functioning of functional systems of the organism.

Actual problems of the branch. The program of training presumes studying of modern theoretical and practical bases of actual technologies of manufacturing of new types of meat products of prolonged term of storage character by economical spending of resources.

Technology of preservation and reprocessing of meat. The main goal taken as the guiding line in studying of this course is obtaining of fundamental knowledge on technologies of preservation and storage of meat and meat products, principles of cutting of losses of mass and quality of raw materials and finished products, obtaining of basic theoretical and practical knowledge of the basic technological processes, obtaining of experience in choose of the appropriate technologies of safe storage and preservation of meat products.

Biologically active substances extracted from raw materials of animal origin. It is foreseen that the future specialists would study the general knowing of compositions and main properties of biological substances, which are the components of raw materials of animal origin, as well as basic knowing on directions of their use in production of preparations made of organs of animals. The students acquaint with characteristics of raw materials use I fabrication of said preparations, procedures of collecting, initial treating, preservation and transporting of raw materials of endocrine and enzyme nature. They acquaint also with the basic principles of fabrication of biologically active additives of animal origin.

Exploitation of technological equipment. The program of training presumes studying of typical theoretical and practical problems occurred in exploitation of technological equipment use in processing of meat, problems of its repair and assembling.

2. ELECTIVE ACADEMIC DISCIPLINES

2.1. Disciplines offered by University

Methodology and organization of research with the principles of intellectual property. The aim of the discipline is formation of the system of knowledge in methodology, theory of method and research process, methodical support of scientific and research activity at the stages of preparation of a Master paper, formation of the ability to organize research of a specific issue using the whole complex of the traditional methods of research including general and special methods. The main task of the theoretical part of the course is introduction to students the current concepts of research creation, the principles of methodology of scientific perception and methods of research. The main task of the practical part is the development of self-education ability, mastering skills of formation and application of perceived methodological position of research. In case of mastering the course students have to improve their skills of search, assortment and processing of scientific information, accurate formulation of a problem, aim, task, object, subject, methods of research. Introduction to students the principles of intellectual property and direction of them to gain knowledge and skills concerning registration of rights of ownership, their protection, commercialization, estimation and management are envisaged.

Business foreign language. The general aim of the program of teaching of foreign language for the professional purpose is formation students' professional linguistic competencies that will contribute to their efficient operating in cultural variety of training and professional environment. The methods of search of new information in another language sources, linguistic methods of analytical study of another language sources are learned. Students study published original literature in another language and increase their lexical and grammatical skills. Methods and linguistic peculiarities of annotation and synopsis of another language sources, the principles of translation of professional oriented another language sources are studied.

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.

Philosophy of science and innovative progress. The training course contains the elements of philosophy of science and innovative progress from the viewpoint of specificity of humanitarian knowledge. There are described the history of development of basic directions of progress of philosophy and methodological principles of solving of principal problems of this science, as well as characterized the methodological, structural, cognitive and valuable fundamentals and peculiarities of scientific progress. The students are taught to analyze from the philosophical point of view the specificity of modern state of scientific base domestically and worldwide, perspectives of its following progress and interrelations with other kinds of functioning of the society.

Agricultural and environmental legislation. Studying of peculiarities of forming of basement of modern agricultural legislation. the principal problem in it is studying of legal regulation of processes of forming of solving of problems of distribution of land and property in rural regions. There are studied the principal directions of assistance by the State of activities of manufacturers of agricultural production, namely the system of

favorable taxation, crediting and insurance. There are studied the methods of attracting of investments in agricultural complex of the State reckoned as one of methods of disappearing of its crisis.

2.2. Disciplines offered by students

Problems of supply of energy to enterprises of the branch. The training program of the course presumes learning by students of constructions of electrical machines, transformers, electrical lighting, supply of energy to enterprises, which produce foods, as well as problems of economy of energy.

Optimization of processes of manufacture. The training program of the discipline presumes studying in process of analysis of specific features of the process in question of theoretical and practical aspects of optimization of typical technologies used in the branch and directed on identification of optimum conditions of their realization by the chosen criterion of quality. In process of training, the future specialists obtain the basic knowledge on fundamental principles of optimization of typical processes of production of foods and acquaint with the principal methods of such work. The specialists would be capable to find the principal ways of optimization of technological parameters of technological processes and choose the necessary equipment. The calculated parameters would permit them to find the optimum method of operation of the planned manufacture.

Radiative safety. The basic principles of assuring of radiative safety. The methods of guaranteeing of radiative safety. Organizational measures used in assuring of radiative safety of work. Sanctions used in violation of norms of rules of radiative safety of execution of works in Ukraine. The valid norms of radiative safety in Ukraine.

Analysis of microstructure of meat and meat products. The constituent components of meat. Microstructure of sinewy tissues and peculiarities of structure of its subkinds, e.g. the skeletal, cordial and unstriated. Structure of the skeletal muscle.

International and regional standardization and certification. Standardization as the principal means of rising of effectiveness of of manufacture and betterment of quality of production at present stage of progress of society. Standardization, certification and quality management as the necessary elements of raising of competitiveness and demand for products of agriculture in Ukraine and abroad; stimulation of development of new, non-traditional items character by unique properties of raw materials of vegetative origin; satisfying of demand of consumers for obtaining of qualitative and safe production; assisting in the steady raising of volume of barter etc.

2.2.1. Specialization “Technology of meat and meat products”

Technology of forages to be used in feeding of domestic animals. The program of training presumes studying of theoretical and practical aspects of modern technologies of production of forages and forage compounding additives, choose of optimum variants of mixes to be used in concrete natural and economic conditions of carrying out of business activities to be used in purposes of augmentation of output, betterment of quality of forages and rising of effectiveness of their use.

Supply of heat for enterprises of the branch. The program of training presumes studying of fundamental notions of thermodynamics, theory of exchange of heat and mass, rational use of resources of heat and energy, as well as the principal methods of protection of nature.

Technology of producing of functional meat products. The products of reprocessing of meat, dietetic additives (biologically active substances), as well as nutritional products and finished culinary consumables prepared with use of dietetic additives. Effective methods of betterment of nutritional value of foods resulted of adding

of dietetic additives, physical, chemical and biochemical processes occurred in foods after adding of the biologically active substances.

Biotechnological processes used in production of meat products. Biotechnology of meat and sausages. Information on structure and composition of tissue of meat and biochemical transformations occurred in it after slaughtering of animals. Basic stages of technologies of fabrication of meat products. Characteristics of substances, which form the structure of meat and their use in biotechnology.

Wasteless technologies of reprocessing of meat. Meat and wastes generated in its reprocessing. Classification of types of canned meat. Reprocessing of ossa. Reprocessing of blood. Reprocessing of woolly meat by-products.

Technologies of fabrication of meat products intended for the prolonged term of storage. Fabrication of canned meat. Fabrication of glue and gelatin. Fabrication of products of reprocessing of eggs. Control of quality of finished products: canned meat, glue, gelatin, egg products. exploitation and servicing of technological equipment used in fabrication of products of prolonged term of storage.

Innovative ingredients of foods used in fabrication of meat products. Basic terms and principles of use of food additives. General classification. Food additives used in regulation of color, taste and flavor of foodstuffs. Classification and characteristics of food additives used in purposes of regulation of consistency of foodstuffs. Food additives used in regulation of terms of safe storage of foodstuffs. Preservatives. Antioxidants. Protective gases. Stabilizers of foam. Substances used for extinguishing of foam and prevention of their generation. Emulsifying salts.

Logistic systems and monitoring. Principles, functions and procedures of projecting and introduction of logistic schemes; methods of management by processes of logistic schemes; methodology of forming of logistic schemes of enterprises in process of their projecting; norms of taking of decisions in planning; basic stages of forming of infrastructure of logistic systems; regional aspects of forming of integrated logistic systems; principles, functions and methods of organization of logistic systems; methods of optimization of parameters of logistic systems and introduction of solutions taken in projecting.

Management of consumption of energy and effective expending of energy in exploitation of technical and technological objects. The system of normative and legal support of work in energetic management. Ukrainian legal deeds taken in sphere of energetic management. Standardization of norms of work in sphere of energetic management. Classification of norms of expending of fuel and energy. Financing of projects of energetic management. ESKO as the business structure. General information. ESKO types. Essence of ESKO as compared with other contracting organizations.

Technological expertise of manufactures of meat products. Fundamentals of work in expertise of foods. History of progress of work in expertise of foods worldwide, work of the Ukrainian and foreign scientists in it. Fundamentals of work in evaluation of quality and safety of meat and meat products. identification and falsification of foodstuffs: problems of identification and peculiarities of work in unmasking of falsification of meat products, fats and spices.

Instrumental methods of execution of R&D works. Carrying out of identification of safety of meat and meat products by the instrumental methods. Identification of safety of water and measuring of its pH. Organoleptic methods of studying of properties of meat and meat products. Fundamentals of analysis by the method of degustation, expert estimation of quality, estimative scales. Classification and characteristic of instruments used in analysis of meat and meat products. Principles of measurement, design and details of structure of instruments. Acquainting with schemes and principles of operation of

potentiometers used in determining of humidity and activity of water. Modern methods of express-testing.

Informative technologies used in R&D work. Methodology, methods and information technologies used in R&D work. Basic stages, mechanisms and tendencies of progress of science. Scientific methods of cognition of nature. Organization of R&D work in Ukraine. Basic stages of research. Tasks and methods of research. Theoretical investigations. Experimental investigations. Problems of trustworthiness and adequacy of results of research. Use of means of computerization and Internet in research.

2.2.2. Specialization “Technology used in fabrication of foods”

Special technologies used in fabrication of foods. Functionality of foods. Theoretical aspects and fundamentals of hygiene of nutrition. Composition of ingredients of functional foods. Functional ingredients. Natural products obtaining the properties of physiological functionality. Technologies of fabrication of functional products made of raw materials of vegetative origin. Technologies of fabrication of functional products made of raw materials of animal origin.

Modern level of global science in sphere of fabrication and consumption of foods. Basic stages of origination and progress of food technologies worldwide, studying of principles of regularity, interrelations and mutual influence of various regional cultures of nitrification, history of domestic and global philosophy of ensuring of need of population in foods, prominent inventions and results of progress of food industry, base of grocery of mankind and the part of domestic food industry in it.

Special technologies used in fabrication of culinary products in restaurants. Scientific principles of nutrition and norms of their use in technologies introduced in restaurants; technological peculiarities of work in production of foods and forming of their assortment; theoretical and technological concepts and principles of producing in restaurants of foodstuffs, which would have the set properties; peculiarities of technologies and means of optimization of process of fabrication and betterment of quality of products; physical, chemical mechanical and biochemical processes occurring in raw materials and semi-finished products in process of cooking; specific features of technologies used in fabrication of certain kinds of foods in restaurants.

Nutriciology. Theoretical and practical aspects of influence of nutrition on conditions of health of men of various groups of sensitivity to content of food ingredients; fundamental principles of rational nutrition; theoretical and practical norms of prophylactic nutrition; properties of certain groups of foodstuffs and their influence on conditions of health of men.

Technological discipline used in restaurants. Fundamental principle of expertise of quality of foods. History of development of food expertise worldwide and participation of the Ukrainian scientists in this work. Basic norms of work in evaluation of quality and safety of certain groups of foodstuffs. Identification and falsification of foodstuffs: problems of identification and details of work in revealing of falsification of flour, meat- and milk products, fats, alcoholic beverages, juices, coffee, cacao, tea, chocolate and spices.

Logistic systems. Principles, functions and procedures of projecting and organization of logistic systems; methods of managing of activities in projecting of logistic systems; methodology of projecting used in forming and development of logistic systems of the enterprise; principles of taking of decisions in process of planning; basic stages of forming of infrastructure of the logistic system; regional aspects of forming of integrated logistic systems; principles, functions and methods of organization of realization of functioning of logistic systems; methods of optimization of parameters of logistic systems and introduction of solutions developed in process of projecting.

Marketing analysis. Studying of theory, methodology and practice of management by the marketing activities in markets of consumables and realization of the marketable and communicative policy of management of marketing activities of personnel, peculiarities of marketing activities in enterprises of wholesale and retail trade.

Instrumental methods used in execution of R&D works. Carrying out of identification of safety of foods by the instrumental methods. Determining of coefficients of activity of water and its pH. Organoleptic methods of determining of quality of foodstuffs. Fundamental principles of sensor and degustation analysis, expert estimation of level of quality and scales of evaluation used in it classification and characteristics of instruments used in identifying of quality of foodstuffs. Principles of measurement, composition and structural charts of instruments. Studying of analyzers of humidity, activity of water and potentiometric devices. Modern methods of research.

Informative technologies used in execution of R&D works. Methodology, methods and information technologies used in carrying out of R&D work. Basic stages, regularities and tendencies of progress of science. Scientific precognition of real nature. Organization of R&D works in Ukraine. Basic stages of carrying out of R&D activities in Ukraine. Purposes set in execution of R&D work and methods of their attaining. Experimental work. Problems of ensuring of trustworthiness and adequacy of results of R&D work. Use of means of computerization and Internet in R&D activities.

Management of consumption of energy and effectiveness of use of energy in exploitation of technical and technological objects. Normative and legal base of energetic management. Legal deeds of Ukraine used in sphere of energetic management. Standardization of work in sphere of energetic management. Classification of norms of expending of fuel and energy. Financing of projects of energetic management. ESKO as the business structure. General information. ESKO types. Essence of ESKO as compared with other contracting organizations.

Supply of heat to enterprises of the branch. The program of training presumes studying of theoretical base of thermodynamics, theory of transfer of heat- and energetic resources, their rational use and norms of protection of nature to be used in it.

Master's course
in specialty "TECHNOLOGIES OF PRESERVATION AND PROCESSING
OF WATER BIORESOURCES"
branch of knowledge "Alimentary industries and reprocessing
of products of agriculture"

Form of Training, Licensed number of persons:

- | | |
|-------------|------------|
| – Full-time | 30 persons |
| – Part-time | 30 persons |

Duration of training

- | | |
|--|-----------|
| – Full-time educational and professional program | 1.5 years |
| – Part-time | 2 years |

Credits:

- | | |
|--|---------|
| – educational and professional program | 90 ECTS |
|--|---------|

Language of training

Ukrainian, English

Qualification of graduates:

masters of sciences by specialty of
 "Technologies of storage and
 reprocessing of aquatic biological
 resources"

Concept of training

The modern tendency of the branch of fish industry is intensification of work in reprocessing of fish and seafood. It was increased the number of enterprises engaged in work in production of foodstuffs made of fish and non-fish seafood. The present level of development of this industry is character by rising of effectiveness of use of novel technologies introduced in the food industry. It is understandable that the successive solving of problems arising in functioning of fish-processing enterprises is possible only on condition of rising of qualification of engineers-technologists trained by specialty of "Technology of storage and reprocessing of aquatic biological resources".

The competence of masters of sciences trained by specialty of "Technologies of storage and reprocessing of aquatic biological resources" is character by the high professional potential and fundamental knowledge necessary for work in modern agricultural industry, as well as in other spheres of material production.

Educational and professional Master's program

***Specialization "Technology of storage, preservation and reprocessing
 of fish and seafood"***

The program has the purpose of familiarization of masters of sciences on problems of theoretical and practical information by problems of modern technologies of storage, preservation and reprocessing of fish and seafood, as well as on procedures of adaptation of indices of quality of raw materials and finished products with those ones of international and European norms.

Areas of employment for graduates

The principal goal of the educational program is training of engineers-technologists specialized in works in storage, preservation and reprocessing of fish and seafood capable to work in R&D institutions specialized in solving of problems of technologies of reprocessing of fish and seafood, departments of Ministry of agricultural policy and foods of Ukraine, as well as in the State agency of fishery of Ukraine, especially in the Southern

R&D institute of maritime, fish industry and oceanography, enterprises specialized in reprocessing of fish and vessels.

Practical training

Practical training of student is the indivisible part of educational process of training of masters of sciences by specialty of 8.05170105 “Technologies of preservation and processing of water bioresources”.

The future specialists obtain the basic experience of practical work and necessary qualification of specialist of meat-processing industry in process of carrying out of practical training at the specialized enterprises.

In process of training, the pretender on obtaining of the master's degree passes two practical works. All these practices differ by their purposes, content and terms of doing.

Each practice occurs at the advanced enterprises of meat-processing industry and is carried out after the pretender would obtain the necessary knowledge in fundamental, engineering, social and economical problems of the industry.

The students pass their practical training at the meat-processing enterprises of all forms of property. Choose of concrete places of passing of practices is carried out in observance of concrete specialization, technical and technological supplying of the manufactures, and their orders on training of specialists, who will be engaged at enterprises used as the base of practice.

The principal bases of practical training of students are: “Rybna manufaktura Ltd” Kyiv province, “Aliaska Ltd” Kyiv province, “Rybcoopproduct LTD” Kyiv province, “Berdiansk’ fish-processing industrial complex Ltd.” Zaporozhye province, JSC “Ochakiv’ fish-canning industrial complex Mykolaiv province, JSC “Chernihiv’ enterprise by reprocessing and realization of fish wares “Chernihivryba” Chernihiv province, “Rybni promyslovi tekhnologii Ltd” Zhytomir province, and others.

Proposed Topics for Master Theses

1. Betterment of technology of salting of fish at the fish-processing plant of “Rybkoopprodukt” (Kyiv region) in use of method of injection.

2. Technology of fabrication of structured minced fish at the enterprise of “Divial-2000 Ltd, city of Kyiv) in use of its microwave treating.

3. Betterment of technology of fabrication of food for infants enriched by laminaria at the JSC “Odessa canning factory by production of foods for infants”.

4. Betterment of technology of fabrication of preserves made of backboneless inhabitants of water at the enterprise “Olvana Ltd.” (Kyiv province) by method of preliminary heating of raw materials.

5. Betterment of technology of fabrication of canned fish intended for consumption by infants at the JSC “Odessa canning factory by production of foods for infants”.

6. Betterment of technology of fabrication at the enterprise “Divial-2000 Ltd.” (Kyiv) of fishery snacks made of limnetic fish.

7. Betterment of technology of fabrication of watery emulsified products based on use of fishery raw materials at the enterprise “Culinary factory Ltd/ (Kyiv).

Academic rights of applicants entering Master course

Applicants with the Diploma of Bachelor can continue training in connected specialties including ones of the field of knowledge “Specific categories”, (table 2) and other specialties (table 3) in accordance with the Terms of enrolment to higher educational institutions of Ukraine in 2015 approved by the Order of the Ministry of education and science of Ukraine on October 15, 2014 № 1172 and the Regulations of enrolment to

National University of Life and Environmental Sciences of Ukraine (basic institution, Kyiv) for 2015.

**Curriculum of Master training
in specialty “Technologies of preservation and processing of water bioresources”
Educational and qualification Master program**

№	Name of the course	Semester	Amount	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	Modern methods of research used in the branch	2	120	4
2	Occupational safety in the meat-processing industry	1	180	6
3	Urgent problems of the fish-processing industry	1	300	10
4	Technology of preservation and reprocessing of fish and products of aquaculture	2	300	10
5	technology of fabrication of albuminous products made of fish and products of aquaculture	3	120	4
6	Exploitation of technological equipment	2	150	5
Total for standard part			1170	39
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by University				
1	Business foreign language	1	90	5
2	Agricultural policy	3	90	3
3	Philosophy of science and innovative progress	1	90	3
4	Agricultural and environmental legislation	1	90	3
Total (Disciplines offered by University)			360	12
2.2. Disciplines offered by students				
1	Problems of supply of energy in the branch	3	90	3
2	Optimization of processes of manufacture	2	90	3
3	Radiative safety	1	90	3
4	biologically active substances made of fish and products of aquaculture	1	120	4
5	International and regional standardization and certification	1	90	3
Total			480	16
2.2.1. Specialization “Technology of storage, preservation and reprocessing of fish and products of aquaculture”				
1	technology of fabrication of fish flour	3	150	5
2	Supply of heat for enterprises of the branch	3	90	3
3	Biotechnology of hydrobiontes	3	90	3
4	Wasteless technologies of enterprises operating reprocessing of fish	3	90	3
5	Microbiological processes used in reprocessing of fish and their products	3	90	3
6	Innovative food ingredients used in fabrication of hydrobiontes	3	90	3
7	Logistic systems and monitoring	3	90	3
8	Management of consumption of energy and effective expending of energy in exploitation of technical and technological objects	3	90	3
9	Technological control and expertise of processes of fabrication of products made of hydrobiontes	3	90	3
10	Modern state of the food science	3	90	3
11	Instrumental methods of execution of R&D works	3	90	3
12	Informative technologies used in R&D work	3	90	3
Total for specialization:			240	8
2.2.2. Specialization “Technology used in fabrication of foods”				
1	Special technologies used in fabrication of foods	3	150	5
2	Modern level of global science in sphere of fabrication and consumption of foods	3	90	3

№	Name of the course	Semester	Amount	
			hours	credits ECTS
3	Special technologies used in fabrication of culinary products in restaurants	3	90	3
4	Nutriciology	3	90	3
5	Technological discipline used in restaurants	3	90	3
6	Logistic systems	3	90	3
7	Marketing analysis	3	90	3
8	Instrumental methods used in execution of R&D works	3	90	3
9	Informative technologies used in execution of R&D works	3	90	3
10	Management of consumption of energy and effectiveness of use of energy in exploitation of technical and technological objects	3	90	3
11	Supply of heat to enterprises of the branch	3	90	3
Total for specialization:			240	8
Total (Disciplines offered by students)			720	24
Total for elective part			1080	36
3. OTHER TYPES OF TRAINING				
1	Practical training	2	150	5
2	Writing and presentation of master's diploma	3	300	10
Total			450	15
Total for Specialty			2700	90

Annotations educational plan disciplines

1. STANDARD ACADEMIC DISCIPLINES

Modern methods of investigation used in the industry. The training program presumes learning of basic principles of carrying out of investigation typical for food industry, modern classification of experiments, as well as methods of selection, systematization and analysis of scientific information and results obtained in it, methods of legalization of results of R&D works and rights of intellectual property obtained in it.

Norms of occupational safety used in the branch. Methods and means of retaining of health, prevention of illnesses and assurance of professional efficiency. Principle of choose of methods of physical training, their arrangement and continuity of execution by the set destination. Healthy mode of life. Methods and means of perfecting of professional skill. Methods of psychical and physical training. Rules of prevention of occurring of physical defatigation, overstress and other critical states of organism. Methods of self-control of state of health, grade of physical maturity and functioning of functional systems of the organism.

Actual problems of the branch. The program of training presumes studying of basic information on modern state and perspectives of progress of sources of raw materials of freshwater basins of Ukraine, and in the global ocean; basic norms of quality of raw materials of fish origin, finished products and methods of their identification; characteristics of principal methods of storing of quality of live, refrigerated, frozen and salted fish; methods of smoking, drying and other methods of preservation of fish and hydrobiontes; psemi-manufactured fish- and culinary consumables etc.

Modern technologies of storage and preservation of fish products. The program of training presumes studying of basic data on modern conditions and perspectives of progress of technologies of storage and preservation of fish and products of aquaculture: buosis, anabiosis, abiosis; methods of preservation; characteristic of basic methods of preserving of quality of live fish; methods of refrigeration of fish and products of aquaculture; characteristics of modern methods of freezing of fish and products of aquaculture; frozen semi-manufactured fish and culinary products; sterilization and pasteurization of fish products.

Technology of albuminous products made of fish and products of aquaculture. The program of training presumes studying of theoretical and practical problems of modern technologies of production of albuminous masses, stuffing, concentrates, hydrolyzate, formed, structured, emulsified and multicomponent products of regulated composition, choose of optimum variants of expanding of assortment of finished products in concrete conditions of nature and specificity of realized technologies, rising of quantity of output and increasing of effectiveness of work in use of raw materials.

Exploitation of technological equipment. The program of training presumes studying of typical theoretical and practical problems occurred in exploitation of technological equipment use in processing of meat, problems of its repair and assembling.

2. ELECTIVE ACADEMIC DISCIPLINES

2.1. Disciplines offered by University

Methodology and organization of research with the principles of intellectual property. The aim of the discipline is formation of the system of knowledge in methodology, theory of method and research process, methodical support of scientific and research activity at the stages of preparation of a Master paper, formation of the ability to organize research of a specific issue using the whole complex of the traditional methods of research including general and special methods. The main task of the theoretical part of the course is introduction to students the current concepts of research creation, the principles of methodology of scientific perception and methods of research. The main task of the practical part is the development of self-education ability, mastering skills of formation and application of perceived methodological position of research. In case of mastering the course students have to improve their skills of search, assortment and processing of scientific information, accurate formulation of a problem, aim, task, object, subject, methods of research. Introduction to students the principles of intellectual property and direction of them to gain knowledge and skills concerning registration of rights of ownership, their protection, commercialization, estimation and management are envisaged.

Business foreign language. The general aim of the program of teaching of foreign language for the professional purpose is formation students' professional linguistic competencies that will contribute to their efficient operating in cultural variety of training and professional environment. The methods of search of new information in another language sources, linguistic methods of analytical study of another language sources are learned. Students study published original literature in another language and increase their lexical and grammatical skills. Methods and linguistic peculiarities of annotation and synopsis of another language sources, the principles of translation of professional oriented another language sources are studied.

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.

Philosophy of science and innovative progress. The training course contains the elements of philosophy of science and innovative progress from the viewpoint of specificity of humanitarian knowledge. There are described the history of development of basic

directions of progress of philosophy and methodological principles of solving of principal problems of this science, as well as characterized the methodological, structural, cognitive and valuable fundamentals and peculiarities of scientific progress. The students are taught to analyze from the philosophical point of view the specificity of modern state of scientific base domestically and worldwide, perspectives of its following progress and interrelations with other kinds of functioning of the society.

Agricultural and environmental legislation. Studying of peculiarities of forming of basement of modern agricultural legislation. the principal problem in it is studying of legal regulation of processes of forming of solving of problems of distribution of land and property in rural regions. There are studied the principal directions of assistance by the State of activities of manufacturers of agricultural production, namely the system of favorable taxation, crediting and insurance. There are studied the methods of attracting of investments in agricultural complex of the State reckoned as one of methods of disappearing of its crisis.

2.2. Disciplines offered by students

Problems of supply of energy to enterprises of the branch. The training program of the course presumes learning by students of constructions of electrical machines, transformers, electrical lighting, supply of energy to enterprises, which produce foods, as well as problems of economy of energy.

Optimization of processes of manufacture. The training program of the discipline presumes studying in process of analysis of specific features of the process in question of theoretical and practical aspects of optimization of typical technologies used in the branch and directed on identification of optimum conditions of their realization by the chosen criterion of quality. In process of training, the future specialists obtain the basic knowledge on fundamental principles of optimization of typical processes of production of foods and acquaint with the principal methods of such work. The specialists would be capable to find the principal ways of optimization of technological parameters of technological processes and choose the necessary equipment. The calculated parameters would permit them to find the optimum method of operation of the planned manufacture.

Radiative safety. The basic principles of assuring of radiative safety. The methods of guaranteeing of radiative safety. Organizational measures used in assuring of radiative safety of work. Sanctions used in violation of norms of rules of radiative safety of execution of works in Ukraine. The valid norms of radiative safety in Ukraine.

Biologically active substances extracted from fish and aquatic biological resources. The program of training [presumes studying of characteristics of biologically active substances, which are the components of various hydrobiontes, fundamentals of theory and technologies of production of biologically active substances extracted from fish and aquatic biological resources, as well as methods of their identification and control.

International and regional standardization and certification. Standardization as the principal means of rising of effectiveness of of manufacture and betterment of quality of production at present stage of progress of society. Standardization, certification and quality management as the necessary elements of raising of competitiveness and demand for products of agriculture in Ukraine and abroad; stimulation of development of new, non-traditional items character by unique properties of raw materials of vegetative origin; satisfying of demand of consumers for obtaining of qualitative and safe production; assisting in the steady raising of volume of barter etc.

2.2.1. Specialization “Technology of storage, preservation and reprocessing of fish and products of aquaculture”

Technology of production of fish flour. The discipline presumes studying of methods of fabrication, storage, use and procedures of evaluation of quality of forages made of hydrobiontes; acquainting with the modern achievements in sphere of manufacturing of forages worldwide and in Ukraine, methods of fabrication of fish flour, its energetic and biological value, as well as amendments occurred in processes of production and storage.

Supply of heat to enterprises of the branch. The program of training presumes studying of theoretical base of thermodynamics, theory of transfer of heat- and energetic resources, their rational use and norms of protection of nature to be used in it.

Biotechnology of hydrobiontes. The characteristic of hydrobiontes as a kind of raw materials used in fabrication of foodstuffs (biologically active additives, consumables enriched by their ingredients; functional products), which are character by the increased biological activeness. Basic norms of evaluation of quality of biological potential of organs and tissues of hydrobiontes in their use in biotechnologies, rationality of their reprocessing in other biological products. technologies of fabrication of hydrobiontes in reprocessing of fish and aquacultures.

Wasteless technologies of reprocessing of fish. Optimization of methods of purposeful treating of raw materials of fish origin. rational use of wastes of reprocessing of. Technologies of fabrication of forages made of fish and aquacultures. Technology of fats. Technology of production of biologically active substances in reprocessing of products of aquaculture. Technology of preprocessing of Технологія maritime plants.

Microbiological processes occurred in reprocessing of fish and their products. Studying of morphology and physiology of principal groups of microorganisms, which influence of quality of fish and products thereof; factors, which influence of processes of deterioration of fish and products thereof; studying of system of prophylactic measures, which observance would permit to avoid the cases of food poisoning of men resulting of consumption of low-grade fish products.

Innovative ingredients of food made of products of reprocessing of hydrobiontes. Basic terms and principles of use of food additives. General classification. Food additives, which adding influences on variation of color, taste and smell of foods. Classification and characteristics of food additives, which regulate the consistency of foodstuffs. Food additives, which use permits to prolong the guaranteed term of storage of foods. Preservatives. Antioxidants. Protective gases. Stabilizers of foam. Substances, which use permits of destroy foams and prevent cases of their origination. Emulsifiers.

Logistic systems and monitoring. Principles, functions and procedures of projecting and organization of logistic systems; methods of managing of activities in projecting of logistic systems; methodology of projecting used in forming and development of logistic systems of the enterprise; principles of taking of decisions in process of planning; basic stages of forming of infrastructure of the logistic system; regional aspects of forming of integrated logistic systems; principles, functions and methods of organization of realization of functioning of logistic systems; methods of optimization of parameters of logistic systems and introduction of solutions developed in process of projecting.

Management of consumption of energy and effectiveness of use of energy in exploitation of technical and technological objects. Normative and legal base of energetic management. Legal deeds of Ukraine used in sphere of energetic management. Standardization of work in sphere of energetic management. Classification of norms of expending of fuel and energy. Financing of projects of energetic management. ESKO as

the business structure. General information. ESKO types. Essence of ESKO as compared with other contracting organizations.

Technological expertise of installations for production of hydrobiontes. Fundamentals of work in expertise of quality of foods. History of development of activities in expertise of quality of foods worldwide and in Ukraine. Basic norms of work in evaluation of quality and safety of certain groups of products made of fish and products of aquaculture. Identification of originality and cases of falsifying of foodstuffs: problems of identification and specificity of work in revealing of cases of falsifying of products made of hydrobiontes.

Modern level of science in sphere of fabrication and consumption of foods. Basic stages of origination and progress of food technologies worldwide, studying of principles of regularity, interrelations and mutual influence of various regional cultures of nitrification, history of domestic and global philosophy of ensuring of need of population in foods, prominent inventions and results of progress of food industry, base of grocery of mankind and the part of domestic food industry in it.

Instrumental methods used in execution of R&D works. Carrying out of identification of safety of foods by the instrumental methods. Determining of coefficients of activity of water and its pH. Organoleptic methods of determining of quality of foodstuffs. Fundamental principles of sensor and degustation analysis, expert estimation of level of quality and scales of evaluation used in it classification and characteristics of instruments used in identifying of quality of foodstuffs. Principles of measurement, composition and structural charts of instruments. Studying of analyzers of humidity, activity of water and potentiometric devices. Modern methods of research.

Informative technologies used in execution of R&D works. Methodology, methods and information technologies used in carrying out of R&D work. Basic stages, regularities and tendencies of progress of science. Scientific precognition of real nature. Organization of R&D works in Ukraine. Basic stages of carrying out of R&D activities in Ukraine. Purposes set in execution of R&D work and methods of their attaining. Experimental work. Problems of ensuring of trustworthiness and adequacy of results of R&D work. Use of means of computerization and Internet in R&D activities.

2.2.2. Specialization “Technology used in fabrication of foods”

Special technologies used in fabrication of foods. Functionality of foods. Theoretical aspects and fundamentals of hygiene of nutrition. Composition of ingredients of functional foods. Functional ingredients. Natural products obtaining the properties of physiological functionality. Technologies of fabrication of functional products made of raw materials of vegetative origin. Technologies of fabrication of functional products made of raw materials of animal origin.

Modern level of global science in sphere of fabrication and consumption of foods. Basic stages of origination and progress of food technologies worldwide, studying of principles of regularity, interrelations and mutual influence of various regional cultures of nitrification, history of domestic and global philosophy of ensuring of need of population in foods, prominent inventions and results of progress of food industry, base of grocery of mankind and the part of domestic food industry in it.

Special technologies used in fabrication of culinary products in restaurants. Scientific principles of nutrition and norms of their use in technologies introduced in restaurants; technological peculiarities of work in production of foods and forming of their assortment; theoretical and technological concepts and principles of producing in restaurants of foodstuffs, which would have the set properties; peculiarities of technologies and means of optimization of process of fabrication and betterment of quality of products;

physical, chemical mechanical and biochemical processes occurring in raw materials and semi-finished products in process of cooking; specific features of technologies used in fabrication of certain kinds of foods in restaurants.

Nutriciology. Theoretical and practical aspects of influence of nutrition on conditions of health of men of various groups of sensitivity to content of food ingredients; fundamental principles of rational nutrition; theoretical and practical norms of prophylactic nutrition; properties of certain groups of foodstuffs and their influence on conditions of health of men.

Technological discipline used in restaurants. Fundamental principle of expertise of quality of foods. History of development of food expertise worldwide and participation of the Ukrainian scientists in this work. Basic norms of work in evaluation of quality and safety of certain groups of foodstuffs. Identification and falsification of foodstuffs: problems of identification and details of work in revealing of falsification of flour, meat- and milk products, fats, alcoholic beverages, juices, coffee, cacao, tea, chocolate and spices.

Logistic systems. Principles, functions and procedures of projecting and organization of logistic systems; methods of managing of activities in projecting of logistic systems; methodology of projecting used in forming and development of logistic systems of the enterprise; principles of taking of decisions in process of planning; basic stages of forming of infrastructure of the logistic system; regional aspects of forming of integrated logistic systems; principles, functions and methods of organization of realization of functioning of logistic systems; methods of optimization of parameters of logistic systems and introduction of solutions developed in process of projecting.

Marketing analysis. Studying of theory, methodology and practice of management by the marketing activities in markets of consumables and realization of the marketable and communicative policy of management of marketing activities of personnel, peculiarities of marketing activities in enterprises of wholesale and retail trade.

Instrumental methods used in execution of R&D works. Carrying out of identification of safety of foods by the instrumental methods. Determining of coefficients of activity of water and its pH. Organoleptic methods of determining of quality of foodstuffs. Fundamental principles of sensor and degustation analysis, expert estimation of level of quality and scales of evaluation used in it classification and characteristic s of instruments used in identifying of quality of foodstuffs. Principles of measurement, composition and structural charts of instruments. Studying of analyzers of humidity, activity of water and potentiometric devices. Modern methods of research.

Informative technologies used in execution of R&D works. Methodology, methods and information technologies used in carrying out of R&D work. Basic stages, regularities and tendencies of progress of science. Scientific precognition of real nature. Organization of R&D works in Ukraine. Basic stages of carrying out of R&D activities in Ukraine. Purposes set in execution of R&D work and methods of their attaining. Experimental work. Problems of ensuring of trustworthiness and adequacy of results of R&D work. Use of means of computerization and Internet in R&D activities.

Management of consumption of energy and effectiveness of use of energy in exploitation of technical and technological objects. Normative and legal base of energetic management. Legal deeds of Ukraine used in sphere of energetic management. Standardization of work in sphere of energetic management. Classification of norms of expending of fuel and energy. Financing of projects of energetic management. ESKO as the business structure. General information. ESKO types. Essence of ESKO as compared with other contracting organizations.

Supply of heat to enterprises of the branch. The program of training presumes studying of theoretical base of thermodynamics, theory of transfer of heat- and energetic resources, their rational use and norms of protection of nature to be used in it.

**Master's course
in specialty "QUALITY, STANDARDIZATION AND CERTIFICATION"
branch of knowledge "Specific categories"**

Form of Training, Licensed number of persons:

- | | |
|-------------|------------|
| – Full-time | 50 persons |
| – Part-time | 50 persons |

Duration of training

- | | |
|--|-----------|
| – Full-time educational and professional program | 1.5 years |
| – Part-time | 2 years |

Credits:

- | | |
|--|---------|
| – educational and professional program | 90 ECTS |
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Language of training

Ukrainian, English

Qualification of graduates:

masters of sciences by specialty of
"Quality, standardization and
certification"

Concept of training

The specific feature of training of students, who would specialize in studying of principles of management of quality, standardization and certification is that it is open to joining of graduates of various spheres of training. Its feature is openness, flexibility and multivariance. At the same time there exist the considerable differences in the list of disciplines of training, which were studied by bachelors, who have learned the economical sciences, and those that were specialized in engineering or biology.

The basic tasks put in the base of training by the program of this specialty are learning by norms of constituent elements of system of State technical regulation and basic laws of Ukraine, which regulate the practice of their functioning; principal tasks, principles and scientific and practical aspects of standardization, certification, metrology and quality management; influence of practice of State technical regulation on effectiveness of functioning of economy; fundamental normative documents used in spheres of standardization, certification, metrology, quality management and their interdependence with the respective international and European normative and legal deeds.

**Educational and professional Master's program
*Specialization "Management of safety and quality of foodstuffs"***

The program has the purpose of training of specialists, who have the fundamental knowledge in spheres of managements of quality and safety of foods, especially by problems as follows: assuring of normative and legal maintaining of safety and quality of foodstuffs in Ukraine, European Union and in international practice; systems of managing of safety of foodstuffs; systems of management of quality of foodstuffs; systems of monitoring of indices of quality and safety of foods.

Areas of employment for graduates

The diploma of master of sciences by specialty of "Quality, standardization and certification" gives the graduates the possibility to occupy the wide range of specialties: specialist by quality, engineer by quality, official of department of quality management, department of validation, department of technical control, metrological service, specialist by standardization and certification, inner auditor etc. Occupation by this kind level of education is the condition of work in sphere of standardization of new types of products,

certification of products and services, legalization of technical documentation, carrying out of inner audits and self-inspections, validation of technological processes, attestation of personnel, equipment, premises etc.

Specialization “Environmental standardization and certification”

Realization of the program has the purpose of training of students by problems of development and perfecting of systems of environmental management harmonized with procedures of international standards, environmental standardization, environmental marking and declaring, managing by environmental risks in process of business activity, use of genetically modified organisms by norms harmonized with the international and European practices.

Areas of employment for graduates

Learning of the program of training by specialists in spheres of management of quality, standardization and certification permits them to occupy positions in the State services located in regions and cities of Kyiv and Sevastopol; departments of strategical planning, ecological and economical development, environmental audit and management, purposeful planning and regional policy etc.

Specialization “Quality management and work in standardization and certification at enterprises and in organizations of forestry”

Realization of the program has the purpose of training of masters of sciences by problems, which knowledge would permit them to solve the problems of assuring of qualitative production of forestry, adaptation of procedures of realization of processes and indices of quality of production to norms of international and European normative and legal documents. The program of training includes acquainting of students with norms of certification of products of forestry and adaptation of procedures used in it with the international norms.

Areas of employment for graduates

The masters of sciences graduated the university by specialty “Quality management, standardization and certification” may work in the territorial branch offices and R&D institutions of Derzhspozhivstandart of Ukraine, institutions and services specialized in standardization, metrology and certification at enterprises and in organization of woody complex.

Practical training

The practical training of students of the magistracy by specialty 8.18010010 “Quality, standardization and certification” is carried out by two stages: the acquainting one realized just after their joining to the faculty, and the finishing carried out at the stage of preparation to writing of the diploma. In course of practical training, the students obtain the necessary practical skill and professional knowledge of prospective specialist by standardization, certification and quality management.

There are two practical training courses the student has to pass during his learning: the acquainting and the productive ones. These practices differ by their purposes, content and terms of passing.

The dominant bases of practices carried out by specialty 8.18010010 “Quality, standardization and certification” are: State enterprise “Ukrainian R&D and training center of problems of standardization, certification and quality management”; JSC “MZVKK” segregated department “Myronivskii meat-processing plant “Legko”; “Ukrainian quality

association”; Bureau Veritas; “TYuF rheinland Ukraine Ltd”; Ukrainian R&D institute of agricultural radiology; Ukrainian R&D Leonid Pogorelov institute of forecasting and testing of technique and technology used in agricultural manufacturing; State center of certification and expertise of agricultural production (city of Kyiv); JSC “Zhashkivskii creamery” (Cherkassy province); State enterprise “Malyn’ forestry” (Zhytomir province); STOV “Staryn’ battery farm”; Producing enterprise of NULES of Ukraine of “Velykosnitynske R&D Muzychenko farm” (Kyiv province); Bila Tserkva’ milk-processing industrial complex (Kyiv province); “Galakton Ltd.” (city of Kyiv); Bread-baking plant # 10 (city of Kyiv); “Obolon’ Ltd.” (city of Kyiv); “Rosinka Ltd.” (city of Kyiv); JSC “Farmak” (city of Kyiv); “Zavod shampanskokh vin Ltd.” (city of Kyiv); “Olkom Ltd.” (city of Kyiv); JSC “Koziatinskii meat-packing factory” (Vinnitsa province); “Gaisin’ meat-packing factory Ltd.” (Vinnitsa province) and others.

Proposed Topics for Master Theses

1. Development of program of interlaboratory comparisons of soils by norms of the document of ISO/IEC Guide 43-1:1997 at the JSC “Myronivskii khloboprodukt”.
2. Development of program of management by the environmental aspects of operation at JSC “Farmak”.
3. Introduction of system of statistical control of processes at the laboratory specialized in testing of agricultural technique.
4. Expertise of requirements of consumers to quality of wood used in fabrication of furniture.
5. Development of proposals on betterment of system of monitoring in process of production of condensed milk at JSC “Bershad’ Moloko”.
6. Development of project of standard on technology of planting of gladiolus and substantiation of their standardized indices of quality Ltd.”.
7. Development of model of computation of optimum rations of fattening of livestock.
8. Development of project of standard on technology of fattening of ostrich and substantiation of chosen norms.
9. Development of elements of system of control of safety and quality of small fruits planted at private enterprises.
10. Analysis of norms used in EU countries in validation of methods of testing of foods and development of recommendations on their introduction in practice of work of the Ukrainian laboratory of quality and safety of foodstuffs.

Academic rights of applicants entering Master course

Except for the specialty “Quality, Standardization and Certification”, applicants with Bachelor of Science degree in different directions of education and training may continue their education in specialties in Area of knowledge 1801 “Specific categories”:

- 8.18010004 “Extension service”;
- 8.18010009 “Stockbroking”;
- 8.18010012 “Management of Innovative activity”;
- 8.18010018 “Administrative Management”;
- 8.18010020 “Management of Educational Institution”;
- 8.18010021 “Pedagogy of Higher School”.

**Curriculum of Master training
in specialty “Quality, standardization and certification”
Educational and qualification Master program**

№	Name of the course	Semester	Amount	
			hours	Credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	Psychology of management	1	90	3
2	Economical aspects of business activities	3	90	3
3	Research and innovative processes	2	120	4
4	Fundamentals of systemic approach and methods of taking of decisions	2	120	4
5	International and regional standardization and certification	3	90	3
6	Management of quality	1	180	6
7	Standardization	1	120	4
8	Audit and certification	1	120	4
9	Managing of quality of products of agriculture and work on its fabrication	2	150	5
10	Standardization and certification of agricultural products	2	180	6
Total for standard part			1260	42
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by University				
1	Agricultural policy	1	90	3
2	Business foreign language	1	90	3
3	Philosophy of science and innovative progress	1	90	3
4	Assurance of legality of decision taken in process of management	2	90	3
Total (Disciplines offered by University)			360	12
2.2. Disciplines offered by students				
1	Quality, safety and hygiene of products of agriculture	2	150	5
2	Monitoring of quality of products of agriculture and methods of its betterment	1	120	4
3	Management of environment	2	120	4
4	Management of personnel	2	90	3
5	Mathematical modeling	3	90	3
Total			570	19
2.2.1. Specialization “Managing of safety and quality of foodstuffs”				
1	Veterinary sanitation and hygiene of reprocessing of products of breeding of cattle	3	90	3
2	Logistic systems and monitoring	3	90	3
3	Technological discipline of enterprises, which produce foodstuffs	3	90	3
4	Instrumental methods of research	3	90	3
5	Information technologies used in research	3	90	3
6	Managing of quality of foodstuffs	3	90	3
7	Procedures of marketing and managing by projects of investment	3	90	3
8	Innovative management	3	90	3
Total for specialization			90	3
2.2.2. Specialization “Environmental standardization and certification”				
1	Environmental standardization and certification	3	90	3
2	Logistic systems	3	90	3
3	Marketing analysis	3	90	3
4	Instrumental methods of research	3	90	3
5	Informative technologies of research	3	90	3
Total for specialization			90	3

№	Name of the course	Semester	Amount	
			hours	Credits ECTS
2.2.3. Specialization “Management of quality, standardization and certification at enterprises and in organization of forestry”				
1	External economic activities used in forestry	3	90	3
2	Standardization and certification in forestry	3	90	3
3	Logistic systems	3	90	3
4	Marketing analysis	3	90	3
5	Informative technologies of research	3	90	3
Total for specialization			90	3
Total (Disciplines offered by students)			660	22
Total for elective part			1020	34
3. OTHER TYPES OF TRAINING				
1	Practical training	2	240	8
2	Writing and presentation of master’s diploma	3	180	6
Total			420	14
Total for Specialty			2700	90

Annotations educational plan disciplines

1. STANDARD ACADEMIC DISCIPLINES

Psychology of management. Theoretical and practical training of students in the advanced learning of conditions, factors, motives and determinates of development of the personality as the subject of management, specificity of motivational factors of management, adaptive processes in the society, types of managers and styles of management.

Economical aspects of business activities. The training program of the discipline presumes learning of principles of theory of economics, as well as obtaining of experience in finding of concrete methods of taking of substantiated decisions in management, accomplishing of economical calculations, analytical and investigating work in finding of inner reserves in manufacturing and other type business activities of the enterprise.

Research and innovative processes. Methods of scientific investigations. Methods of investigation of processes of forming of quality of the product (given service). Influence of types and potential of material means (equipment, auxiliaries, resources) on process of identification of conditions of forming of quality of the product (given service). Methods of identification of need in material resources (equipment, auxiliaries, resources) used in identification of conditions of forming of quality of production (given services). Informative thread of forming of quality of production (given services). Capture and processing of informative threads. Analysis and systematization of information. Modeling of processes. Cause and effect relations existing in spheres of quality management, standardization and certification. Forecasting of ways of progress of the manufacturing structure. Analysis of processes of development of the manufacturing structure. Analysis of methods of motivating of personnel. Investigatory methods. Collecting and processing of informative threads. Analysis and systematization of information.

Fundamentals of systemic approach and methods of taking of decisions. The program of training presumes mastering of skill in revealing of systemic regularities, discriminate the basic stages of solving of problems, identify the specificity of managing by the system rational by the attribute of reaching of the set goal of operation and use of accessible resources, use the most known methods of taking of decisions. Studying of principles of systemic approach, typical methods of management of systems, algorithms of method of multicriterial scales.

International and regional standardization and certification. The program of training presumes studying of principles of international standardization, accreditation and attestation of conformity, principles used as the base of international and European legal and normative documents used in sphere of standardization, certification and accreditation, protection of nature in conditions of agricultural manufacturing, ensuring of quality and safety of foodstuffs reached in observance of norms developed by the international and regional organizations by standardization, accreditation and attestation of conformity.

Management of quality. System of management of quality of products and/or services. Structure of the organization (enterprise, institution). Standards of system of quality management of DSTU ISO 9000 series. Special functions of systems of management of quality of production and/or services. Development, introduction and functioning of systems of quality. Documentation of systems of management of quality of production and/or services. Technological documentation. Plan of work in managing of quality of production and/or services. Identification of needs and requirements of consumers of products and/or users of services. Process of managing of quality of production at stage of its marketing. Evaluation of level of quality of products and/or services. Identification of capability of the organization (enterprise, institution) to reach the set indices of quality of products and/or services. Preventive measures taken by results of inner audits of the system of quality management. Measuring, analysis and betterment of norms of system of quality management. Corrective actions to be done after revealing of unconformities of the system of quality management revealed in the course of its inner and external audits.

Standardization. Standard of the organization (enterprise, institution). Control of content of the standard on compliance of its norms to the modern level of development of science and technique in the corresponding sphere of use of the standard. Analysis of the modern level of progress of science and technique in the corresponding sphere of use of the standard. Procedures of introduction of amendments in normative documents. Technical regulations. Legislative base of work in standardization. Procedures of cancellation of normative documents. information on amendments in normative documents. Unification of articles and/or services. Standardization of articles and/or services. State system of standardization. Setting of norms and control of normative documents of the organization (enterprise, institution). Methods of dissemination of documentation by standardization, certification and quality management. Reports on introduction of norms of standards and routine of work of all departments of the organization (enterprise, institution) by problems of quality management and certification.

Audit and certification. Procedures of applying for certification of products and/or services, and/or systems of quality management. Objects and schemes of certification. procedures of use of schemes of certification. rules of choose of schemes of certification. schemes of carrying out of testing of products and/or services, and/or systems of quality management. Certificates of conformity. National schemes of certification and accreditation used in foreign countries. self-assessment and inner audit of systems of quality management. External audit in sphere of quality management. Certification of products carried put by norms of system of UkrSEPRO.

Managing of quality of products of agriculture and work on its fabrication. The program of training presumes studying of norms of laws of Ukraine and documents by regulation of norms of quality and safety of products of agriculture and raw materials used in production of foods, studying of maximum permissible levels of various kinds of agricultural products established in clauses of national, European and international

normative documents, standards of DSTU ISO 14000 series by problems of protection of environment in operation of reprocessing and agricultural enterprises.

Mastering of practice of development of systems of managing of quality and safety of forages and agricultural products at all stages of their production in observance of norms of standards of DSTU ISO 9000 series and principles of system of HACCP.

Standardization and certification of agricultural products. The program of training presumes learning of principles of international standardization and norms of national systems of standardization of agricultural products, requirements of principal international European and national legal and normative documents related to problems of standardization and certification of products of agriculture, as well as procedures of ensuring of its quality and safety, norms of safety and quality of products of agriculture, acquainting with practice of development of normative documents.

2. ELECTIVE ACADEMIC DISCIPLINES

2.1. Disciplines offered by University

Methodology and organization of research with the principles of intellectual property. The aim of the discipline is formation of the system of knowledge in methodology, theory of method and research process, methodical support of scientific and research activity at the stages of preparation of a Master paper, formation of the ability to organize research of a specific issue using the whole complex of the traditional methods of research including general and special methods. The main task of the theoretical part of the course is introduction to students the current concepts of research creation, the principles of methodology of scientific perception and methods of research. The main task of the practical part is the development of self-education ability, mastering skills of formation and application of perceived methodological position of research. In case of mastering the course students have to improve their skills of search, assortment and processing of scientific information, accurate formulation of a problem, aim, task, object, subject, methods of research. Introduction to students the principles of intellectual property and direction of them to gain knowledge and skills concerning registration of rights of ownership, their protection, commercialization, estimation and management are envisaged.

Business foreign language. The general aim of the program of teaching of foreign language for the professional purpose is formation students' professional linguistic competencies that will contribute to their efficient operating in cultural variety of training and professional environment. The methods of search of new information in another language sources, linguistic methods of analytical study of another language sources are learned. Students study published original literature in another language and increase their lexical and grammatical skills. Methods and linguistic peculiarities of annotation and synopsis of another language sources, the principles of translation of professional oriented another language sources are studied.

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.

Philosophy of science and innovative progress. The training course contains the elements of philosophy of science and innovative progress from the viewpoint of specificity of humanitarian knowledge. There are described the history of development of basic directions of progress of philosophy and methodological principles of solving of principal problems of this science, as well as characterized the methodological, structural, cognitive and valuable fundamentals and peculiarities of scientific progress. The students are taught to analyze from the philosophical point of view the specificity of modern state of scientific base domestically and worldwide, perspectives of its following progress and interrelations with other kinds of functioning of the society.

Agricultural and environmental legislation. Studying of peculiarities of forming of basement of modern agricultural legislation. the principal problem in it is studying of legal regulation of processes of forming of solving of problems of distribution of land and property in rural regions. There are studied the principal directions of assistance by the State of activities of manufacturers of agricultural production, namely the system of favorable taxation, crediting and insurance. There are studied the methods of attracting of investments in agricultural complex of the State reckoned as one of methods of disappearing of its crisis.

2.2. Disciplines offered by students

Quality, safety and hygiene of products of agriculture. The program of training presumes studying of the basic methods of identification of values of indices of quality and safety of products of agriculture, factors, which stipulate for producing of qualitative products, as well as the related legal and normative bases of documents.

Monitoring of quality of products of agriculture and methods of its betterment. The program of training presumes learning of various systemic and methodological approaches to use of methods of monitoring of safety and quality of foodstuffs and raw materials of vegetative and animal origin used in their production, processes, which occur in their storage, as well as methods of betterment of quality of production and conditions of their manufacturing in whole.

Management of environment. Processes of managing of environment normalized by ISO standards of 14000 series. Documentation used in managing of environment normalized by standards DSTU ISO 14000 series. Methods and methodology of quantitative estimation of ecological and social consequences of hazard events and incidents. Extraordinary situations. Documents, which use permits to avoid or decrease the grade of damage for resources (hominal, material, informational etc.) in extreme situations. Procedures of investigation and accounting of accidents, professional illnesses and damage occurred at enterprises, organizations and institutions. Direct and indirect methods of evaluation of grade of damage caused for men and environment. Modeling of scenario of origination of extreme situations. Immediate causes of origination of hazard events and accidents. Systems of centralized and local informing of population. Procedures of informing on state of work in protection of population and territories in cases of origination of danger. Principal measures used for protection of population and territories in extreme situations. Means of man-to-man defense. Criteria and basic principles of carrying out of evacuation of people, bodies responsible for execution of such measures, their functions and tasks.

Management of personnel. System of quantitative estimation of qualification of laborers. General principles of distribution of work by spheres of occupation in Ukraine. System of normative documents, which regulate relations in sphere of labor. Positioning of the specialist in distribution of spheres of activities of laborers in the society. Corporal culture of organization (enterprise, institution). Social and economical conditions of the

society and prognosis of ways of its progress. Modeling of professional activity (model of the specialist). Modeling of social activities (model of individuality). Classification of structural elements of professional activities.

Mathematical modeling. The discipline comprises the complex of information, which knowledge would permit the student to understand the essence of methods of evaluation of results of modeling to be used in choose of parameters of carrying out of technological processes and possible methods of computation of structure of equipment used in it, as well as choose in detail the procedures of organization of manufactures of foodstuffs and technologies used in it. Learning of this discipline gives the future specialists the possibility of scientific and technical substantiation and managing by technological processes, what is necessary in organization of producing of qualitative production on base of use of principles of systemic analysis.

2.2.1. Specialization “Managing by safety and quality of foodstuffs”

Veterinary sanitation and hygiene of reprocessing of products of breeding of cattle. The program of training presumes studying of basic principles of sanitary and hygienic expertise of raw materials used in production of foods and foodstuffs proper; danger of pollution by substances of chemical nature and principles of normalization of their permissible content in products of breeding of cattle; danger of pollution of by substances of biological nature; sanitary and hygienic expertise of meat and meat products, fish and fish products, milk and milk products.

Logistic systems and monitoring. Principles, functions and procedures of projecting and introduction of logistic schemes; methods of management by processes of logistic schemes; methodology of forming of logistic schemes of enterprises in process of their projecting; norms of taking of decisions in planning; basic stages of forming of infrastructure of logistic systems; regional aspects of forming of integrated logistic systems; principles, functions and methods of organization of logistic systems; methods of optimization of parameters of logistic systems and introduction of solutions taken in projecting.

Technological expertise of foodstuffs. Fundamentals of work in expertise of foods. History of progress of expertise of foods worldwide and results of work of foreign and Ukrainian specialists in it. Basic principles of evaluation of quality and safety of certain groups of foodstuffs, identification and falsification of foodstuffs: problems of identification and peculiarities of work in unmasking of falsification of meat products, fats and spices.

Instrumental methods used in execution of R&D works. Carrying out of of identification of safety of foods by the instrumental methods. Determining of coefficients of activity of water and its pH. Organoleptic methods of determining of quality of foodstuffs. Fundamental principles of sensor and degustation analysis, expert estimation of level of quality and scales of evaluation used in it classification and characteristic s of instruments used in identifying of quality of foodstuffs. Principles of measurement, composition and structural charts of instruments. Studying of analyzers of humidity, activity of water and potentiometric devices. Modern methods of research.

Informative technologies used in execution of R&D works. Methodology, methods and information technologies used in carrying out of R&D work. Basic stages, regularities and tendencies of progress of science. Scientific precognition of real nature. Organization of R&D works in Ukraine. Basic stages of carrying out of R&D activities in Ukraine. Purposes set in execution of R&D work and methods of their attaining. Experimental work. Problems of ensuring of trustworthiness and adequacy of results of R&D work. Use of means of computerization and Internet in R&D activities.

Managing of quality of foodstuffs. Organization of good hygienic, manufacturing and laboratory practices at enterprises, which fabricate foods in compliance to international norms of management of quality management of quality and safety of foodstuffs, development and introduction of systems of management of quality and safety of foods based on norms of system of HACCP. Certification of foodstuffs and systems of management used in food industry.

Procedures of marketing and managing by projects of investment. Organization of process of setting of tasks, planning and obtaining of marketing information, organization of its collection, analysis and preparation of the report on its results, which has the purpose of solving of problems of marketing at the enterprise in process of introduction of recommended actions. Realization of the principal purposes of marketing investigations, namely the exploring, experimental, descriptive and controlling actions. Carrying out of marketing investigations of processes and identification of the necessary ones that have be used in development and introduction of the project of innovative activities having to assist in taking of optimum administrative decisions by each process.

Innovative management. Essential senses of innovation and innovative processes. Innovative management as the constituent part of managing of work of the organization.

2.2.2. Specialization “Environmental standardization and certification”

Environmental standardization and certification. The program of training presumes learning of normative documents by problems of protection of environment arising in practice of operation of business persons. The specificity of such type certification is that there have to be identified compliance to the established norms of environmental standards of production of the enterprise, types of its activities, conditions of living premises and certain territories. Environmental certification as the necessary constituent part of ecological expertise and environmental audit. This problem obtains the especial actuality in view of joining of Ukraine to the World Trade Organization, where these problems relate both to quality of production of the enterprise and procedures of its operation.

Logistic systems. Principles, functions and procedures of projecting and organization of logistic systems; methods of managing of activities in projecting of logistic systems; methodology of projecting used in forming and development of logistic systems of the enterprise; principles of taking of decisions in process of planning; basic stages of forming of infrastructure of the logistic system; regional aspects of forming of integrated logistic systems; principles, functions and methods of organization of realization of functioning of logistic systems; methods of optimization of parameters of logistic systems and introduction of solutions developed in process of projecting.

Marketing analysis. Studying of theory, methodology and practice of marketing activities at markets of consumables, as well as the marketable, pricing, sale and communicative policy, as well as the policy of management of marketing activities of personnel of enterprises, specific features of marketing activities of trade organizations..

Instrumental methods of execution of R&D works. Carrying out of identification of safety of meat and meat products by the instrumental methods. Identification of safety of water and measuring of its pH. Organoleptic methods of studying of properties of foods. Fundamentals of analysis by the method of degustation, expert estimation of quality, estimative scales. Classification and characteristic of instruments used in analysis of foodstuffs. Principles of measurement, design and details of structure of instruments.

Acquainting with schemes and principles of operation of potentiometers used in determining of humidity and activity of water. Modern methods of express-testing.

Informative technologies used in R&D work. Methodology, methods and information technologies used in R&D work. Basic stages, mechanisms and tendencies of progress of science. Scientific methods of cognition of nature. Organization of R&D work in Ukraine. Basic stages of research. Tasks and methods of research. Theoretical investigations. Experimental investigations. Problems of trustworthiness and adequacy of results of research. Use of means of computerization and Internet in research.

2.2.3. Specialization “Managing of quality, standardization and certification at enterprises and in organizations of forestry”

External economic activities in forestry. The object to be learned in this discipline is the complex of business, economical, legal and finance relations of persons engaged in external economic activities and relations with foreign businesspersons both in Ukraine and abroad.

Standardization and certification in forestry. Organization of business activities in observance of established international norms of operation in forestry having the purpose of reaching of steady progress, prevention and decreasing of areas of forests and the useful resources obtained in reprocessing of its production.

Logistic systems. Principles, functions and procedures of projecting and organization of logistic systems; methods of managing of activities in projecting of logistic systems; methodology of projecting used in forming and development of logistic systems of the enterprise; principles of taking of decisions in process of planning; basic stages of forming of infrastructure of the logistic system; regional aspects of forming of integrated logistic systems; principles, functions and methods of organization of realization of functioning of logistic systems; methods of optimization of parameters of logistic systems and introduction of solutions developed in process of projecting.

Marketing analysis. Studying of theory, methodology and practice of marketing activities at markets of consumables, as well as the marketable, pricing, sale and communicative policy, as well as the policy of management of marketing activities of personnel of enterprises, specific features of marketing activities of trade organizations..

Informative technologies used in R&D work. Methodology, methods and information technologies used in R&D work. Basic stages, mechanisms and tendencies of progress of science. Scientific methods of cognition of nature. Organization of R&D work in Ukraine. Basic stages of research. Tasks and methods of research. Theoretical investigations. Experimental investigations. Problems of trustworthiness and adequacy of results of research. Use of means of computerization and Internet in research.

FACULTY CONSTRUCTION AND DESIGN

Dean – Ph.D. (Technical Sciences), associate professor Zynoviy Ruzhylo
Tel.: (044) 527-81-29
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Location: building № 11, room 305

The faculty provides teaching of Master-students on courses:

8.05050303 “Forest Complex Equipment»

Diploma Departments:

Constructing of Machines and equipment

Tel.: (044) 527-87-34,

E-mail: machinebuild_centre@twin.nauu.kiev.ua

Head of department – Doctor of Technical Sciences, professor Vyacheslav Loveykin

Reliability of Machinery

Tel.: (044) 527-87-71

E-mail: relability_chair@twin.nauu.kiev.ua

Head of department – Dr. Sc., Professor Anatoliy Boyko

8.05050312 “Machinery and Agricultural Equipment”

Diploma Departments:

Constructing of Machines and equipment

Tel.: (044) 527-87-34,

E-mail: machinebuild_centre@twin.nauu.kiev.ua

Head of department – Doctor of Technical Sciences, professor Vyacheslav Loveykin

Reliability of Machinery

Tel.: (044) 527-87-71

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Head of department – Dr. Sc., Professor Anatoliy Boyko

Tractors and automobiles

Tel.: (044) 527-88-95

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Head of department – Ph.D. (Technical Sciences), associate professor Kateryna Syera

8.06010101 “Industrial and Civil Construction”

Diploma Departments:

Technology and Organization of Construction

Tel.: (044) 527-83-92

E-mail: a.david@ukr.net

Head of department – Doctor of Technical Science, Professor Alexander Davydenko

Mechanics

Tel.: (044) 527-83-25

E-mail: berezovyi@nubip.edu.ua

Head of department – Ph.D. (Technical Sciences), associate professor Mykola Berezovyi

**Master's course
in specialty "FOREST COMPLEX EQUIPMENT"
branch of knowledge "Mechanical engineering and processing of materials"**

Form of Training, Licensed number of persons:

- | | |
|-------------|-------------|
| – Full-time | 50 students |
| – Part-time | 50 students |

Duration of training:

- | | |
|--|-----------|
| – Full-time educational and professional program | 1,5 years |
| – Full-time educational and scientific program | 2 years |
| – Part-time | 2 years |

Credits:

- | | |
|--|----------|
| – educational and professional program | 90 ECTS |
| – educational and scientific program | 120 ECTS |

Language

Ukrainian, English, German

Qualification of graduates:

M.Sc. Mechanical engineering

Concept of training

Training of Master-students within the program "Machinery for forest complex" is based on a systematic approach to obtain specific skills and knowledge that are sufficient for realization of professional tasks and responsibilities in the area of machine constructing, designing, testing, certification, maintenance and utilization of machines and equipment for forestry.

**Educational and professional Master's program
*Specialization "Constructing machines, designing and testing
of techniques for forest complex"***

A specialist obtains a deep knowledge of design, engineering and testing of machines for forest complex, based on the theory of technical systems, comprehension of system evaluation methods and methods of equipment testing for the forest complex by industrial, national and international standards.

It is assumed a clear comprehension to constructing machines for forestry as a part of the mechanical system. It is assessed as repairable and non-repairable systems and ensuring their reliability.

**Educational and scientific Master's program
*Specialization "Mechatronic Systems of Machines for forestry"***

The program provide a deep knowledge about innovative construction and designing of mechatronic systems in equipment for forestry, based on classical and modern concepts of mechatronics, mechanical motion control with programmable software support and digital control theory.

Researches and innovative development carried out on dynamic models of forestry equipment (the dynamics of a nonlinear function of the equipment provisions of links; dynamic loads to equipment during steady-state and unsteady modes of motion).

Areas of employment for graduates

Alumnus with diploma of Engineer-Mechanic are able to implement professional tasks and responsibilities provided in the form of engineering activity of positions in various groups of profession related to engineering, organization of production and management, teaching and researching in engineering departments of research institutions.

Practical training

During practical training the faculty is oriented on close co-operation and collaboration with educational-experimental enterprises of university, such as: Separated subdivision of NULES of Ukraine “Velykosnytynske Education and Research Farm named after O. Muzychenka”, Separated subdivision of NULES of Ukraine “Agronomic Research Station”, Separated subdivision of NULES of Ukraine “Education and Research Farm “Vorzel”, Separated subdivision of NULES of Ukraine “Boyarka Forestry Research Station”.

Practical training is also carried out at the advanced research institutions and enterprises of agricultural and forestry such as: National Scientific Centre "Institute of Mechanization and Electrification of Agriculture", L.Pogorelyi's Ukrainian Research Institute of Forecasting and testing of equipment and technologies for agricultural production; Companies “TAN”, “John Deere”, “Amaco”, “Astra”; State Forestry Agencies of forest resources of Ukraine.

Proposed Topics for Master Theses

1. Adjustment to construction parameters of the wood-materials cutter at the equipment line to produce solid bio-fuels.
2. Investigation to the drying process of wood raw-materials and adjustment of parameters of dryers at the equipment line to produce solid bio-fuels.
3. Adjustment to parameters of hydraulic mechanism for trimming wood.
4. Optimizing to rotation mode of crane for transporting of timber.
5. Adjustment to constructional and technological parameters of granulators.

Academic rights of applicants entering Master course

Applicants with the Diploma of Bachelor can continue training in connected specialties including ones of the field of knowledge “Specific categories”, (table 2) and other specialties (table 3) in accordance with the Terms of enrolment to higher educational institutions of Ukraine in 2015 approved by the Order of the Ministry of education and science of Ukraine on October 15, 2014 № 1172 and the Regulations of enrolment to National University of Life and Environmental Sciences of Ukraine (basic institution, Kyiv) for 2015.

Curriculum of Master training in specialty “Forest Complex Equipment” Educational and qualification Master program

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	Applied computer technologies of machines for forestry	2	90	3
2	Measuring devices and methods of measurement	3	90	3
3	Computer design of equipment for forestry	1, 2	180	6
4	Engineering to using of life resources	2	90	3
5	Theory and designing of machines for forestry	1	120	4
6	Mechatronic systems of machines for forestry	2	150	5
7	Automation of technical systems of machines for forestry	1	90	3
8	Reliability of machines for forestry	1	120	4
Total for standard part			930	31
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by University				
1	Business foreign language	1	150	5
2	Philosophy of science	1	90	3

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
3	Patent science and copyright	1	120	4
Total (Disciplines offered by University)			360	12
2.2. Disciplines offered by students				
<i>Specialization "Constructing machines, designing and testing of techniques for forest complex"</i>				
1	Methods of designing of machines for forestry	3	120	4
2	Theory and designing of vehicles for forestry	2, 3	240	8
3	Testing of machines for forestry	3	90	3
4	Design of vibration machines for forestry	3	90	3
5	Design woodworking machinery	2	120	4
6	Mechanics of materials and timbers	3	90	3
7	Dynamics of machines for forestry	3	120	4
8	Designing of technical systems for forestry	3	90	3
Total (Disciplines offered by students)			960	32
Total for elective part			1320	44
3. OTHER TYPES OF TRAINING				
1	Practical trainings	2	300	10
2	Preparation and defense of master's work	3	150	5
Total			450	15
Total for Specialty			2700	90

**Curriculum of Master training in specialty "Forest Complex Equipment"
Educational and scientific Master's program**

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	Applied computer technologies of machines for forestry	2	90	3
2	Measuring devices and methods of measurement	3	90	3
3	Computer design of equipment for forestry	1, 2	180	6
4	Engineering to using of life resources	2	90	3
5	Theory and designing of machines for forestry	1	120	4
6	Mechatronic systems of machines for forestry	2	150	5
7	Automation of technical systems of machines for forestry	1	90	3
8	Reliability of machines for forestry	1	120	4
Total for standard part			930	31
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by University				
1	Business foreign language	1	150	5
2	Philosophy of science	1	90	3
3	Patent science and copyright	1	120	4
Total (Disciplines offered by University)			360	12
2.2. Disciplines offered by students				
2.2.1. Specialization "Mechatronic Systems of Machines for forestry"				
1	Testing and certification of machines for forestry	3, 4	180	6
2	Vibration processes in machines for forestry	3, 4	180	6
3	Nanotechnology	2	90	3
4	Reliability of technical systems for forestry machines	2	90	4
5	Newest design methods of machines for forestry	3, 4	180	12
6	Optimization of technical systems for forestry	2	300	3
7	Optimizing of designs for woodworking equipment	3, 4	180	6
8	Dynamics of technical systems	3, 4	300	10
9	Mathematical modeling of technical systems for forestry	3, 4	180	6
10	Mechanics of contact interaction of machines with timber	3, 4	180	6

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
Total (Disciplines offered by students)			1860	62
Total for elective part			2220	74
3. OTHER TYPES OF TRAINING				
1	Practical trainings	2	300	10
2	Preparation and defense of master's work	3, 4	150	5
Total			450	15
Total for Specialty			3600	120

Annotations educational plan disciplines

1. STANDARD ACADEMIC DISCIPLINES

Applied computer technologies of machines for forestry. The study of this discipline can improve applied theoretical and practical professional skills of future engineers through the study of newest computerized technologies of various technological systems; learning its functional potential and methods of use; obtain the necessary techniques and practical skills to work with applied computer programs.

Measuring devices and methods of measurement. This discipline reveals the basis of theoretical knowledge about measurements, evaluation and processing of measured results; introduces the main principles of work and construction of the electronic measuring devices, equipment to display information, measuring informational systems; and describes the perspectives of development of measuring instruments.

Computer design of equipment for forestry. Discipline involves the raise of comprehensive theoretical and practical professional skills by familiarizing students with CAD-programs of various classes, learning its functional possibilities and methods of use, adoption of techniques and skills that are necessary for designing of machines for forestry.

Engineering to using of life resources. Educational direction of the course consists of studying to scientific and industrial bases to develop alternative types of energy, especially from the sun, wind, and renewable biomass. Constructions and technological parameters of equipment are calculated to receive energy from alternative sources; to analyze its power ability, ecological and economic characteristics of gas, liquid and solid bio-fuels.

Theory and designing of machines for forestry. This discipline studies the methods and techniques of calculation and designing at all stages of projecting; schemes, structure, and functions of machines and equipment for forestry.

Mechatronic systems of machines for forestry. Course of this discipline provides principles of constructing and common functioning algorithm for mechatronic systems used in forestry; its calculations, design and characteristics put into practice.

Automation of technical systems of machines for forestry. Course of this discipline prepares Masters to solve the issues of automation processing systems for fixed and mobile machinery of forestry complex stand at high scientific and technological level; to improve the effectiveness of usage of automatic and automated systems.

Reliability of machines for forestry. This is a complex discipline that studies: patterns of changes in the technical state of machines and their details during functioning; methods and techniques to remove defects and damages; giving to the surface of details the required physical and mechanical characteristics; recovery technological processes for typical parts of equipment used for forestry and wood processing.

2. ELECTIVE ACADEMIC DISCIPLINES

2.1. Disciplines offered by University

Business foreign language. The study of this discipline allows learning the knowledge and skills that will provide the necessary to master communicative ability in the field of professional communication at scientific conferences by specialty, research reports, business meetings and negotiations in a foreign language.

Philosophy of science. Course provides to students a complete list of the basic problems of philosophy of science at the objective, ideologically unbiased contemporary vision of modern science, the synthesis of the knowledge gained in professional and humanities disciplines to a holistic worldview for creating of foundations of methodological and humanitarian components of the Master.

Patent science and copyright. The study of this discipline allows receiving future specialists in the field of agricultural mechanical engineering of the necessary knowledge of the system of intellectual property protection, the ability to apply in practice methods of legal protection of scientific and technical achievements and creative products.

Educational and professional Master's program

2.2. Disciplines offered by students

Specialization "Constructing machines, designing and testing of techniques for forest complex"

Methods of designing machines for forestry. Course of this discipline is directed at the existing knowledge about design techniques of forestry equipment; to learn the functional possibilities to use them; to get the necessary techniques and practical skills to implement design methods for production purposes in machines for forestry.

Theory and designing of vehicles for forestry. This discipline studies existed theoretical methods to develop and plan the constructional and technological parameters of vehicles for forestry.

Testing of machines for forestry. A course of this discipline is directed to study the engineering methods to tests the machines for forest complex. That allows obtaining an objective judgment about structural, technological, and operating characteristics of machines; to define its accordance to the requirements of specifications, tasks, requirements, and valid standards to working processes.

Design of vibration machines for forestry. The discipline studies principles and methods of calculation and analytical description of vibration and motion at mechanical systems; general principles to design of machine with vibration; evaluation of their parameters, means to generate mechanical vibrations and pulses; and structural features of vibration machines for forestry.

Design woodworking machinery. The course examines the existing design methods woodworking equipment, patterns of elementary and complex machining cutting design features wood cutting tools and woodworking machines.

Mechanics of materials and timbers. This discipline can help to learn the basic theoretical knowledge and practical skills about the interaction of working organs of machines and equipment for forestry. The aim is to change properties and break characteristics of materials and media, which is the base of the most processes.

Dynamics of machines for forestry. Discipline is directed on studying the dynamic models of concrete machines and equipment for forest complex; its mathematical descriptions; calculation of dynamic loadings and recommendations and ways to reduce these loadings during work.

Designing of technical systems for forestry. Courses in this discipline aims to explore the theoretical approaches and principles of optimization timber production and

logging works; the basis to calculate the productivity and technological coordination of the work to the single machines and the whole production lines; the rational plan-schemes and methods to design and optimize the technological processes of the timber storage and sawmill enterprises.

Educational and scientific Master's program

2.2. Disciplines offered by students

2.2.1. Specialization "Mechatronic Systems of Machines for forestry"

Testing and certification of machines for forestry. Educational discipline represents the base of theoretical knowledge and practical skills to the questions of general concept to test and certificate the machinery for forest complex. A course of this discipline is directed to study the engineering methods of testing and certificating of equipment for forest complex; which allows getting the objective estimation about structural, technological and operating characteristics of machine; to define their accordance to specification requirements and valid technological standards to workings processes.

Vibration processes in machines for forestry. Discipline studies vibratory processes in equipment for forestry; basic approaches and principles of mathematical relationships and methods of both theoretical and practical researchers under development to the theory of vibration working machinery and equipment for forestry.

Nanotechnology. This discipline studies the possibilities to produce devices and their components, that are necessary to create, treat and manipulate by atoms, molecules and nanoparticles; and it also studies technologies which are based on manipulation to separate atoms or molecule in order to construct the structures with the expected properties.

Reliability of technical systems for forestry machines. Discipline is complex it includes: concepts of technical systems and their classification; schemes of reliability to technical systems and their analysis; method to optimize the quantity of reserved elements of systems; theory of graphs; logically-imitative design to research the reliability of technical systems; methods to provide the reliability of technical systems and equipment for forest complex.

Newest design methods of machines for forestry. Discipline examines analytical and experimental methods to develop mathematical models for forest industry technological objects; methods of object formalization and algorithm of a process for the automation equipment functioning; methods of identification to the objects of technological process by their frequency, pulse and transient characteristics; statistical methods of identification; elements correlation and spectral analysis.

Optimization of technical systems for forestry. Discipline studies the methods of optimization to constructions of the technical systems for forest complex; principles and bases of modelling to the guided technical systems for industrial and forestry production.

Optimizing of designs for woodworking equipment. Discipline studies methods of the rational planning, organization and providing researchers and construction products, organization and forecasting; optimization of technological processes and constructions of woodworking equipment.

Dynamics of technical systems. Discipline is directed to development of dynamic models to a certain technical systems of machines and equipment for forest complex, their mathematical description; calculation of dynamic loadings; and statements of initial requirements for the following calculations of technical systems which were based on durability, productivity and reliability.

Mathematical modelling of technical systems for forestry. This is a complex discipline that studies: the methods and technical means to obtain, process, present and use the information about the objects, which interact with each other and the environment. This is needed in order to foresee the reaction of the object from controlled impacts; to analyze its sensitivity to various factors while keep the mathematical description of the physical object adequate to the real.

Mechanics of contact interaction of machines with timber. This course has the aim to obtain the basics of theoretical knowledge and practical skills about the interaction of working parts of machine or equipment with timber; directed to change the properties and breaking ability of media and materials.

**Master's course
in specialty "MACHINERY AND AGRICULTURAL EQUIPMENT"
branch of knowledge "Mechanical engineering and processing of materials"**

Form of Training, Licensed number of persons:

- | | |
|-------------|-------------|
| – Full-time | 50 students |
| – Part-time | 50 students |

Duration of training:

- | | |
|--|-----------|
| – Full-time educational and professional program | 1,5 years |
| – Full-time educational and scientific program | 2 years |
| – Part-time | 2 years |

Credits:

- | | |
|--|----------|
| – educational and professional program | 90 ECTS |
| – educational and scientific program | 120 ECTS |

Language Ukrainian, English, German

Qualification of graduates: Engineer-Designer

Concept of training

Training of Master's course students in the field "Machinery and Agricultural Equipment" is based on a systematic approach to obtain specific skills and knowledge that are sufficient for realization of professional tasks and responsibilities in the field of constructing, designing, testing, certification, maintenance and utilization of machines and equipment for agricultural production.

**Educational and professional Master's program
*Specialization "Constructing machines, designing and testing
of agricultural machines"***

A specialist obtains a deep knowledge of design, engineering and testing of machines for agricultural production, based on the theory of technical systems, comprehension of system evaluation methods and methods of equipment testing for agricultural machinery by industrial, national and international standards. Engineering of agricultural machines is implemented through formation, structuring and solution to optimization problems of analysis and synthesis.

Areas of employment for graduates

Alumnus with diploma of Engineer-Mechanic are able to implement professional tasks and responsibilities provided in the form of engineering activity of positions in various groups of profession related to engineering, organization of production and management, teaching and researching in engineering departments of research institutions.

**Educational and scientific Master's program
*Specialization "Mechatronic Systems of Machines for Agricultural Production"***

A specialist obtains a deep knowledge about newest construction and designing of mechatronic systems in machines for agricultural production, based on classical and modern concepts of mechatronics, mechanical motion control with programmable software support and digital control theory.

It is assumed a clear understanding of the stages in construction of hydro-mechanical and electro-mechanical systems; the use of technical elements and aesthetics for industrial design to the modern production of agricultural machines.

Areas of employment for graduates

Alumnus with diploma of Engineer-Mechanic are able to implement professional tasks and responsibilities provided in the form of engineering activity of positions in various groups of profession related to engineering, organization of production and management, teaching and researching in engineering departments of research institutions.

Practical training

During practical training the faculty is oriented on close co-operation and collaboration with educational-experimental enterprises of university, such as: Separated subdivision of NULES of Ukraine "Velykosnytynske Education and Research Farm named after O. Muzychenka", Separated subdivision of NULES of Ukraine "Agronomic Research Station", Separated subdivision of NULES of Ukraine "Education and Research Farm "Vorzel", Separated subdivision of NULES of Ukraine "Boyarka Forestry Research Station".

Practical training is also carried out at the advanced research institutions and enterprises of agricultural and forestry such as: National Scientific Centre "Institute of Mechanization and Electrification of Agriculture," L.Pogorelyi's Ukrainian Research Institute of Forecasting and testing of equipment and technologies for agricultural production; Companies "TAN", "John Deere", "Amaco", "Astra"; State Forestry Agencies of forest resources of Ukraine.

Proposed Topics for Master Theses

1. Adjustment to constructional and technological parameters of the biogas reactors of the rotary type.
2. Investigation to efficiency of nutrition for plants cultivated in greenhouses by the use of mediator adapter.
3. Adjustment to constructional and technological parameters of the belt conveyor to move vegetable seeds.
4. Improving of potato harvesting machine with designing of separating device.
5. Investigation to the process and the rationale structural parameters in order to improve machine for the fuel pellets produce.
6. Adjustment to parameters and operating modes for milking machine of pair-wise type at the maternity section for 25 animals.

Academic rights of applicants entering Master course

Applicants with the Diploma of Bachelor can continue training in connected specialties including ones of the field of knowledge "Specific categories", (table 2) and other specialties (table 3) in accordance with the Terms of enrolment to higher educational institutions of Ukraine in 2015 approved by the Order of the Ministry of education and science of Ukraine on October 15, 2014 № 1172 and the Regulations of enrolment to National University of Life and Environmental Sciences of Ukraine (basic institution, Kyiv) for 2015.

**Curriculum of Master training
in specialty "Machinery and Agricultural Equipment"
Educational and qualification Master program**

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	Automation of technical systems	1	90	3
2	Applied computer technologies	2	90	3
3	Mechanics of technical systems constructions	2	90	3
4	Measuring devices and methods of measurement	3	90	3
5	Engineering of systems of nature using	2	90	3
6	Computer aided design systems	1, 2	210	7
7	Theory of designing of agricultural machines	1	180	6
8	Mechatronic systems of agricultural technique	2	90	3
Total for standard part			930	31
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by University				
1	Business foreign language	1	150	5
2	Philosophy of science	1	90	3
3	Patent science and copyright	1	90	3
Total (Disciplines offered by University)			330	11
2.2. Disciplines offered by students				
2.2.1. Specialization "Constructing, designing and testing of machines of agricultural production"				
1	Design of vibration machines	2	90	3
2	Design of machines and equipment in bioenergetics	3	90	3
3	Testing of agricultural technique	3	90	3
4	Reliability of agricultural machines	1	120	4
5	Mechanics of environments	2	90	3
6	Methods of construction of agricultural workers machines	3	90	3
7	Mechatronics	2, 3	120	4
8	Design of machines and equipment in animal husbandry	3	90	3
9	Theory of technical systems	3	210	7
Total (Disciplines offered by students)			990	33
Total for elective part			1020	34
3. OTHER TYPES OF TRAINING				
1	Practical trainings	2	300	10
2	Preparation and defense of master's work	3	150	5
Total			450	15
Total for Specialty			2700	90

**Curriculum of Master training
in specialty "Machinery and Agricultural Equipment"
Educational and scientific Master's program**

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	Automation of technical systems	1	90	3
2	Applied computer technologies	2	90	3
3	Mechanics of technical systems constructions	2	90	3
4	Measuring devices and methods of measurement	3	90	3
5	Engineering of systems of nature using	2	90	3
6	Computer aided design systems	1, 2	210	7
7	Theory of designing of agricultural machines	1	180	6

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
8	Mechatronic systems of agricultural technique	2	90	3
Total for standard part			930	31
2.1. Disciplines offered by University				
1	Business foreign language	1	150	5
2	Philosophy of science	1	90	3
3	Patent science and copyright	1	90	3
Total (Disciplines offered by University)			330	11
2.2. Disciplines offered by students				
2.2.1. Specialization "Mechatronic systems of machines of agricultural production"				
1	Mathematical modelling of technical systems	3, 4	180	6
2	Vibrational processes in agricultural technics	3, 4	180	6
3	Testing and certification of agricultural technique	3, 4	180	6
4	Reliability of technical systems	1	150	5
5	Experimental research methods and design agricultural machinery	3, 4	300	10
6	History of techniques	2	90	3
7	Theory of mechatronic systems of agricultural machines	2, 3, 4	300	10
8	Mechanics of contact interaction of operational devices with agricultural materials	3, 4	180	6
9	Dynamics and optimization of machines	2, 3, 4	330	11
Total (Disciplines offered by students)			1890	63
Total for elective part			2220	74
3. OTHER TYPES OF TRAINING				
1	Practical trainings	2	300	10
2	Preparation and defense of master's work	3, 4	150	5
Total			450	15
Total for Specialty			3600	120

Annotations educational plan disciplines

1. STANDARD ACADEMIC DISCIPLINES

Automation of technical systems. Discipline course allows preparing Master's course students for deciding of issues of process automation systems for fixed and mobile technical equipment in the modern scientific and technological level and improving the efficiency of operation of automatic and automated systems.

Applied computer technologies. The study of this discipline can improve the applied theoretical and practical professional skills of future Master's engineers by their knowledge of modern computer technology in various technological systems, learning features and methods of use, mastering the necessary techniques and practical skills with computer applications for production purposes of Agricultural Engineering.

Mechanics of technical systems constructions. The discipline studies the phenomena that affect the operability of technical systems considering the constructive and technological methods of improving structures machines, in terms of energy intensity, metal, etc.; provides a theoretical justification for the required accuracy of elements of structures of technical systems and methods for achieving it.

Measuring devices and methods of measurement. This discipline reveals the future design engineers basics of theoretical knowledge on measurement, evaluation and processing of measurement results, introduces the principles of the modern electronic and electric measuring devices, display products, measuring information systems, as well as the prospects of measuring instruments.

Engineering of systems of nature using. The direction of the discipline consists in studying by specialists of the scientific-production basics and prospects of development of alternative energy, in particular solar, wind, renewable biomass. Calculated constructive-technological parameters of the equipment for reception of energy from alternative sources, analyzes the energy, environmental and economic performance of gas, liquid and solid biofuels.

Computer aided design systems. Discipline involves raising a comprehensive theoretical and practical professional skills of future engineers-designers by familiarizing them with contemporary CAD various classes, the mastery of the necessary techniques and skills of implementation of development activities using major CAD systems.

Theory of designing of agricultural machines. This discipline studies methods of calculation and design at all stages of development of technical means, schemes of construction and operation of objects of modern new equipment for agriculture.

Mechatronic system of agricultural technique. The course of this discipline reveals the principles of the structure and General algorithms of functioning of mechatronic systems, which are used in agriculture, their calculation, design and features of use in practice.

2. ELECTIVE ACADEMIC DISCIPLINES

2.1. Disciplines offered by University

Business foreign language. The study of this discipline allows learning the knowledge and skills that will provide the necessary to master communicative ability in the field of professional communication at scientific conferences by specialty, research reports, business meetings and negotiations in a foreign language.

Philosophy of science. Course provides to students a complete list of the basic problems of philosophy of science at the objective, ideologically unbiased contemporary vision of modern science, the synthesis of the knowledge gained in professional and humanities disciplines to a holistic worldview for creating of foundations of methodological and humanitarian components of the Master.

Patent science and copyright. The study of this discipline allows receiving future specialists in the field of agricultural mechanical engineering of the necessary knowledge of the system of intellectual property protection, the ability to apply in practice methods of legal protection of scientific and technical achievements and creative products.

Educational and professional Master's program

2.2. Disciplines offered by students

2.2.1. Specialization "Constructing, designing and testing of machines of agricultural production"

Design of vibration machines. The discipline studies the basics of methods of analytical description and calculation of fluctuations and motion of mechanical systems and general design principles of vibrating machines, in particular, the main types of calculations of their parameters and generation tools of mechanical vibrations and pulses and structural features of machinery vibration of agriculture.

Designing of machines and equipment in bioenergy. The course includes the fundamentals of designing machines and equipment for bioenergy production in agroindustrial complex, and peculiarities of their choice of rational constructive-technological parameters of optimization of technological processes of bioenergy.

Testing of agricultural technique. Course in the discipline aimed to study engineering test methods for agricultural technology, which allows getting an objective assessment of the design, technological and service properties of equipment and

determining their compliance with technical requirements and current technological requirements on workflows.

Reliability of agricultural machines. It is a complex discipline that studies the regularities of change of a technical condition of machines and their elements in the process of exploitation, studies the implementation of methods and ways of elimination of defects and damages, discloses the methods of making surfaces of the parts necessary physical-mechanical properties by: surfacing, spraying, use of polymers, electroplating, plastic deformation, electrical methods of processing and restore the health of agricultural machinery.

Mechanics of environments. This discipline allows you to learn the basics of theoretical knowledge and practical skills related to the interaction of working bodies of machines and equipment, aimed at the change of properties and fracture of materials and environments, which are the basis of most processes in agriculture.

Methods of construction of agricultural workers machines. The discipline course is aimed to study of existing methods of constructing of agricultural workers machines, mastering of functionality and their usage patterns, mastering the essential techniques and practical skills of performance of works with application of methods for designing of industrial purpose agricultural machinery.

Mechatronics. Course of this subject aims to familiarize with the basic provisions and directions of use of mechatronics, which studies patterns, computer-controlled machine and functions and structures equipment and software management.

Designing of machines and equipment in animal husbandry. This discipline allows mastering the methods of design and development work items of machinery, equipment, production of mechanized production lines in animal husbandry, systematization and consolidation of knowledge on technology, mechanization, ecology and safety of livestock production.

Theory of technical systems. The discipline aimed to study the main provisions of the systematic examination of the goals of technical systems of machines and equipment for agricultural production and familiarization with the constructive solution methods. In this case, any technical system is viewed as a process of interaction of its elements in space and time.

Educational and scientific Master's program

2.2. Disciplines offered by students

2.2.1. Specialization "Mechatronic systems of machines of agricultural production"

Mathematical modelling of technical systems. It is a complex discipline that studies the methods and ways of reception, processing, presentation and use of information about the objects that interact with each other and external environment in order to predict the reaction of the object on control actions, its analysis of sensitivity to various factors when saving in the mathematical description of the physical adequacy of the real object.

Vibrational processes in agricultural technics. The discipline studies the vibrational processes in the agricultural technique and the main provisions and principles of construction of their mathematical models, and application of the method of theoretical researches, development of the theory of vibration of operating devices of agricultural machines and equipment.

Testing and certification of agricultural technique. The course of the discipline aimed to study of engineering methods of testing and certification of agricultural technology, which allows getting an objective assessment of the design, technological and

service properties of equipment and determining their compliance with technical requirements and current technological requirements on workflows.

Reliability of technical systems. It is a complex discipline that studies: the concept of technical systems and their classification; schemes of reliability of technical systems and their analysis; methodology for optimization of the number of backup systems elements; graph theory; tools of the logical-simulation modelling for the research of reliability of technical systems; methods of ensuring reliability of agricultural machinery, as technical systems.

Experimental research methods and design agricultural machinery. The discipline studies the analytical and experimental methods for the development of mathematical models of technological facilities of the agrarian industry, methods of formalization of object and algorithmic of the process of functioning of systems of automation equipment, methods of identification of technological objects by their frequency, pulse and transient, statistical methods for the identification of elements of the correlation and spectral analysis.

History of techniques. The discipline considers the questions of evolution of technology, technical solutions, design errors, external factors that will be useful in creating new or improving the existing machinery and equipment.

Theory of mechatronic systems of agricultural machines. The discipline studies the theoretical basics of construction of mechatronic systems, methods of their control and automatic means of implementation of mechatronic systems in agricultural machines.

Mechanics of contact interaction of operational devices with agricultural materials. The course of this discipline focuses on introducing the foundations of theoretical knowledge and practical skills related to the interaction of working bodies of machines and equipment, aimed at the change of properties and fracture of materials and environments, which are the basis of most processes in agriculture.

Dynamics and optimization of machines. It is focused on the development of dynamic models of specific systems of machines and equipment for agricultural production, their mathematical description, calculation of current dynamic loads, which are determined on base of the initial conditions for the subsequent calculations on durability, performance, and reliability of machines.

**Master's course
in Specialty "INDUSTRIAL AND CIVIL CONSTRUCTION"
branch of knowledge "Building and Architecture"**

Form of Training, Licensed number of persons:	
– Full-time	25 students
Duration of training:	
– Full-time educational and professional program	1,5 years
Credits:	
– educational and professional program	90 ECTS
Language	Ukrainian, English, German
Qualification of graduates:	Research Engineer in Construction

Concept of training

Providing knowledge, skills and professional skills of new generation of innovation in field of industrial and civil construction of agriculture and environmental systems based on modern standards of education adapted to requirements of world's best educational programs for public and private sectors in Ukraine.

**Educational and professional Master's program
*Specialization "Innovative projects of industrial and civil construction
of agricultural and environmental systems"***

Master's Programme – Innovative projects of industrial and civil construction of agriculture and environmental systems. The program includes works commissioned by strategic partners to develop innovative projects of industrial and civil construction of agribusiness and environmental systems.

Areas of employment for graduates

Receive higher education and can work in positions that correspond to 4th level qualification by state classifications of occupations: Assistant; Professor of higher education, Engineer (Civil Engineering), Engineer Building Regulations; Engineer with design and cost estimate; Design Engineers (civil engineering); Engineer training; Researcher (engineering sector); Safety Engineer; Engineer patent and inventive work; Engineer production preparation; Quality engineer; Engineer with the introduction of new technology; Engineer o standardization; Design Engineer; Research-Engineer.

Practical training

Practical training is on Knauf Marketing Ukraine, SRI "Ukragrobudivnytstvo", SRI "Ukragropromproduktyvnyist", SRI Construction Process, Design Bureaus Ukrainian Research Institute of Forecasting and Testing of Equipment and Technologies for Agricultural Production named Leonida Pogorelogo, "Design Bureau National Scientific Center", Institute of Mechanization and Electrification of Agriculture", LLC "Agrobidivelnny alliance "Astra", LLC "John Deere Ukraine", PE "New AgroConstruction Technologies", Research Institute of Building Structures, other bases of practical training students (trainees) from among the leading university institutions, enterprises and organizations in Ukraine and abroad, with right conditions for practice students in accordance with requirements of educational and vocational training programs for professionals.

Proposed Topics for Master Theses

1. Office building state farms using efficient reinforced concrete beams.
2. Steel frame frameworks with welded beams with variable section flexible wall.
3. Girder-off and ribbed steel beton overlap.
4. Elevation Technology relegation automobile overpass breadstuff-terminal agricultural sector.
5. Refractoriness steel reinforced concrete beams.
6. Rehabilitation of Buildings "Agrolizyng" from the superstructure.
7. Metal structures, reinforced carbon fiber, under static loading.
8. Beam steel-concrete structures with external reinforcement.
9. Items fiber concretes reinforced with steel fiber.
10. Hollow slabs reinforced with steel profiled decking.

Academic rights of applicants entering Master course

Applicants with a bachelor's degree can continue their studies on related, including field of knowledge "Specific categories" (Table. 2) and other specialties (Table. 3) Under the terms of admission to the higher educational institutions of Ukraine in 2015 approved by the Ministry of Education and Science of Ukraine from October 15, 2014 number 1172 and Rules Admission to the National University of Life and Environmental Sciences of Ukraine (basic institution, m. Kyiv) in 2015.

Curriculum of Master training in specialty "Industrial and Civil Construction" Educational and professional program

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	Construction Standards of Ukraine (OiF, MC, JBK)	1	150	5
2	Business Foreign Language	2	120	4
3	Organization of construction	3	90	3
4	Through systems analysis	3	150	5
5	Theory and Methods of Research	1	120	4
6	Mechatronic Systems in Construction	1	120	4
7	Budget and contract documentation	3	180	6
8	Engineering Protection and Preparation Area (OiF, JBK)	1	150	5
9	CAD in Construction	2	150	5
Total for standard part			1350	41
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by University				
1	Test Building Structures (OiF)	1	120	4
2	Test Building Structures (JBK)	2	90	3
3	Test Building Structures (MC)	2	120	4
Total (Disciplines offered by University)			330	11
2.2. Disciplines offered by students				
2.2.1. Specialization “Innovative projects of industrial and civil construction of agricultural and environmental systems”				
1	Innovative Engineering and Construction Technologies in Agro Construction	2	120	2
2	Development of Effective Construction Structures (JBK, MK, OiF)	2	150	5
3	Designing buildings for agricultural purposes (JBK, MK, OIF)	2, 3	180	6

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
4	Environmental security processes	3	120	4
5	Occupational safety in the industry	3	120	4
Total (Disciplines offered by students)			690	23
Total for elective part			1020	34
3. OTHER TYPES OF TRAINING				
1	Practical trainings	2	210	7
2	Preparation and defense of master's work	3	240	8
Total			450	15
Total for Specialty			2700	90

Annotations educational plan disciplines

1. STANDARD ACADEMIC DISCIPLINES

Construction Standards of Ukraine (OiF, MC, JBK). Consolidate and deepen the students' knowledge of the theory, and gain the skills to make independent technological and organizational solutions in matters of Ukraine building codes, design technology and complex mechanization of assembly processes.

Business Foreign Language. Mastering the knowledge and skills that will provide the necessary communicative ability for masters in vocational communication.

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

Through systems analysis. Form students scientific knowledge about the basics of system analysis as a science, its goals and objectives, main categories; the ability to form organizations for training and research for the further implementation of future specialists in the professional activities of research, teaching and administrative functions.

Theory and Methods of Research. Raising a comprehensive theoretical and practical engineering of future Master builders by mastering the basics of theoretical knowledge and practical skills for the general concept of experimental methods.

Mechatronic Systems in Construction. Teaching theoretical foundations and principles of mechatronic systems in construction. Theoretical bases of mechatronic systems and methods for their control and automatic means of realization of mechatronic systems in agricultural construction.

Budget and contract documentation

Engineering Protection and Preparation Area (OiF, JBK). City building rating territory by natural factors. Vertical planning of urban areas. Quantitative and qualitative assessment of relief. Methods vertical layout. Storm sewage drainage system in surface waters. The theoretical basis of design areas where there are dangerous physical and geological processes. Engineering improvement of rural areas for various purposes. Theoretical foundations of means of dealing with transport and industrial noise, air pollution. Lighting rural areas. Sanitary improvement. Organization drainage runoff.

CAD in Construction. General information about the composition of the working draft. Basic working set of drawings of the project. The composition of the basic sets of drawings mark GP, AR. Using the computer program "ArchiCAD" to perform architectural and engineering drawings: plans for improvement, building plans, sections, facades, photorealistic perspective images. The use of texture library "InteAr" to cover the surfaces of walls, floors, roofs and facilities. The program Corel Draw: create new textures or edit

existing ones; picture editing JPEG and BMP format to improve quality. Reproduction and completing a set of drawings.

2. ELECTIVE ACADEMIC DISCIPLINES

2.1. Disciplines offered by University

Test of Building Structures (OiF). To acquaint students with the fundamentals, techniques and innovative test structures (foundations and foundations): with particular products and design elements that are part of buildings; of purpose and relationships of structures to each other; with the basic requirements that apply to the structural elements of buildings and the buildings themselves taking into account the specific conditions of use.

Test of Building Structures (JBK). To acquaint students with the fundamentals, techniques and innovative test of Building Structures (reinforced concrete structures): with particular products and design elements that are part of buildings; of purpose and relationships of structures to each other; with the basic requirements that apply to the structural elements of buildings and the buildings themselves taking into account the specific conditions of use.

Test of Building Structures (MC). Provide scientific principles and train future engineers (professional degree) with the basics, methods and innovative approaches test of Building Structures (metal structures) when used in manufacturing processes in the construction industry.

2.2. Disciplines offered by students

2.2.1. Specialization “Innovative projects of industrial and civil construction of agricultural and environmental systems”

Innovative Engineering and Construction Technologies in Agro Construction. Provide knowledge on legal, organizational and methodological foundations definitions of innovation and study innovative engineering technologies in agricultural construction.

Development of Effective Construction Structures (JBK, MK, OiF). The theoretical basis of theoretical foundations and principles of developing effective structures (JBK, MK, OiF). methods for their control and automatic means of implementing systems in agricultural construction.

Designing buildings for agricultural purposes (JBK, MK, OiF). Bases of designing buildings and structures agro purpose (JBK, MK, OiF), methods for their control and automatic means of implementing systems agricultural construction.

Environmental security processes. Raising a comprehensive theoretical and practical engineering of future engineers by mastering the basics of theoretical knowledge and practical skills on environmental safety processes and the environment in terms of resource saving nature.

Occupational safety in the industry. Acquiring the skills to develop innovative organizational measures to prevent accidents, injuries and illness in the construction industry.

FACULTY MECHANIZATION OF AGRICULTURAL

Dean – Associate Professor Yaroslav Mykhalovich

Tel.: (044) 527-85-34

E-mail: mtf11k@ukr.net

Location: educational building № 11, room 309

Mechanical Engineering Department organizes and coordinates the educational process of preparation of masters in the field:

8.07010102 "Organization of transportation and management in transport" (road transport)

The graduating department:

Transport technology and tools in agriculture

Tel.: (044) 527-86-32

E-mail: kozypytsya@mail.ru

Head – PhD, Professor Sergey G. Fryshev

Tractors and cars

Tel.: (044) 527-88-95

E-mail: avto@ukr.net

Head of Department – Ph.D., Associate Professor Kateryna Syera

Technical service and engineering management of them. MP Momotenka

Tel.: (044) 527-88-53

E-mail: vdv-tsim@ukr.net

Head – PhD, professor Valery D. Voytyuk

8.07010104 "Organization and regulation of traffic"

The graduating department:

Transport technology and tools in agriculture

Tel.: (044) 527-86-32

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Head – PhD, Professor Sergey G. Fryshev

Tractors and cars

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E-mail: vdv-tsim@ukr.net

Head – PhD, professor Valery D. Voytyuk

8.10010203 "Mechanization of agriculture"

The graduating department:

Mechanization of livestock

Tel.: (044) 527-85-35

E-mail: gagolub@mail.ru

Head – PhD, Professor Golub Gennady Anatolievich

Technical service and engineering management of them M.P. Momotenka

Tel.: (044) 527-88-53

E-mail: vdv-tsim@ukr.net

Head – PhD, professor Valery D. Voytyuk

Occupational Health and environment engineering

Tel.: (044) 527-82-99

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Head of Department – Ph.D., associate professor Alexander Voinalovych
Volodymytrovych

Agricultural machinery and systems engineering them. Acad. P.N. Vasilenko

Tel.: (044) 527-85-37

E-mail: Vtesluk@i.ua

Head of Department – Doctor of Agricultural Sciences, Professor Victor V. Teslyuk

Tractors and cars

Tel.: (044) 527-88-95

E-mail: avto@ukr.net

Head of Department – Ph.D., Associate Professor Kateryna Syera

**Master's course
in specialty "ORGANIZATION OF TRANSPORTATION
AND MANAGEMENT IN TRANSPORT"
branch of knowledge "Transport and transport infrastructure"**

Form of Training, Licensed number of persons:

- | | |
|-------------|------------|
| – Full-time | 15 persons |
| – Part-time | 15 persons |

Duration of training

- | | |
|--|-----------|
| – Full-time educational and professional program | 1.5 years |
| – Part-time | 2 years |

Credits:

- | | |
|--|---------|
| – educational and professional program | 90 ECTS |
|--|---------|

Language of training

Ukrainian, English, German

Qualification of graduates:

Researcher in the transport sector

The concept of training

Providing knowledge and skills specialist new generation of innovation in the organization of traffic and transport management (road transport) and environmental facilities agroindustrial complexes based on modern standards of education adapted to the requirements of the world's best educational programs for the public and private sectors Ukraine.

**Educational and professional Master's program
*Specialization "Management of road transport of agricultural products
in terms of environmental and economic constraints"***

Design freight motor means and loading and unloading operations in the production of agricultural products. The objects of research are the specificity and diversity of agricultural goods, the terms and conditions of carriage of cargo flows on short, medium and long distances.

Areas of employment for graduates

Receives higher education and can work in positions that correspond to the fourth qualification level according to the State classifier professions: dispatchers, engineers traffic service and logistic department managers trucking companies; transport department managers of large corporations; Specialist of road transport and infrastructure; engineers control department of the State Automobile Inspectorate; research staff research and design institutes transport profile; teachers in driving schools, secondary professional and higher education.

Practical training

Through laboratory and practical classes, training, technology, research, and other pre-diploma practice areas: crops, livestock, technical service, conservation, processing and storage of plant products, technology, biodiesel, animal breeding, the legal value, economy, accounting marketing and management in the field of agricultural production and so on. These databases are: John Deere Ukraine, Amaco Ukraine, Myronivsky ZVVK, Astra; Department district traffic police Internal Affairs of Ukraine MoU in (Kiev, Crimea, Cherkasy, Khmelnytsky, Chernihiv, Zhytomyr, Rivne, Volyn, Poltava, etc.) and the Office of Research Affairs of Ukraine traffic police in the regions; other bases of practical training

of students (students) University from among leading institutions, enterprises, organizations of any ownership in Ukraine and abroad, with adequate conditions for practice of students in accordance with the requirements of education and professional training programs.

Proposed Topics for Master Theses

1. Study of technical and economic parameters of an automobile by an effective implementation of logistic approaches.
2. Improve handling for transportation of vegetable-fruit groups transport system in the agricultural company.
3. Improvement of transport and production process of grain at harvest using variables bodies.
4. Justification transport and production process at harvesting corn.
5. Improvement of transport and traffic during the production process of dairy products in the Kiev region.
6. Justification transport and production process in making organic fertilizers.
7. Study of the main indicators of road transport and their improvement Ltd. "Ray" Kyiv region
8. Improving transport and process the transport of sugar beet in agricultural farm.
9. Improving transport and production process at transportation fertilizers in LLC "Torch" Vinnitsa region.
10. Improving transport and logistics processes during transportation of fruits and berries in agricultural farm.

Academic rights of applicants entering Master course

Applicants with the Diploma of Bachelor can continue training in connected specialties including ones of the field of knowledge "Specific categories", (table 2) and other specialties (table 3) in accordance with the Terms of enrolment to higher educational institutions of Ukraine in 2015 approved by the Order of the Ministry of education and science of Ukraine on October 15, 2014 № 1172 and the Regulations of enrolment to National University of Life and Environmental Sciences of Ukraine (basic institution, Kyiv) for 2015.

Curriculum of Master training in specialty "Organization of transportation and management in transport" Educational and qualification Master program

№	The name of the course	Semester	Volume	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	Roads farm appointment	1	120	4
2	Recycling vehicles	2	180	6
3	Project Analysis	1	120	4
4	Freight forwarding activity	2	240	8
5	Quality Management Technology	1	120	4
6	Transport Economics	2	180	6
7	Navigation systems in transport	1	120	4
8	Supply chain management	1	210	7
Total for standard part			1290	43
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by University				

№	The name of the course	Semester	Volume	
			hours	credits ECTS
1	Methodology and organization of scientific research on the basics of intellectual property	2	90	3
2	Business Foreign Language	1	150	5
3	Agrarian policy	3	90	3
Total (Disciplines offered by University)			330	11
2.2. Disciplines offered by students				
2.2.1. Specialization "Management of agricultural road transport products in terms of environmental and economic constraints"				
1	Occupational Health	2	90	3
2	Technical service vehicles	3	90	3
3	Civil Protection	3	90	3
4	Testing and certification of vehicles	1	90	3
5	Loads agriculture	2	90	3
6	Sanitation and hygiene vehicles	1	90	3
Total (Disciplines offered by students)			540	18
Total for elective part			870	29
3.OTHER TYPES OF TRAINING				
1	Internship	3	360	12
2	Preparation and defense of master's work	3	180	6
Total :			540	18
Total for specialty			2700	90

Annotations educational plan disciplines

1. STANDARD ACADEMIC DISCIPLINES

Roads farm purposes. Acquiring the skills to develop innovative arrangements for operational efficiency and road design farm supplies, prevention of accidents, injuries and illness in the organization of transportations and management on motor manufacture.

Recycling vehicles. Disclosure retskylinhovoyh design methodology of different levels, the concept of recycling mechanism organizational coordination, forms of cooperation organizations; able: to draft retskylinhovoyi system, analyze retskylinhove environment, paint algorithm "problem" formation retskylinhovoyh systems, develop organizational structure retskylinhovoyi system, allocate and analyze business processes organizations use to optimize the principles recycling system.

Project analysis. Formation of skills of analysis of diverse projects and organization of transport for motor control, and increase their efficiency. It focuses on the use of automated systems analysis projects generated in batches of specialized applications and some calculation and analytical methods.

Freight forwarding activity. Formation of system knowledge and practical skills of forwarding activities by type and forms, especially the processes of forwarding service. In accordance with the methods of freight forwarding service, determine the parameters of forwarding services; perspective directions of further development of forwarding services and determine its effectiveness.

Quality management technology. Getting knowledge corresponding to the current level in quality management vehicles, review of major developments in the theory and practice of quality management in different countries, the need to use advances in quality management, its organizational system, the need to switch to production management product "because of the quality" of using international standards ISO 9000, adopted in Ukraine as national.

The economy of transport. Is to explore relations in the middle of technological systems, skills planning, pricing and investment, determine the efficiency of traffic organization and management in motor manufacturing.

Navigation systems in transport. Obtaining knowledge and skills aimed at creating and using road transport navigation subsystems, parts and systems of vehicles. Learning the basics of analysis and synthesis of information navigation systems on vehicles with a computer system at various levels and purposes.

Supply chain management. Mastering the theoretical foundations of supply chain management; review of key business processes in the supply chain; acquiring skills design and planning supply chains; learning the basics of creating a single information space participants of the supply chain; familiarization with the criteria of quality and efficiency of supply chains.

2. ELECTIVE ACADEMIC DISCIPLINES

2.1. Disciplines offered by University

Methodology and organization of scientific research on the basics of intellectual property. Raising general theoretical and practical engineering of future masters-Transport by mastering the basics of theoretical knowledge and practical skills on the general concept of experimental research methods of organization and management of transportation in motor manufacturing.

Business Foreign Language. Acquiring knowledge, skills and abilities necessary to ensure that masters communicative ability in the fields of professional communication in the organization of transportations and management on motor manufacture.

Agrarian policy. This discipline acquaints future professionals with the basics of policy in the agricultural sector, makes it possible to master methodical and methodological basis for development and implementation of measures to support and ensure the development of agriculture in the system of linkages in the national economy, and assess from the perspective of the theory of practical action government agencies on regulation of the agricultural production of the country.

We study both domestic and foreign experience. As a result of learning students get the opportunity on a professional basis to form their own opinion about the processes and phenomena occurring in the agricultural sector of the state.

2.2. Disciplines offered by students

2.2.1. Specialization "Management of road transport of agricultural products in terms of environmental and economic constraints "

Occupational Health. Acquiring the skills to develop innovative organizational measures to prevent accidents, injuries and illness in the organization of transportations and management on motor manufacture.

Technical service vehicles. Providing knowledge on methods and means of promoting technical condition of the car, its units, systems and mechanisms, maintenance organizations and maintenance vehicles.

Civil Protection. To teach future professionals the ability to predict the scale emergencies, prevent their occurrence, to determine the protection of people; organize and carry out rescue and other urgent work in the aftermath of accidents, natural disasters and lesions; organize measures to improve the sustainability of the objects of the organization and regulation of traffic.

Testing and certification of vehicles. Examines legislation concerning the system of testing and certification of vehicles, specific features of their use in agricultural

production, technology and the test conditions for certification and issuing of certificates certifying quality of production vehicles.

Loads agriculture. Disclosure of development and methods of using the full set of rules potential vehicles for the transport of specific characteristics of agriculture and natural production conditions, determine the need for these funds to achieve programmed outcomes and compliance.

Sanitation and hygiene vehicles. Formation of theoretical knowledge of students about the kinds of transportation for animals and their products, modern techniques and methods of sanitization transport, packaging machinery and equipment. The course combines technological expertise with the student mastered sanitary norms and processes that are needed in growing animals, livestock production, transportation and sales.

**Master's course
in specialty "ORGANIZATION AND REGULATION OF TRAFFIC"
branch of knowledge "Transport and transport infrastructure"**

Form of Training, Licensed number of persons:

- | | |
|-------------|------------|
| – Full-time | 15 persons |
| – Part-time | 15 persons |

Duration of training

- | | |
|--|-----------|
| – Full-time educational and professional program | 1.5 years |
| – Part-time | 2 years |

Credits:

- | | |
|--|---------|
| – educational and professional program | 90 ECTS |
|--|---------|

Language of training

Ukrainian, English, German

Qualification of graduates:

Researcher in the transport sector

The concept of training

Providing knowledge and skills specialist new generation of innovation in the organization and regulation of traffic and environmental facilities agroindustrial complexes based on modern standards of education adapted to the requirements of the world's best educational programs for the public and private sectors of Ukraine's economy.

Educational and professional Master's program

Specialization "Technology of Traffic"

Development of methods for improving operational modes on existing transport networks on the basis of safety, traffic efficiency and its effect on the environment (including conditions in rural areas). Research of traffic changes during harvesting on critical areas of transport networks.

Areas of employment for graduates

Can work in positions that correspond to the fourth qualification level according to state classifications of professions: engineers on organization and safety in transport enterprises; Service specialists surveillance of highways, road-road-repair and operational departments; engineer of organization and safety of the State Automobile Inspectorate; experts insurance companies; academic staff research and design institutes transport profile; teachers in driving schools, secondary professional and higher education.

Practical training

Through laboratory and practical classes, training, technology, research, and other pre-graduation practice in the field of transportation of cargoes crop production, animal husbandry, processing, subject to optimal traffic flow with traffic enforcement, legal values, economics, accounting, marketing and management in the field of agricultural production and so on. These databases are: John Deere Ukraine, Amaco Ukraine, Myronivsky ZVVK, Astra; Department district traffic police Internal Affairs of Ukraine MoU in (Kiev, Crimea, Cherkasy, Khmelnytsky, Chernihiv, Zhytomyr, Rivne, Volyn, Poltava, etc.) and the Office of Research Affairs of Ukraine traffic police in the regions; other bases of practical training of students (students) University from among leading institutions, enterprises, organizations of any ownership in Ukraine and abroad, with adequate conditions for practice of students in accordance with the requirements of education and professional training programs.

Proposed Topics for Master Theses

1. Study the basic parameters cargo and improvement of traffic in rural areas.
2. Research design flows accident and safety measures in rural areas.
3. Research intensity and improve the movement of road transport on the road the countryside.
4. Study the basic parameters of traffic with the development of measures to improve safety transport hub in the countryside.
5. Analysis of the organization of traffic safety in passenger fleets of rural areas in the implementation of intra transportation.
6. Analysis of the movement of road transport on the stretch of road in the countryside.
7. Research logistic process of cargo transportation in rural areas.
8. Research and improving the organization of transport bulky cargo transport enterprise for example in rural areas.
9. Analysis of transport and logistics processes during transportation of fruits and berries in agricultural farm.

Academic rights of applicants entering Master course

Applicants with the Diploma of Bachelor can continue training in connected specialties including ones of the field of knowledge "Specific categories", (table 2) and other specialties (table 3) in accordance with the Terms of enrolment to higher educational institutions of Ukraine in 2015 approved by the Order of the Ministry of education and science of Ukraine on October 15, 2014 № 1172 and the Regulations of enrolment to National University of Life and Environmental Sciences of Ukraine (basic institution, Kyiv) for 2015.

Curriculum of Master training in specialty "Organization and regulation of traffic" Educational and qualification Master program

№	The name of the course	Semester	Volume	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	Automated Traffic Management	2	120	4
2	Economics of traffic	1	180	6
3	Special methods of traffic	1	150	5
4	Traffic Systems	2	180	6
5	Monitoring and inspection of vehicles	3	180	6
6	Transport planning of large and major cities	2	180	6
7	Quality Management Technology	1	120	4
8	Navigation systems in transport	2	180	6
Total for standard part			1290	43
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by University				
1	Methodology and organization of scientific research on the basics of intellectual property	2	90	3
2	Business Foreign Language	1	150	5
3	Agrarian policy	3	90	3
Total (Disciplines offered by University)			330	11
2.2. Disciplines offered by students				
2.2.1. Specialization "Technology of Traffic"				
1	Testing and certification of vehicles	2	90	3
2	Transport planning of rural areas	3	90	3

№	The name of the course	Semester	Volume	
			hours	credits ECTS
3	Occupational Health	2	90	3
4	Transport planning of rural areas	2	90	3
5	Loads agriculture	2	90	3
2	Sanitation and hygiene vehicles	2	90	3
Total (Disciplines offered by students)			540	18
Total for elective part			870	29
3.OTHER TYPES OF TRAINING				
1	Internship	3	360	12
2	Preparation and defense of master's work	3	180	6
Total :			540	18
Total for specialty			2700	90

Annotations educational plan disciplines

1. STANDARD ACADEMIC DISCIPLINES

Automated control traffic. Formation of system of theoretical knowledge and understanding of the conceptual bases of the automated systems of traffic management, the acquisition of practical skills for the organization of their operation.

The economy of road ruhu. Polyahaye in studying relations in the middle of technological systems, skills planning, pricing and investment, determining the efficiency of the organization and regulation of traffic.

Special methods of traffic. Providing knowledge on road safety with the use of special methods of traffic using state standards, state building codes, regulations and standard solutions engineering planning and organizational measures in the operation of public roads, streets, railroad crossings, using techniques described in professional literature, raise the level of road safety.

Traffic Systems. Formation of system of theoretical knowledge and skills and understanding the basics of system analysis of the functioning of the complex road conditions, component engineering, information telekomunitsiynoyi component, professionally-emotional component of the driver, the acquisition of practical skills in developing and designing rational regulation of traffic.

Monitoring and inspection of transport means. Disclosure nature and methods of developing a set of rules complete control and examination of vehicles by the specific properties of agriculture and natural production conditions, determine the need for control and expertise to achieve programmed outcomes and compliance.

Transport planning of large and major cities. Formation of system knowledge and practical skills in transport planning cities: principles and metodyratsionalnoho planning and reconstruction of transport networks taznachnyh large cities that increase the efficiency of freight and passenger transportation, safety in modern cities.

Quality management technology. Getting knowledge corresponding to the current level in quality management vehicles, review of major developments in the theory and practice of quality management in different countries, the need to use advances in quality management, its organizational system, the need to switch to production management product "because of the quality" of using international standards ISO 9000, adopted in Ukraine as national.

Navigation systems in transport. Obtaining knowledge and skills aimed at creating and using road transport navigation subsystems, parts and systems of vehicles. Learning the basics of analysis and synthesis of information navigation systems on vehicles with a computer system at various levels and purposes.

2. ELECTIVE ACADEMIC DISCIPLINES

2.1. Disciplines offered by University

Methodology and organization of scientific research on the basics of intellectual property. Raising general theoretical and practical engineering of future masters-Transport by mastering the basics of theoretical knowledge and practical skills on the general concept of experimental research methods of organization and management of transportation in motor manufacturing.

Business Foreign Language. Acquiring knowledge, skills and abilities necessary to ensure that masters communicative ability in the fields of professional communication in the organization of transportations and management on motor manufacture.

Agrarian policy. This discipline acquaints future professionals with the basics of policy in the agricultural sector, makes it possible to master methodical and methodological basis for development and implementation of measures to support and ensure the development of agriculture in the system of linkages in the national economy, and assess from the perspective of the theory of practical action government agencies on regulation of the agricultural production of the country.

We study both domestic and foreign experience. As a result of learning students get the opportunity on a professional basis to form their own opinion about the processes and phenomena occurring in the agricultural sector of the state.

2.2. Disciplines offered by students

2.2.1. Specialization "Technology of Traffic"

Testing and certification of vehicles. Examines legislation concerning the system of testing and certification of vehicles, specific features of their use in agricultural production, technology and the test conditions for certification and issuing of certificates certifying quality of production vehicles.

Transport planning villages. Analysis of the selection area for transport planning, construction, landscaping, planting systems of rural areas, networking of cultural and community services, protection and use of territories and objects of natural reserve fund.

Occupational Health in. Acquiring the skills to develop innovative organizational measures to prevent accidents, injuries and illness in the organization of transportations and management on motor manufacture.

Transport planning villages. Analysis of the selection area for transport planning, construction, landscaping, planting systems of rural areas, networking of cultural and community services, protection and use of territories and objects of natural reserve fund.

Loads agriculture. Disclosure of development and methods of using the full set of rules potential vehicles for the transport of specific characteristics of agriculture and natural production conditions, determine the need for these funds to achieve programmed outcomes and compliance.

Sanitation and hygiene vehicles. Formation of theoretical knowledge of students about the kinds of transportation for animals and their products, modern techniques and methods of sanitization transport, packaging machinery and equipment. The course combines technological expertise with the student mastered sanitary norms and processes that are needed in growing animals, livestock production, transportation and sales.

**Master's course
in specialty "MECHANIZATION OF AGRICULTURE"
branch of knowledge "Engineering and Energetics of Agricultural Production"**

Form of Training, Licensed number of persons:

- | | |
|-------------|-------------|
| – Full-time | 150 persons |
| – Part-time | 125 persons |

Duration of training:

- | | |
|--|-----------|
| – Full-time educational and professional program | 1.5 years |
| – Part-time | 2 years |

Credits:

- | | |
|--|---------|
| – educational and professional program | 90 ECTS |
|--|---------|

Language of training

Ukrainian, English, German

Qualification of graduates:

Engineer-Research of
Mechanization's Agriculture

The concept of training

Providing knowledge and skills specialist new generation of innovation in the field of agricultural mechanization and agro-industrial facilities conservation systems based on modern standards of education adapted to the requirements of the world's best educational programs for the public and private sectors of Ukraine's economy.

**Educational and professional Master's program
*Specialization "Technologies and techniques in crop"***

Optimization of complex machinery and equipment for modern technology of growing crops in crop mechanization. Design and organization processes, safety and reliability study designs of machines and equipment.

Areas of employment of graduates

Receives higher education and can work in positions that correspond to the 4 th qualification level according to state classifications of occupations superiors and masters of manufacturing sites; Shift; managers of small businesses without administrative apparatus; mechanical engineers; Engineers diagnosis of technical condition tractor fleet; engineers; Safety Engineer.

Specialization "Technologies and techniques in animal husbandry"

Optimization of complex machinery and equipment for modern processes mechanization field of animal farming. Research and reliability of structures reliability of machines and equipment.

Areas of employment for graduates

Receives higher education and can work in positions that correspond to the fourth qualification level according to state classifications of occupations superiors and masters of manufacturing sites; Shift; managers of small businesses without administrative apparatus; mechanical engineers; Engineers diagnosis of technical condition of machinery and equipment Livestock; engineers; Safety Engineer.

Specialization "Technology and technique of processing industries"

Optimization of complex machinery and equipment with modern technology mechanized processing and storage of agricultural products. Research reliability and reliability of designs of machines and equipment in meat packing industry.

Areas of employment for graduates

Receive higher education and can work in positions that correspond to 4th level of qualification according to state classifications of occupations and heads production line supervisor, shift supervisor, managers of small businesses with administrative staff, engineers, mechanics, engineers, technical diagnostics of machinery processing industries, engineers, safety engineers.

Specialization "Technologies and equipment service companies"

Optimization of complex machines to modern technological processes for the maintenance and restoration of agricultural machinery parts. Study parameters and modes of processing equipment, design is not standardized equipment.

Areas of employment for graduates

Receives higher education and can work in positions that correspond to the 4 th qualification level according to state classifications of occupations superiors and masters of manufacturing sites; Shift; managers of small businesses without administrative apparatus; mechanical engineers; Engineers diagnostic equipment technical state service enterprises; engineers; Safety Engineer.

Specialization "Pratsehoronni principles in agrobioengineering"

Development of safety management and energy saving and engineering facilities to prevent the negative impact of production processes in agriculture on the environment, study parameters safety means to improve working conditions and eliminate injuries.

Areas of employment for graduates

Receives higher education and can work in positions that correspond to the 4 th qualification level according to state classifications of occupations superiors and masters of manufacturing sites; Shift; managers of small businesses without administrative apparatus; mechanical engineers; Safety Engineer.

Specialization "Optimization of parameters and operating modes technology APC"

Raising agricultural machinery reliability based structural analysis of its reliability and justification of rational processes, settings and modes. Research and technological design and kinematic schemes, units, assemblies, working bodies.

Areas of employment of graduates

Receives higher education and can work in positions that correspond to the 4th level of qualification according to the State classifier professions: teaching, research, organizational and administrative activities in the research departments of enterprises, research and design institutions, as well as institutions of higher education as head of production units in industry; chiefs and masters manufacturing sites; Shift; Head of Laboratory (education); leaders of student research bureau; Senior Staff, heads of research laboratories; researchers; mechanical engineers; assistants and university professors.

Practical training

Through laboratory and practical classes, training, technology, research, and other pre-diploma practice areas: crops, livestock, technical service, conservation, processing and storage of plant products, technology, biodiesel, animal breeding, the development of mechanized methods of diagnosis and prevention animal diseases, with repair technology. g technology, test with. g technology and their legal significance, economics, accounting, marketing and management in the agricultural field of production and so on. These databases are: Ukrainian Scientific Research Institute of forecasting and test equipment and technologies for agricultural production to them. Leonid burned "; National Scientific Center "Institute of Mechanization and Electrification of Agriculture"; JSC "Agriculture"; PJSC "Rayahrotehservis"; PDP AF "Concord-Agro", JV Agricultural firm "Dream"; LLC "Concern" SIMEKS-Agro "(Vinnitsa region.) Other bases of practical training of students (students) University from among leading institutions, enterprises, organizations of any ownership in Ukraine and abroad, with appropriate conditions for students according practice the requirements of education and professional training programs.

Proposed Topics for Master Theses

1. Research constructive scheme and justification count parameters group milk yield.
2. Study the basic parameters and system design of parallel driving machine and tractor units.
3. Analysis of statistical processing parameter flow refuse and improvement process of repair tractors.
4. Study process parameters and settings for processing soybean seeds rotating thermal camera type.
5. Investigation of complex machines and determine their optimal composition for growing and harvesting of winter wheat.
6. Research the operational performance of the machine with the tractor units when using fuels of vegetable origin.
7. Research and design of computer technology biodiesel production process of improvement cavitation mixing reagents.
8. Research Feeds major damage to the development process of their elimination.
9. Research damaged parts wheel gearboxes combine harvesters and development process of recovery.

Academic rights of applicants entering Master course

Applicants with the Diploma of Bachelor can continue training in connected specialties including ones of the field of knowledge "Specific categories", (table 2) and other specialties (table 3) in accordance with the Terms of enrolment to higher educational institutions of Ukraine in 2015 approved by the Order of the Ministry of education and science of Ukraine on October 15, 2014 № 1172 and the Regulations of enrolment to National University of Life and Environmental Sciences of Ukraine (basic institution, Kyiv) for 2015.

**Curriculum of Master training in specialty "Mechanization of agriculture"
Educational and qualification Master program**

№	The name of the course	Semester	Volume	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	Legislation and Law in agriculture	1	120	4
2	Mechatronic system engineering APC	1	120	4
3	Logistics in mechanization of agriculture	1	150	5
4	Innovative engineering technologies	1	120	4
5	Ecological security processes	3	150	5
6	Economy of technological systems	1	150	5
7	Precision Agriculture	1	150	5
Total for standard part			960	32
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by University				
1	Methodology and organization of scientific research on the basics of intellectual property	1	120	4
2	Business Foreign Language	1, 2	210	7
3	Pedagogy	2	150	5
Total (Disciplines offered by University)			490	16
2.2. Disciplines offered by students				
2.2.1. Specialization "Technologies and techniques in crop"				
1	Design and calculation systems in crop tehnolohchnyh	2,3	240	8
2	Designing processes in plant	2	240	8
3	Process control in crop	3	240	8
Total (Disciplines offered by students)			720	24
2.2.2. Specialization "Technologies and techniques in animal husbandry"				
1	Design and calculation of technological systems in animal husbandry	2,3	240	8
2	Designing processes in livestock	2	240	8
3	Process control in livestock	3	240	8
Total (Disciplines offered by students)			720	24
2.2.3. Specialization "Technologies and equipment service companies"				
1	Design and calculation of service of process systems	2,3	240	8
2	Design processes service machines	2	240	8
3	Corporate Governance Technical Service	3	240	8
Total (Disciplines offered by students)			720	24
2.2.4. Specialization "Pratseohoronni principles in agrobioengineering"				
1	Organization of safety in the agro bioengineering	2,3	240	8
2	Theory of safety of agro engineering	2	240	8
3	Safety productions of agro bioengineering	3	240	8
Total (Disciplines offered by students)			720	24
2.2.5. Specialization "Optimization of parameters and modes of technology AIC"				
1	Designing processes and modes of technology APC	2,3	240	8
2	Modeling business processes and machines	2	240	8
3	Testing of agriculture technology	3	240	8
Total (Disciplines offered by students)			720	24
Total for elective part			1190	40
3. OTHER TYPES OF TRAINING				
1	Internship	3	360	12
2	Preparation and defense of master's work	3	180	6
Total :			540	18
Total for specialty			2700	90

Annotations educational plan disciplines

1. STANDARD ACADEMIC DISCIPLINES

Legislation and Law in agriculture. Provide students with a complete summary of the main problems of law and law in agriculture at the objective, ideologically unbiased contemporary vision of modern science, synthesis of acquired knowledge in professional and humanities disciplines in a holistic outlook to provide a framework and methodological training masters humanitarian components.

Mechatronic system engineering agribusiness. Teaching theoretical foundations and principles of mechatronic systems agricultural machines. Theoretical bases of mechatronic systems, methods for their control and automatic means of implementing mechatronic systems with-machines.

Logistics in the mechanization of agriculture. Raising general theoretical and practical level mechanical engineer of agricultural production by mastering basic theoretical principles and practical skills of logistics concepts to ensure the movement of agricultural products to the consumer.

Innovative engineering technologies Examines theoretical and organizational bases of innovative engineering technologies. Consider their regulatory and technical support and legal laws in innovative technologies.

Environmental safety processes. Raising general theoretical and practical engineering of future mechanical engineers by mastering the basics of theoretical knowledge and practical skills on environmental safety processes ahrobiioinzheneriyi and environment in terms of resource saving natural resources.

Economy of technological systems. Is to explore relations in the middle of technological systems, skills planning, pricing and investment, definition of efficiency of operation.

Precision agriculture. Discipline forms the students knowledge of the scientific basis for the development of best practices and organization of mechanized crop production based on modern information technology. Discipline reveals the ways and methods of solving pressing problems highly efficient use of agricultural machinery in the field using variable technology standards (doses) introducing technological materials based on global positioning satellite systems. There is a formation specialists with the ability to choose the best technologies of growing crops with minimal materials and energy and the preservation of soil fertility and the environment.

2. ELECTIVE ACADEMIC DISCIPLINES

2.1. Disciplines offered by University

Methodology and organization of scientific research on the basics of intellectual property. Raising general theoretical and practical engineering of future masters and researchers by mastering the basics of theoretical knowledge and practical skills on the general concept of experimental methods.

Pedagogy. Form students scientific knowledge of pedagogy as a science, its goals and objectives, basic pedagogical category; the ability to form on the organization of training and educational work in higher education for the further implementation of future specialists in the professional activities of research, teaching and administrative functions.

Business Foreign Language. Acquiring knowledge, skills and abilities necessary to ensure that masters communicative ability in the fields of professional communication.

2.2. Disciplines offered by students

2.2.1. Specialization "Technologies and techniques in crop"

Design and calculation of technological systems in crop production. Provide scientific principles and train future engineers (professional master) to design and calculate crop technology system.

Designing processes in livestock. Teaching students basic provisions in the village of Gd engineering, including design process of modern engineering systems in agriculture. Providing justification for calculating and designing technological requirements for components and assemblies cars.

Process control in crop. Receive future specialists in agricultural mechanization necessary knowledge systems of advanced mechanized production lines and processes of crop production.

2.2.2. Specialization "Technologies and techniques in animal husbandry"

Design and calculation of technological systems in animal husbandry. Formation of professional knowledge of students on general and specific issues managing large technical systems on the example of operation of machines and equipment for livestock logistics system.

Design processes. Teaching students the basic provisions of c-d design, including the reconstruction of livestock enterprises and the design process of modern engineering systems in animal husbandry. Providing justification for calculating and designing technological requirements for areas of machinery and equipment.

Process control in livestock. Receive future specialists in agricultural mechanization necessary knowledge systems of advanced mechanized production lines and processes of livestock production.

2.2.3. Specialization "Technologies and equipment service companies"

Design and calculation of service of process systems. In the course curriculum provides theoretical and practical study issues relating to effective business management and technical service units of machines, their interaction with technology manufacturers and farmers, the volume of provision of services subject to seasonal agricultural production, the extensive range of machines, their technical condition for the effective use of technology, labor, social and economic resources.

Design processes service machines. Provide scientific principles and train future engineers (professional master) design processes of technical service of agricultural machinery, tractors, cars, patterns and features its organization, requirements for technical service and its products, quality technical service and how their software.

Corporate Governance of technical service. Formation of professional knowledge of students on general and specific issues managing large technical systems on the example of operation of machines and equipment service companies, logistics system.

2.2.4. Specialization "Pratseohoronni system in agrobioengineering"

Organization of labor agrobioengineering. Discipline, which describes the organizational principles for the development and implementation of safety management in the agricultural sector and to agricultural enterprises, arrangements for monitoring of safety in agricultural production.

Theory safety. Theoretical and applied training course that explores and studies: ways and causes dangerous situations on their origin and formation to the appearance and performance of systems "man-machine-production environment"; emergency,

traumatic and catastrophic situations in the workplace, prevention, modeling and risk management of their origin; evaluation criteria of industrial hazards, harmful and dangerous production factors.

Safety of production processes. It provides theoretical and practical training of students to create regulatory conditions and prevent injuries on mechanized agriculture, examines the components of security processes and equipment APC and technical security to mobile agricultural machinery and stationary equipment.

2.2.5. Specialization "Optimization of parameters and modes of technology AIC"

Design modes, processes and technology APC. Formation of professional knowledge of students on general and specific issues managing large technical systems on the example design modes, process and technology of agriculture.

Modeling business processes and machines. Formation of professional knowledge of models and modeling business processes and machines, types of models and key stages of modeling, theoretical and practical methodological foundations, methods and objects object modeling of technological processes of production, economic and mathematical models and simulation processes and mechanisms for agriculture machines using a personal computer.

Testing of agricultural machinery. Raising general theoretical and practical research of future professionals through the assimilation of the foundations of theoretical knowledge and practical skills on general concepts and methods for testing of agricultural machinery.

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

Director – Doctor of technical sciences, Professor Volodymyr Victorovych Kozyrskyi

Tel.: (044) 527-85-80

E-mail: epafort1@ukr.net

Location: Building № 8, Room 11

The ERI organizes and coordinates Masters training in the following courses:

8.05020201 “Automated Control of Technological Processes”

Graduating department:

Automation and Robotics Systems named after Acad. I.I. Martynenko

Tel.: (044) 527-82-22

E-mail: avto.ea@gmail.com

Head of department – Doctor of technical sciences, Professor Vitaliy Pylypovych Lysenko.

8.05070103 “Electrotechnical Systems of Power Consumption”

Graduating department:

Power Supply named after Prof. V.M. Synkov

Tel.: (044) 527-85-80

E-mail: epafort1@ukr.net

Head of department – Doctor of technical sciences, Professor Volodymyr Victorovych Kozyrskyi.

8.10010101 “Energetics of Agricultural Production”

Graduating departments:

Power Supply named after Prof. V.M. Synkov

Tel.: (044) 527-85-80

E-mail: epafort1@ukr.net

Head of department – Doctor of technical sciences, Professor Volodymyr Victorovych Kozyrskyi.

Electrical Machinery and Electrical Equipment Operation

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

E-mail: elmash_nubip@ukr.net

Head of department – Doctor of technical sciences, Associate Professor Andrei Volodymirovich Zhyltsov.

Automation and Robotics Systems named after Acad. I.I. Martynenko

Tel.: (044) 527-82-22

E-mail: avto.ea@gmail.com

Head of department – Doctor of technical sciences, Professor Vitaliy Pylypovych Lysenko.

Heat and Power Engineering

Tel.: (044) 527-87-48

E-mail: gorobetsv@ukr.net

Head of department – Doctor of technical sciences, Associate Professor Valeryi Hrygorovych Gorobets.

8.10010103 "Electrification and Automation of Agriculture"

Graduating departments:

Automation and Robotics Systems named after Acad. I.I. Martynenko

Tel.: (044) 527-82-22

E-mail: avto.ea@gmail.com

Head of department – Doctor of technical sciences, Professor Vitaliy Pylypovych Lysenko.

Electric Drive and Electric Technologies named after Prof. S.P. Bondarenko

Tel.: (044) 527-87-73

E-mail: a.chmil@mail.ru

Head of department – Doctor of technical sciences, Professor Anatoliy Ivanovich Chmil.

**Master's course
in specialty "AUTOMATED CONTROL OF TECHNOLOGICAL PROCESSES"
branch of knowledge "Automation and control"**

Form of Training, Licensed number of persons:	
– Full-time	35 students
Duration of training:	
– Full-time educational and professional program	1,5 years
– Full-time educational and scientific program	2 years
Credits:	
– educational and professional program	90 ECTS
– educational and scientific program	120 ECTS
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 Master's program
*Specialization "Computer-Integrated Process Control Systems
of Livestock Production"***

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

Areas of employment for graduates

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

Specialization "Computer-Integrated Process Control Systems of Crop Production"

Research, development and implementation of computer-integrated control systems in crop production. Technology and mathematical modeling of processes in the plant, automated process control systems in the plant.

Areas of employment for graduates

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

Educational and scientific Master's program

Specialization "Energy-Efficient Control Systems of Biotechnical Objects"

Research and development of advanced energy efficiency control systems of biotechnical objects. Technology and mathematical modeling of processes in the areas of agriculture, automated process control system in agriculture.

Areas of employment for graduates

Engineer of automated control systems, research engineer of research institutions, research associate of research institutions.

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 for Master's 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 SAR 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.

Academic rights of applicants entering Master course

Applicants with the Diploma of Bachelor can continue training in connected specialties including ones of the field of knowledge "Specific categories", (table 2) and other specialties (table 3) in accordance with the Terms of enrolment to higher educational institutions of Ukraine in 2015 approved by the Order of the Ministry of education and science of Ukraine on October 15, 2014 № 1172 and the Regulations of enrolment to National University of Life and Environmental Sciences of Ukraine (basic institution, Kyiv) for 2015.

**Curriculum of Master training
in specialty "Automated control of technological processes"
Educational and professional Master program**

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	Philosophy of Science and Innovation	1	90	3
2	Civil Protection	1	90	3
3	Automated Accounting of Energy and Material Resources	2	120	4
4	Computer-Simulation Control Systems in Agriculture	2	150	5
5	Technological Processes Automation	2	150	5
6	Installation, Commissioning and Maintenance of Automation Systems	2	120	4
7	Special Sections of High Mathematics	1	90	3
8	CAD of Automation Systems in Agriculture	2	150	5
9	ACS of Technological Processes in Agriculture	2	120	4
10	Safety in the Area	1	90	3
Total for standard part			1170	39
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by University				
1	Agricultural Policy	3	90	3
2	Methodology and Organization of Scientific Research on the Basics of Intellectual Property	2	90	3
3	Business Foreign Language	1	150	5
Total (Disciplines offered by University)			330	11
2.2. Disciplines offered by students				
1	Calculations of Economic Efficiency of Scientific Developments	3	90	3
2	Neuro Information Control Networks of Biotechnical Objects	3	120	4
3	Object-Oriented Programming	2	90	3
4	Robotic Complex and Systems in Agriculture	3	90	3
5	Modeling and Identification of Biotechnical Objects in Agriculture	2	150	5
Total			540	18
2.2.1. Specialization "Computer-Integrated Process Control Systems of Livestock Production"				
1	Methods and Tools of Modern Automated Control of Technological Processes and Productions in Livestock	3	90	3
2	Features Computer Integrated Control Systems in Livestock	3	90	3
Total for Specialization			180	6
2.2.2. Specialization "Computer-Integrated Process Control Systems of Crop Production"				
1	Methods and Tools of Modern Automated Control of Technological Processes and Productions in Crop	3	90	3
2	Features Computer Integrated Control Systems in Crop Production	3	90	3
Total for Specialization			180	6
Total (Disciplines offered by students)			720	24
Total for elective part			1050	35
3. OTHER TYPES OF TRAINING				
1	Practical Training	1	300	10
2	Writing and Defense of Master's Thesis	3	180	6
Total			480	16
Total for Specialty			2700	90

**Curriculum of Master training
in specialty "Automated control of technological processes"
Educational and scientific Master's program**

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	Philosophy of Science and Innovation	1	90	3
2	Civil Protection	1	90	3
3	Automated Accounting of Energy and Material Resources	2	120	4
4	Computer-Simulation Control Systems in Agriculture	2	150	5
5	Technological Processes Automation	2	150	5
6	Installation, Commissioning and Maintenance of Automation Systems	2	120	4
7	Special Sections of High Mathematics	1	90	3
8	CAD of Automation Systems in Agriculture	2	150	5
9	ACS of Technological Processes in Agriculture	2	120	4
10	Safety in the Area	1	90	3
Total for standard part			1170	39
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by University				
1	Agricultural Policy	3	90	3
2	Methodology and Organization of Scientific Research on the Basics of Intellectual Property	4	360	12
3	Business Foreign Language	1	150	5
Total (Disciplines offered by University)			600	20
2.2. Disciplines offered by students				
1	Calculations of Economic Efficiency of Scientific Developments	3	90	3
2	Neuro Information Control Networks of Biotechnical Objects	3	120	4
3	Object-Oriented Programming	2	90	3
4	Robotic Complex and Systems in Agriculture	3	120	4
5	Modeling and Identification of Biotechnical Objects in Agriculture	2	150	5
6	Computer Integrated Control Systems	2	90	3
7	Intelligent Control Systems of Biotechnical Objects	4	360	12
Total			1020	34
2.2.1. Specialization "Energy Efficient Control Systems of Biotechnological Objects"				
1	Special Systems	3	180	6
2	Methods for Preparing Research	4	150	5
Total for Specialization			330	11
Total (Disciplines offered by students)			1350	45
Total for elective part			1950	65
3. OTHER TYPES OF TRAINING				
1	Practical Training	1	300	10
2	Writing and Defense of Master's Thesis	4	180	180
Total			380	16
Total for Specialty			3600	120

Annotations educational plan disciplines

1. STANDART ACADEMIC DISCIPLINES

Philosophy of Science and Innovation. Science and reality. The role of theory in the knowledge of phenomena in nature and society. The relationship of theoretical

knowledge and practical tools. Logical-mathematical and theoretical methods of processing the results of the experiment.

Civil Protection. Theoretical foundations of civil defense and safety in production and life. Prevention of disasters and elimination of their organization adverse effects.

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

Computer-Simulation Control Systems in Agriculture. 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.

Technological Processes Automation. Specifications processes as facilities management and their disturbances. Principles of automated process control systems. Automation of technological processes in crop and livestock production.

Installation, Commissioning and Maintenance of Automation Systems. 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.

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.

CAD of Automation Systems in Agriculture. 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.

ACS of Technological Processes in Agriculture. Principles of control systems. Information channels and their characteristics. Identification of control objects. Algorithms management. Technical means of automation. Reliability and economic efficiency of automation.

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.

2. ELECTIVE ACADEMIC DISCIPLINES

2.1. Disciplines offered by University

Methodology and organization of research with the principles of intellectual property. The aim of the discipline is formation of the system of knowledge in methodology, theory of method and research process, methodical support of scientific and research activity at the stages of preparation of a Master paper, formation of the ability to organize research of a specific issue using the whole complex of the traditional methods of research including general and special methods. The main task of the theoretical part of the course is introduction to students the current concepts of research creation, the principles of methodology of scientific perception and methods of research. The main task of the practical part is the development of self-education ability, mastering skills of

formation and application of perceived methodological position of research. In case of mastering the course students have to improve their skills of search, assortment and processing of scientific information, accurate formulation of a problem, aim, task, object, subject, methods of research. Introduction to students the principles of intellectual property and direction of them to gain knowledge and skills concerning registration of rights of ownership, their protection, commercialization, estimation and management are envisaged.

Business foreign language. The general aim of the program of teaching of foreign language for the professional purpose is formation students' professional linguistic competencies that will contribute to their efficient operating in cultural variety of training and professional environment. The methods of search of new information in another language sources, linguistic methods of analytical study of another language sources are learned. Students study published original literature in another language and increase their lexical and grammatical skills. Methods and linguistic peculiarities of annotation and synopsis of another language sources, the principles of translation of professional oriented another language sources are studied.

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.

2.2. Disciplines offered by students

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.

Neuro Information Control Networks of Biotechnical Objects. Basic concepts of neural networks. The properties of the neural network training. Hopfield neural networks. Basic concepts of fuzzy logic. fuzzy sets and fuzzy neural networks.

Object-Oriented Programming. 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.

Robotic Complex and Systems in Agriculture. 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.

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.

Educational and professional Master's program

2.2. Disciplines offered by students

2.2.1. Specialization "Computer-Integrated Process Control Systems of Livestock Production "

Methods and Tools of Modern Automated Control of Technological Processes and Productions in Livestock. Modeling of technical and biological objects under uncertainty: 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 Computer Integrated Control System in Livestock. Principles of the control systems. Information channels and their characteristics. Identification of control objects. Algorithms management. Technical means of automation. Reliability and economic efficiency of automation.

2.2.2. Specialization "Computer-integrated process control systems of crop production"

Methods and Tools of Modern Automated Control of Technological Processes and Productions in Crop. 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 Computer Integrated Control System in the Crop Production. Principles of control systems. Information channels and their characteristics. Identification of control objects. Algorithms management. Technical means of automation. Reliability and economic efficiency of automation.

Educational and scientific Master's program

2.2. Disciplines offered by students

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.

Neuro Information Control Networks of Biotechnical Objects. Basic concepts of neural networks. The properties of the neural network training. Hopfield neural networks. Basic concepts of fuzzy logic. Fuzzy sets and fuzzy neural networks.

Object-Oriented Programming. 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.

Robotic Complex and Systems in Agriculture. 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.

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.

Intelligent Control Systems of Biotechnical Objects. Classification of types of intelligent systems. Presentation specialized development environments Intelligent Systems. Basic concepts of neural networks. Classification of neural networks and their properties. The properties of the neural network training. Neural networks counter-proliferation. Hopfield neural networks. The neural network Hemet. Basic concepts of fuzzy logic. The theoretical basis of fuzzy logic. Fuzzy sets. Fuzzy operation. Algorithm of fuzzy inference systems. Fuzzy sets and fuzzy neural network. Basic concepts of genetic algorithm.

2.2.1. Specialization "Energy Efficient Management of Biotechnological Objects"

Special Systems. Special subjects in the study which students have to study methods of creating, optimizing adaptive control systems, control systems built on fuzzy logic. Creation of research systems, their configuration and optimization must take place in an environment in MatLAB Packages Simulink and Fuzzy Logis. Also laid the foundations of genetic learning of neural networks is the basis for building intelligent controllers.

Methods for Preparing Research. Within the course presents the main stages of scientific research of the problem of system-analytical position and generalized requirements for methods of materials processing research. Lecture and laboratory practical course material covers the entire range of the materials for their research publications in general and, in particular, consider writing the competent scientific text. It may be, for example, research papers, thesis or reports, reviews of scientific means ordering information, summarizing the results of the pilot study, graphical interpretation of research results and more.

**Master's course
in specialty "ELECTROTECHNICAL SYSTEMS OF POWER CONSUMPTION"
branch of knowledge "Electrical engineering and Electromechanics"**

Form of Training, Licensed number of persons:	
– Full-time	20 students
Duration of training:	
– Full-time educational and professional program	1,5 years
– Full-time educational and scientific program	2 years
Credits:	
– educational and professional program	90 ECTS
– educational and scientific program	120 ECTS
Language	Ukrainian
Qualification of graduates:	Master of Electrotechnical systems of power consumption

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 Energetics, 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 Master's program
*Specialization "Electrical Networks and Systems"***

Research, development and introduction of energy saving technologies, electrical networks and systems. Power plants, modeling and design of power supply in Agriculture. Modeling and protection devices and automation of power supply systems.

Areas of employment for graduates

Production, distribution and use of electricity, electrical work, repair and maintenance of power lines, transformer substations and electricity equipment.

**Educational and scientific Master's program
*Specialization "Electric Stations, Systems and Networks"***

Design, installation, commissioning and maintenance of power lines, transformer substations and switchgear. Accounting and rational use of electricity. Power plants, modeling and design of power supply in Agriculture. Modeling and protection devices and automation of power supply systems.

Areas of employment for graduates

Engineer-researcher of scientific institutions, research associate of scientific institutions. Operating engineer of electric networks and systems.

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 "Kyivsilelectro", regional electricity networks.

Proposed Topics for Master Thesis

1. Optimization of parameters and operating modes of power grid.
2. The impact of autonomous power sources on the quality and reliability of power supply in agricultural sector.
3. Automated system of accounting and regulation of the energy resources and energy.
4. Power supply of livestock farms from renewable energy sources.

Academic rights of applicants entering Master course

Applicants with the Diploma of Bachelor can continue training in connected specialties including ones of the field of knowledge "Specific categories", (table 2) and other specialties (table 3) in accordance with the Terms of enrolment to higher educational institutions of Ukraine in 2015 approved by the Order of the Ministry of education and science of Ukraine on October 15, 2014 № 1172 and the Regulations of enrolment to National University of Life and Environmental Sciences of Ukraine (basic institution, Kyiv) for 2015.

Curriculum of Master's training in specialty "Electrotechnical systems of power consumption" Educational and professional Master program

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	Safety in the Area (Electrical Safety)	1	120	4
2	Energy Management and Energy Audit	3	90	3
3	Forecasting and Planning of Energy	2	90	3
4	Philosophy of Science and Innovation	1	90	3
5	Civil Protection	1	90	3
6	Information-Computing Systems in the Energy Sector	2	90	3
7	Basics of Patent and Copyright	1	90	3
8	Power Control and Experimental Methods of Electric Regimes	1	90	3
9	Progressive Methods of Energy Saving and Power Supply Systems	2	90	3
10	Power Saving Modes of Power Supply	2	120	4
11	Typical Electric Drives	2	90	3
12	Energy Saving in Technological Processes and Plants	3	90	3
Total for standard part			1140	38
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by University				
1	Agricultural Policy	3	90	3

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
2	Methodology and Organization of Scientific Research on the Basics of Intellectual Property	1	90	3
3	Business Foreign Language	1	150	5
Total (Disciplines offered by University)			330	11
2.2. Disciplines offered by students				
2.2.1 Specialization "Electrical networks and systems"				
1	Automated Control Systems of Power Consumption	3	90	3
2	Mathematical Models of Optimization Problems in Power Supply	2	90	3
3	Relay Protection and Automation of Electrical Distribution Networks	3	90	3
4	Telemechanics and ACS of Power Supply Systems	2	90	3
5	Energy Supply of Industry	1	120	4
6	Design of Power Consumption Systems	3	90	3
7	Technology of Maintenance and Repair of Electrical Plants of Power Systems	3	90	3
8	Mathematical and Simulation Modeling of Processes in Electrical Networks and Systems	3	90	3
9	Small Power Stations with Renewable Energy Sources	3	90	3
10	Grid-Systems and Artificial Intelligence in the Electricity	3	90	3
11	Electromechanical Transients in Electrical Systems	3	90	3
Total (Disciplines offered by students)			750	25
Total for elective part			1080	36
3. OTHER TYPES OF TRAINING				
1	Practical Training	1	300	10
2	Writing and Defense of Master's Thesis	3	180	6
Total			480	16
Total for Specialty			2700	90

**Curriculum of Master training
in specialty "Electrotechnical systems of power consumption "
Educational and scientific Master program**

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	Safety in the Area (Electrical Safety)	1	120	4
2	Energy Management and Energy Audit	3	90	3
3	Forecasting and Planning of Energy	2	90	3
4	Philosophy of Science and Innovation	1	90	3
5	Civil Protection	1	90	3
6	Information-Computing Systems in the Energy Sector	2	90	3
7	Basics of Patent and Copyright	1	90	3
8	Power Control and Experimental Methods of Electric Regimes	1	90	3
9	Progressive Methods of Energy Saving and Power Supply Systems	2	90	3
10	Power Saving Modes of Power Supply	2	120	4
11	Typical Electric Drives	2	90	3
12	Energy Saving in Technological Processes and Plants	3	90	3
Total for standard part			1140	38

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by University				
1	Agricultural Policy	3	90	3
2	Methodology and Organization of Scientific Research on the Basics of Intellectual Property	2	90	3
3	Business Foreign Language	1	150	5
Total (Disciplines offered by University)			330	11
2.2. Disciplines offered by students				
2.2.1 Specialization "Electrical networks and systems"				
1	Modeling Parameters of Electrical Networks	4	180	6
2	Mathematical Models of Optimization Problems in Power Supply	2	90	3
3	Research of New Switching Systems in Distributed Electrical Networks	4	180	6
4	Relay Protection and Automation of Electrical Distribution Networks	3	90	3
5	Automated Control Systems of Power Consumption	3	90	3
6	The Use of Functional Alloys in Electrical Vehicles	4	180	6
7	Modeling of Power Distribution Networks Modes with Distributed Generation Sources	4	180	6
8	Telemechanics and ACS of Power Supply Systems	3	90	3
9	New System of Relay Protection and Automation in Distributed Electrical Networks	4	180	6
10	Energy Supply of Industry	1	120	4
11	Design of Power Consumption Systems	3	90	3
12	Technology of Maintenance and Repair of Electrical Plants of Power Systems	3	90	3
13	Mathematical and Simulation Modeling of Processes in Electrical Networks and Systems	3	90	3
14	Small Power Stations with Renewable Energy Sources	3	90	3
15	Grid-Systems and Artificial Intelligence in the Electricity	4	90	3
16	Electromechanical Transients in Electrical Systems	3	90	3
Total (Disciplines offered by students)			1650	55
Total for elective part			1980	66
3. OTHER TYPES OF TRAINING				
1	Practical Training	1	300	10
2	Writing and Defense of Master's Thesis	4	180	6
Total			480	16
Total for Specialty			3600	120

Annotations educational plan disciplines

1. STANDART ACADEMIC DISCIPLINES

Occupational Safety in the Industry (Electrical Safety). Safety measures in normal and emergency modes of electrical installations. Safety during installation, repair and maintenance of electrical installations. Lightning agricultural facilities.

Energy Management and Energy Audit. Basic principles of energy auditing and energy management. The procedure for conducting energy audit company. Technology power management.

Forecasting and Planning of Energy. Principles and methods of forecasting. Planning, organization and management of the power plants and in industrial energy

management. The main directions of formation of tariffs in the market. System planning and preventive maintenance of equipment.

Philosophy of Science and Innovation. Ideologically and methodological training of students, formation of their philosophical culture as the theoretical basis of university level training. Coverage of philosophical knowledge of the main parts of philosophy that would develop the type of consciousness of students. The philosophical image of science. Philosophical problems of modern science.

Civil Protection. Theoretical foundations of civil defense and safety in production and life. Prevention of disasters and elimination of their organization adverse effects.

Information-Computing Systems in the Energy Sector. Information management facilities and systems. Concept of automated systems of electricity metering in terms of the energy market of Ukraine. Structures and of construction and application of existing information management systems and systems for metering.

Basics of Patent and Copyright. International classification and systematization of a patent. Legal principles of protection of copyright and especially its use. Preparation of applications for patent registration.

Power Control and Experimental methods of Electric Regimes. Monitoring energy consumption. The energy balance. Rationing of fuel and energy resources. Energy consumption monitoring system. Energy-saving measures.

Progressive Methods of Energy Conservation and Power Supply Systems. Electrical equipment and basic measures for energy saving in the industrial enterprise. Calculations of electricity industry. Energy resources, ways to effectively address the problems of energy saving. Energy-saving technologies, perspectives and effective ways of using alternative and renewable energy sources. Plans and construction equipment.

Power Saving Mode Power Supply. The main factors energy savings in the industry. General questions determining the economic efficiency of capital investments in the energy sector. Fundamentals of electricity rationing. Main directions of energy saving various industries. Power saving modes in power systems industry.

A Typical Electric. Typical installation of general purpose and characteristics of their design and kinematics. Technological cycles and electrical equipment. Typical control scheme automated electric installations. Calculations of electric power.

Energy Efficiency in Manufacturing Processes and Plants. Energy resources, ways to effectively address the problems of energy conservation in agriculture. Energy-saving technologies, perspectives and effective ways of using alternative and renewable energy systems, heating and water supply. Plans and construction equipment.

2. ELECTIVE ACADEMIC DISCIPLINES

2.1. Disciplines offered by University

Methodology and organization of research with the principles of intellectual property. The aim of the discipline is formation of the system of knowledge in methodology, theory of method and research process, methodical support of scientific and research activity at the stages of preparation of a Master paper, formation of the ability to organize research of a specific issue using the whole complex of the traditional methods of research including general and special methods. The main task of the theoretical part of the course is introduction to students the current concepts of research creation, the principles of methodology of scientific perception and methods of research. The main task of the practical part is the development of self-education ability, mastering skills of formation and application of perceived methodological position of research. In case of mastering the course students have to improve their skills of search, assortment and processing of scientific information, accurate formulation of a problem, aim, task, object,

subject, methods of research. Introduction to students the principles of intellectual property and direction of them to gain knowledge and skills concerning registration of rights of ownership, their protection, commercialization, estimation and management are envisaged.

Business foreign language. The general aim of the program of teaching of foreign language for the professional purpose is formation students' professional linguistic competencies that will contribute to their efficient operating in cultural variety of training and professional environment. The methods of search of new information in another language sources, linguistic methods of analytical study of another language sources are learned. Students study published original literature in another language and increase their lexical and grammatical skills. Methods and linguistic peculiarities of annotation and synopsis of another language sources, the principles of translation of professional oriented another language sources are studied.

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.

Educational and professional Master's program

2.2. Disciplines offered by students

2.2.1 Specialization "Electrical Networks and Systems"

Automated Control System Power Consumption. Information management systems power supply. Means remotely control power supply systems. Telecontrol systems, telemeasuring and signaling. Channels of communication systems in automation and remote control. Dispatch of command and control equipment. Means of automation in the control systems of power supply. Techno-economic performance and automation telemechanization.

Mathematical Models of Optimization Problems in Power Supply. Fundamentals of linear and nonlinear mathematical programming. Mathematical model. Transportation problem. Principles of dynamic programming. Optimization models.

Relay Protection and Automation of Electrical Distribution Networks. Theory and practice of automatic control modes of power supply systems using modern methods and means of automation and relay protection.

ACS Robot and Power Supply Systems. Theory telemechanics of signal transmission channels. Methods to improve noise immunity signals. Principles of telecontrol, signaling, remote metering and control. Features modern telemechanics, automatic supervisory control grids and power supply ACS industrial enterprises.

Electricity industry. External electric networks, substations and rural power reserve. The equipment for power stations and substations. Relay protection and automation. Reliability of power supply. The quality of electricity.

Design of Power Consumption. Production specification, calculations, graphics creation and delivery of documents using CAD company Autodesk Inc. and subsystems CAD Mathcad, Autocad and best computer-integrated technologies. Methods of designing systems of power consumption and energy in agriculture. Requirements for projects.

Technology Maintenance and Repair of Electrical Installations of Power Plants. Operation of transformer substations, switchgear, power lines, electric, lighting and Irradiation plants, electrically heated and electric equipment, communication means. The procedure for putting into operation mounted systems. Formation and Organization of instrumentation and automation tools. Operation of boilers, heat generators and heaters. Operation of electrical equipment.

Mathematical and Simulation of Processes in Electrical Networks and Systems. Parameters energy networks. Simulation parameters and network analysis. Requirements for performance of networks and ways to support them. Criteria for optimizing network settings. How to optimize the network settings. Analysis modes of energy networks. Criteria for optimization of networks. Optimizing components of the cost of electricity.

Small Power from Renewable Energy Sources. The types of small plants. Features of small power plants and their role in the power supply APC. Comparative characteristics of small sources of electricity. The construction of small power plants.

Grid systems and Artificial Intelligence in the Electricity. Intelligent systems. Tool environment intelligent systems. Technological means intelligent systems. Subsystem Automation programming tools and intelligent. The intelligent programming. Automation Programming Environment – TURBO. Systems EXSYS, GURU – ART. Hardware implementation of intelligent systems, element base. Examples of artificial intelligence.

Electromechanical Transients in Electrical Systems. Ensuring the proper functioning of sustainable power for any violations of their modes of operation. Transients in synchronous generators of electric stations and networks systems. Electromechanical transients in electrical systems for small and large disturbances.

Educational and scientific Master's program

2.2. Disciplines offered by students

2.2.1 Specialization "Electrical stations, systems and networks"

Modeling Parameters of Electrical Networks. Study course is structure, principle of operation modes and electrical systems and networks. As a result of the course students should be able to make payments current and projected operating modes of power systems using modern computer technology; justify the technical and economic decisions taken by engineering staff.

Mathematical Models of Optimization Problems in Power Supply. Fundamentals of linear and nonlinear mathematical programming. Mathematical model. Transportation problem. Principles of dynamic programming. Optimization models.

Research of New Switching Systems in Distributed Electrical Networks. The subject of the study course is the settlement of current and projected operating modes of the latest switching systems in distributed power grids; study the technical and economic decisions taken by engineering staff.

Relay Protection and Automation of Electrical Distribution Networks. Theory and practice of automatic control modes of power supply systems using modern methods and means of automation and relay protection.

Automated Control System Power Consumption. Information management systems power supply. Means remotely control power supply systems. Telecontrol systems, measuring and signaling. Channels of communication systems in automation and remote control. Dispatch of command and control equipment. Means of automation in the control systems of power supply. Techno-economic performance and automation telemechanization.

The Use of Functional Alloys in Electrical Vehicles. The course is designed to study electro electrothermomechanical and functional properties of alloys as electrical goods new generation. As a result of the course students should understand the phenomenology of functional alloys and their physical properties, to be able to calculate electrical parameters and design tools based on functional alloys.

Simulation Mode Power Distribution Networks with Distributed Generation Sources. The purpose of discipline is to form the expert in the field of normal stable operation of power supply system for any violations of its modes; mastering processes occurring in synchronous generators in particular, and in the electric system as a whole; studying electromechanical transients in electrical systems, both at large and for small perturbations.

ACS Robot and Power Supply Systems. Theory telemechanics of signal transmission channels. Methods to improve noise immunity signals. Principles of telecontrol, signaling, remote metering and control. Features modern telemechanics, automatic supervisory control grids and power supply ACS industrial enterprises.

New System of Relay Protection and Automation in Distributed Electrical Networks. Theory and practice of automatic control modes of power supply systems using modern methods and means of automation and relay protection.

Electricity industry. External electric networks, substations and rural power reserve. The equipment for power stations and substations. Relay protection and automation. Reliability of power supply. The quality of electricity.

Design of Power Consumption. Production specification, calculations, graphics creation and delivery of documents using CAD company Autodesk Inc. and subsystems CAD Mathcad, Autocad and best computer-integrated technologies. Methods of designing systems of power consumption and energy in agriculture. Requirements for projects.

Technology Maintenance and Repair of Electrical Installations of Power Plants. Operation of transformer substations, switchgear, power lines, electric, lighting and Irradiation plants, electrically heated and electric equipment, communication means. The procedure for putting into operation mounted systems. Formation and Organization of instrumentation and automation tools. Operation of boilers, heat generators and heaters. Operation of electrical equipment.

Mathematical and Simulation of Processes in Electrical Networks and Systems. Parameters energy networks. Simulation parameters and network analysis. Requirements for performance of networks and ways to support them. Criteria for optimizing network settings. How to optimize the network settings. Analysis modes of energy networks. Criteria for optimization of networks. Optimizing components of the cost of electricity.

Small Power from Renewable Energy Sources. The types of small plants. Features of small power plants and their role in the power supply APC. Comparative characteristics of small sources of electricity. The construction of small power plants.

Grid systems and Artificial Intelligence in the Electricity. Intelligent systems. Tool environment intelligent systems. Technological means intelligent systems. Subsystem Automation programming tools and intelligent. The intelligent programming. Automation Programming Environment – TURBO. Systems EXSYS, GURU – ART. Hardware implementation of intelligent systems, element base. Examples of artificial intelligence.

Electromechanical Transients in Electrical Systems. Ensuring the proper functioning of sustainable power for any violations of their modes of operation. Transients in synchronous generators of electric stations and networks systems. Electromechanical transients in electrical systems for small and large disturbances.

Master's course
in specialty "ENERGETICS OF AGRICULTURAL PRODUCTION"
branch of knowledge "Techniques and Energetics of Agricultural production"

Form of training, licensed number of persons	
– Full-time	100 persons
– Part-time	70 persons
Duration of Training:	
– Full-time educational and professional program	1,5 years
– Full-time education and scientific program	2 years
– Part-time	2 years
Credits:	
– educational and professional program	90 ECTS
– education and scientific program	120 ECTS
Language of Teaching	Ukrainian
Qualification	Master of Energetics of Agricultural Production

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 efficiency based on a systems approach and interdisciplinary learning principles to educate students broadmindedness non-standard thinking, the ability to address overhead and socio-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 Master's programs
Specialization "Computer-integrated process control systems
in the fields of agriculture"

Research, development and implementation of computer-integrated control systems in farms for the production and primary processing of agricultural products. Technology and mathematical modeling of processes in the areas of agriculture, automated process control systems in the fields of agriculture.

Areas of employment for graduates

Engineer in CEA of poultry, engineer of automated control systems for the production and management of primary milk processing, engineer of ACS of piggery, engineer of CEA in greenhouses, engineer in maintenance of automation systems in the enterprise.

Specialization "Energy engineering in agriculture"

The integrated performance of the design, installation, adjustment, commissioning and maintenance of electrical current equipment. Reliability of technical systems and the quality of energy and energy resources. Technology energy engineering and operational reliability of electrical equipment..

Areas of employment for graduates

Repair and maintenance of transmission lines, transformer substations and electricity equipment. Installation works. Design work.

***Specialization "Automation of technological processes
and computer integrated systems to control information
and technological resources in agriculture"***

Research, development and implementation of computer-integrated control systems of information and technological resources in agriculture technology and mathematical modeling. Information technology resources of automated control systems and technological resources for agriculture.

Areas of employment for graduates

Engineer in automated control systems, engineer in automation and computer-integrated technologies, engineer in maintenance of automation systems for enterprise.

Specialization "Electrical networks and systems"

Design, installation, commissioning and operation of transmission lines, transformer substations and switchgears. Accounting and management of electrical energy. Power plants, modeling and design of power APC. Modeling and automation of security devices and power supply systems.

Areas of employment for graduates

Production, distribution and use of electricity, electrical work, repair and maintenance of power lines, transformer substations and electricity equipment.

Specialization "Power Supply for agriculture"

Installation and operation of power plants in agriculture, development and implementation of alternative and renewable energy sources. Thermal power plants and systems, alternative and renewable energy for agriculture. Energy sources and heating technologies.

Areas of employment for graduates

Electricity production from renewable sources. Production and distribution of heat. Collection, purification and distribution of water.

Educational and scientific Master's programs

Specialization "Electrical networks and systems"

Design, installation, commissioning and operation of transmission lines, transformer substations and switchgears. Accounting and management of electrical energy. Power plants, modeling and design of power APC. Modeling and automation of security devices and power supply systems.

Areas of employment for graduates

Engineer-researcher research institutions, research associate research institutions. Operating engineer of electric networks and systems.

Specialization "Energy efficient control of biotechnological objects"

Research and development of advanced energy efficiency control systems of biotechnical objects. Technology and mathematical modeling of processes in the areas of agriculture, automated process control system in agriculture.

Areas of employment for graduates

Engineer of automated control systems, research engineer of research institutions, research associate of research institutions.

Specialization "Scientific and technical principles of electromechanical energy conversion"

Studying ways to convert electrical energy, development of new drives with improved performance properties. Basic principles of research and the modern theory of electromechanical energy conversion. Technology research of electromagnetic and electromechanical devices, power converters.

Areas of employment for graduates

Engineer-researcher of research institutions, scientist of research and design estimates institutions.

Specialization "Power Supply for agriculture"

Installation and operation of power plants in agriculture, development and implementation of alternative and renewable energy sources. Thermal power plants and systems, alternative and renewable energy for agriculture. Energy sources and heating technologies.

Areas of employment for graduates

Engineer-researcher of research institutions, scientific assistant of research institutions.

Practical training

Practical training is carried out in educational and research facilities of the university: Separated subdivision of NULES of Ukraine "Velykosnytsinske 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 "Kyivsilelectro", regional electricity networks.

Proposed Topics for Master's Thesis

1. Optimization of parameters and operating modes of power grid;
2. The influence of autonomous power supply into the quality and reliability of power supply in agricultural enterprise.
3. Automated system of accounting and regulation of the energy resources and energy.
4. Power supply of livestock farms from renewable energy sources.
5. Energy Service Project agricultural enterprise.
6. The system energy management of agricultural enterprises.
7. Computer-integrated SAR packaging dairy products.
8. Intelligent automated control system.

9. Automated Control System based on neuronetworks.
10. Integrated using of traditional and alternative energy sources.

Academic rights of applicants entering Master course

Applicants with the Diploma of Bachelor can continue training in connected specialties including ones of the field of knowledge "Specific categories", (table 2) and other specialties (table 3) in accordance with the Terms of enrolment to higher educational institutions of Ukraine in 2015 approved by the Order of the Ministry of education and science of Ukraine on October 15, 2014 № 1172 and the Regulations of enrolment to National University of Life and Environmental Sciences of Ukraine (basic institution, Kyiv) for 2015.

Curriculum of Master's training in specialty "Energetics of Agricultural Production" Educational and professional Master's program

№	Name of Academic Discipline	Semester	Numbe	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	Philosophy of Science and Innovation	1	90	3
2	Energy Supply of Industry	2	90	3
3	Design of Electrification, Automation and Energy Supply Systems	1	90	3
4	Heat and Water Supply in Agriculture	1	90	3
5	Electrical Technologies in Agriculture	1	90	3
6	Technologies of Service and Repair of Power Equipment and Means of Automation	1	120	4
7	Safety in the Area (Electricity Safety)	2	120	4
8	Mathematical Software for Master's Programs	2	90	3
9	Information Technologies	2	90	3
10	Staff Management	2	90	3
11	Electric Drive of Production Machines and Mechanisms	1	90	3
12	Energy Saving and Using of Renewable Energy Sources	2	90	3
Total for standard part			1140	38
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by University				
1	Agricultural Policy	3	90	3
2	Methodology and Organization of Scientific Research on the Basics of Intellectual Property	2	90	3
3	Business Foreign Language	1	150	5
Total (Disciplines offered by University)			330	11
2.2. Disciplines offered by students				
2.2.1. Specialization “Computer-integrated Process Control Systems in the Fields of Agriculture”				
1	Automated Control Systems in the Area	2	120	4
2	Engineering-Service of Automation Systems	3	90	3
3	Economic Calculations in Engineering Activities	3	90	3
4	Typical Technological Objects and Processes in the Fields of Agriculture	3	90	3
5	Modeling of Biotechnical Objects in the Field of Agriculture	3	90	3
6	Methods and Tools of Modern Automated Control of Technological Processes in Area	3	90	3
7	Technical Means of Automation and Equipment of	3	90	3

№	Name of Academic Discipline	Semester	Numbe	
			hours	credits ECTS
	Automated Control Systems			
8	Microprocessor Control Systems	3	90	3
9	Optimal Automated Control Systems	3	90	3
10	Information Technologies of Control Systems	2	90	3
Total (Disciplines offered by students)			750	25
2.2.2. Specialization "Energy Engineering in Agriculture"				
1	Technical Service of Energy Equipment	2	120	4
2	Energy Audit and Management in Agriculture	3	90	3
3	Engineering-Service of Energy Systems	2	90	3
4	Reliability of Technical Systems, Technogenic Risks	3	90	3
5	Technologies of Energy Engineering	3	90	3
6	Operational Reliability of Electrical Equipment in Agriculture	3	90	3
7	Accounting and Regulation of Energy Resources Costs	3	90	3
8	Quality of Energy Resources	3	90	3
9	Economics of Energy Consumption	3	90	3
Total (Disciplines offered by students)			750	25
2.2.3. Specialization "Automation of Technological Processes and Computer-integrated Control Systems of Information and Technological Resources in Agriculture"				
1	Automated Control Systems in the Area	2	120	4
2	Engineering Service of Automation Systems	3	90	3
3	Economic Calculations in Engineering Activities	3	90	3
4	Typical Technological Objects and Processes in the Fields of Agriculture	3	90	3
5	Modeling of Biotechnical Objects in the Fields of Agriculture	3	90	3
6	Methods and Tools of Modern Automated Control of Technological Processes in Area	3	90	3
7	Technical Means of Automation and Equipment of Automated Control Systems	3	90	3
8	Microprocessor Control Systems	3	90	3
9	Optimal Automated Control Systems	3	90	3
10	Information Technologies of Control Systems	2	90	3
Total (Disciplines offered by students)			750	25
2.2.4. Specialization "Electrical Networks and Systems"				
1	Electrical Networks and Systems	2	120	3
2	Design of Power Supply Systems in Agriculture	3	90	3
3	Automated Control Systems of Power Consumption	3	90	3
4	Transients in Power Supply Systems	3	90	3
5	Relay Protection and Automation of Energy Supply Systems	3	90	3
6	Automation and Telemechanics of Energy Supply Systems	3	90	3
7	Electrical Plants and Systems of Energy Supply	3	90	3
8	Small Power Stations in Agriculture	3	90	3
Total (Disciplines offered by students)			750	25
2.2.5. Specialization "Energy Supply in Agriculture"				
1	Thermal Power Plants and Systems	2	120	4
2	Accounting and Control of Energy Resources Distribution and Costs	3	90	3
3	Alternative and Renewable Energy Sources in Agriculture	3	90	3
4	Energy Efficiency of Energy Equipment of Agricultural	3	90	3

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
	Production			
5	Energy Saving in Heating Technologies	3	90	3
6	Biofuels	3	90	3
7	Gas Supply	3	90	3
8	Small Hydro and Wind Power Stations in Agriculture	3	90	3
9	Heating Technologies of Production and Processing of Agricultural Product	3	90	3
Total (Disciplines offered by students)			750	25
Total for elective part			1080	36
3. OTHER TYPES OF TRAINING				
1	Practical Training	1	300	10
2	Writing and Defense of Master's Thesis	3	180	6
Total			480	16
Total for Specialty			2700	90

**Curriculum of Master's training
in specialty "Energetics of Agricultural Production"
Educational and scientific Master program**

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	Philosophy of Science and Innovation	1	90	3
2	Energy Supply of Industry	2	90	3
3	Design of Electrification, Automation and Energy Supply Systems	1	90	3
4	Heat and Water Supply in Agriculture	1	90	3
5	Electrical Technologies in Agriculture	2	90	3
6	Technologies of Service and Repair of Power Equipment and Means of Automation	1	120	4
7	Safety in the Area (Electricity Safety)	2	120	4
8	Mathematical Software for Master's Programs	2	90	3
9	Information Technologies	2	90	3
10	Staff Management	2	90	3
11	Electric Drive of Production Machines and Mechanisms	1	90	3
12	Energy Saving and Using of Renewable Energy Sources	1	90	3
Total for standard part			1140	38
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by University				
1	Agricultural Policy	3	90	3
2	Methodology and Organization of Scientific Research on the Basics of Intellectual Property	2	90	3
3	Business Foreign Language	1	150	5
Total (Disciplines offered by University)			330	11
2.2. Disciplines offered by students				
2.2.1. Specialization "Energy Efficient Control Systems of Biotechnical Objects"				
1	Automated Control Systems of the Area	2	120	4
2	Typical Technological Objects and Processes in Agriculture	3	120	4
3	Modeling of Biotechnical Objects in the Field of Agriculture	3	120	4

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
4	Methods and Tools of Modern Automated Control of Technological Processes in Area	3	120	4
5	Technical Means of Automation and Equipment of Automated Control Systems	3	120	4
6	Microprocessor Control Systems	4	120	4
7	Engineering Service of Automation Systems	4	120	4
8	Economic Calculations in Engineering Activities	4	120	4
9	Optimal Automated Control Systems	4	120	4
10	Information Technology of Control Systems	2	120	4
11	Automated Control Systems in the Area	4	120	4
12	Neural Networks in Control Systems	4	120	4
13	Computer Simulation Control Systems in Agriculture	4	120	4
Total (Disciplines offered by students)			1530	51
2.2.2. Specialization "Scientific and Technical Principles of Electromechanical Energy Conversion"				
1	Technical Service of Energy Equipment	2	120	4
2	Energy Audit and Management in Agriculture	3	90	3
3	Engineering Service of Energy Systems	3	90	3
4	Reliability of Technical Systems, Technogenic Risks	3	90	3
5	Technologies of Energy Engineering	3	90	3
6	Operational Reliability of Electrical Equipment in Agriculture	3	90	3
7	Accounting and Regulation of Energy Resources Costs	3	90	3
8	Quality of Energy Resources	3	90	3
9	Economics of Energy Consumption	3	90	3
10	Modern Scientific Problems in the Field of Energetics	4	20	4
11	Patent Engineering and Theory of Experiment	4	120	4
12	Modern Theory of Electromechanical Energy Conversion	4	120	4
13	Asynchronous Machines with High Energy Efficiency and Electromagnetic and Electromechanical Processes in Compensated Asynchronous Motors	3	120	4
14	Mathematical Modeling of Electromagnetic Devices and Electromechanical Energy Converters	4	120	4
15	Calculations of Electromagnetic Devices and Electromechanical Energy Converters	4	120	4
16	Reliability of Electromagnetic Devices and Electromechanical Energy Converters	4	90	3
17	Research Methods for Electromagnetic Devices and Electromechanical Energy Converters	4	90	3
18	Testing of Electromagnetic Devices and Electromechanical Energy Converters	4	90	3
Total (Disciplines offered by students)			1530	51
2.2.3. Specialization "Electrical Networks and Systems"				
1	Electrical Networks and Systems	2	120	4
2	Design of Power Supply Systems in Agriculture	3	90	3
3	Automated Control Systems of Power Consumption	3	90	3
4	Transients in Power Supply Systems	3	90	3
5	Relay Protection and Automation of Energy Supply Systems	3	90	3
6	Automation and Telemechanics of Energy Supply Systems	3	90	3
7	Electrical Plants and Systems of Energy Supply	3	90	3
8	Small Power Stations in Agriculture	3	90	3
9	Economic Efficiency of Energy Systems in Agriculture	4	150	5

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
10	Reliability of Energy Supply Systems	4	150	5
11	Criteria Problems of Energy Supply in Agriculture	4	150	5
12	Modeling and Optimization of Energy Supply Systems	4	150	5
13	Alternative and Renewable Energy Sources	4	150	5
14	Information Control Systems in Electrical Networks	4	150	5
15	Functional Alloys in Electrical Vehicles	4	150	5
Total (Disciplines offered by students)			1530	51
2.2.4. Specialization "Energy Supply in Agriculture"				
1	Thermal Power Plants and Systems	2	120	4
2	Accounting and Control of Energy Resources Distribution and Costs	3	90	3
3	Alternative and Renewable Energy Sources in Agriculture	3	90	3
4	Energy Efficiency of Energy Equipment of Agricultural Production	3	90	3
5	Energy Saving in Heating Technologies	3	90	3
6	Biofuel	3	90	3
7	Gas Supply	3	90	3
8	Small Hydro and Wind Power Stations in Agriculture	3	90	3
9	Heating Technologies of Production and Processing of Agricultural Product	3	90	3
10	Economic Efficiency of Energy Systems in Agriculture	4	150	5
11	Optimization of Energy Supply and Energy Saving Systems	4	150	5
12	Nanotechnology of Intensification of Heat and Mass Transfer Processes	4	150	5
13	Modeling of Heat and Hydrodynamic Processes	4	150	5
14	Integrated Using of Alternative and Renewable Energy Sources	4	150	5
15	Heat and Mass Transfer of Production and Processing of Agricultural Product	4	150	5
16	Cogeneration Plants	4	150	5
Total (Disciplines offered by students)			1530	51
Total for elective part			1860	62
3. OTHER TYPES OF TRAINING				
1	Practical Training	1	420	14
2	Writing and Defense of Master's Thesis	4	180	6
Total			600	20
Total for Specialty			3600	120

Annotations educational plan disciplines

1. STANDARD ACADEMIC DISCIPLINES

Philosophy of Science and Innovation. Ideologically and methodological training of students, formation of their philosophical culture as the theoretical basis of university level training. Coverage of philosophical knowledge of the main parts of philosophy that would develop the type of consciousness of students. The philosophical image of science. Philosophical problems of modern science.

Energy Supply of Industry. External electric networks, substations and rural power reserve. The equipment for power stations and substations. Relay protection and automation. Reliability of power supply. The quality of electricity.

Design of Electrification, Automation and Energy Supply Systems. The methodology of designing of electrification, automation and energy of agriculture. Computer technologies in design. Requirements for projects.

Heat and Water Supply in Agriculture. Heat power installations and heating system. Energy audit and management. Energy Efficiency of heat APC. Sources of water. Facilities for the abstraction of surface and groundwater. Distributors and internal water network.

Electrical Technologies in Agriculture. Electrophysics, electrochemical, electrobiological factors in nature. The use of strong electric fields. The cultivation of electric shock. Of electric machinery and technology. Magnetic materials processing.

Technologies of Service and Repair of Power Equipment and Means of Automation. Operation of equipment power supply systems of agriculture. Operation of transformer substations, switchgear, power lines, electric, lighting and Irradiation plants, electrically and electric equipment, communication means. Adjustment of sensors, controllers, actuators automatic control systems. The procedure for putting into operation mounted systems. Formation and Organization of instrumentation and automation means an agricultural enterprise. Operation of boilers, heat generators and heaters. Operation of water supply and heating systems. Operation of gas plants. Handling equipment power supply systems of agriculture.

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

Mathematical Software for Master's Programs. Analytical methods of mathematical modeling facilities of agricultural production. Construction of models of typical objects by experiment. Algorithms implementation models for PC. Algorithms of Euler, Runge-Kutta.

Information Technologies. Computer technology visualization modes and parameters of technological facilities and manufacturing processes. Packages for processing applications and information transfer. Technical means of information technology. The global network Internet.

Staff Management. The system of personnel management in the organization. Analysis of quality and staff turnover. Planning of Personnel. Methods of recruitment and selection, evaluation of motivation and professional development.

Electric Drive of Production Machines and Mechanisms. Driving characteristics of machines and mechanisms. The principles and control electronic circuits. Complete equipment for automatic control. Experimental methods of driving characteristics.

Energy Saving and Using of Renewable Energy Sources. Energy resources, ways to effectively address the problems of energy conservation in agriculture. Energy saving technologies, perspectives and effective ways of using alternative and renewable energy systems, heating and water supply. Plans and construction equipment.

2. ELECTIVE ACADEMIC DISCIPLINES

2.1. Disciplines offered by University

Methodology and organization of research with the principles of intellectual property. The aim of the discipline is formation of the system of knowledge in methodology, theory of method and research process, methodical support of scientific and research activity at the stages of preparation of a Master paper, formation of the ability to organize research of a specific issue using the whole complex of the traditional methods of research including general and special methods. The main task of the theoretical part of the course is introduction to students the current concepts of research creation, the

principles of methodology of scientific perception and methods of research. The main task of the practical part is the development of self-education ability, mastering skills of formation and application of perceived methodological position of research. In case of mastering the course students have to improve their skills of search, assortment and processing of scientific information, accurate formulation of a problem, aim, task, object, subject, methods of research. Introduction to students the principles of intellectual property and direction of them to gain knowledge and skills concerning registration of rights of ownership, their protection, commercialization, estimation and management are envisaged.

Business foreign language. The general aim of the program of teaching of foreign language for the professional purpose is formation students' professional linguistic competencies that will contribute to their efficient operating in cultural variety of training and professional environment. The methods of search of new information in another language sources, linguistic methods of analytical study of another language sources are learned. Students study published original literature in another language and increase their lexical and grammatical skills. Methods and linguistic peculiarities of annotation and synopsis of another language sources, the principles of translation of professional oriented another language sources are studied.

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.

Educational and professional Master program

2.2. Disciplines offered by students

2.2.1 Specialization "Computer-integrated Process Control Systems in the Fields of Agriculture"

Automated Control Systems in the Area. Principles of the control system. Information channels and their characteristics. Identification control objects. Algorithms management. Technical means of automation. Reliability and economic efficiency of automation.

Engineering Service of Automation Systems. Procedure mounted delivery systems in operation. Formation and Organization of instrumentation and automation means an agricultural enterprise. Net after-sales service of power equipment. Group activities with after sales service. Care System as part of the company image - producer.

Economic Calculations in Engineering Activities. Method of cost estimates for the construction of rural energy. Methods of calculating the cost of technical work. Methods of assessing the economic efficiency of engineering solutions.

Typical Technological Objects and Processes in the Fields of Agriculture. Automation object; classification, structure and main characteristics of typical technological facilities, technologies and processes AIC branches. Physics and chemical basis of hydrodynamic, thermal, mass transfer, mechanical, chemical and technological processes. Calculation of the heat and mass transfer processes in agriculture technology processing and storage of agricultural products. Fundamentals of modeling and designing technological devices.

Modeling of Biotechnical Objects in the Field of Agriculture. Analytical modeling processes. Methods of identification processes. Examples of typical modeling processes. Check adequacy of mathematical models of the process.

Methods and Tools of Modern Automated Control of Technological Processes in Area. Specifications processes as facilities management and their disturbances. Principles of automated process control systems. Automation of technological processes in crop and livestock production. Principles of the control system. Information channels and their characteristics. Identification and facilities management. Algorithms management. Technical means of automation. Reliability and economic efficiency of automation.

Technical Means of Automation and Equipment of Automated Control Systems. Information channels and their characteristics. Facilities of management. Algorithms management. Technical means of automation. Reliability and economic efficiency of automation.

Microprocessor Control Systems. The architecture of the microprocessor and microcomputer, microprocessor programming in assembly language, microprocessor-based hardware systems. Development and debugging microprocessor systems in agricultural production. Discrete signals, their coding. DAC and ADC. The analysis in the time and frequency domains. Manageability. The synthesis of digital systems. Restrictions in microprocessor control systems.

Optimal Automated Control Systems. Problem optimal control. Criteria optimization in agricultural production. Methods of optimal control theory. Calculus of variations, Pontryagin maximum principle, dynamic programming. Analytical design of optimal controllers. Optimal control with random disturbances. The synthesis of stochastic systems. Optimal observer.

Information Technologies of Control Systems. Computer technology visualization modes and parameters of technological facilities and manufacturing processes. Packages for processing applications and information transfer. Technical means of information technology. The global network Internet.

2.2.2. Specialization “Energy Engineering in Agriculture”

Technical Service of Energy Equipment. Maintenance of transformer substations and power lines. Servicing of electrical consumers. Diagnosis of electrical equipment.

Energy Audit and Management in Agriculture. The scope of services for the preparation and provision of installation and operation of power equipment in agriculture. Energoservice in agriculture, nomenclature and implementation services. Marketing in energy services.

Engineering Service of Energy Systems. The procedure of putting into operation mounted systems. Formation and Organization of instrumentation and automation means an agricultural enterprise. Net after-sales service of power equipment. Group activities with after sales service. Care System as part of the company image - producer.

Reliability of Technical Systems, Technogenic Risks. The main categories and standards in reliability. Categories reliability of electricity supply. The quality of electricity. Man-made risks in the energy sector. Environmental aspects electrification of agriculture.

Technologies of Energy Engineering. Engineering as an independent field of activity. The range of engineering services. Engineering-consulting firms. Engineer-resident in engineering activities. Service as a means of creating a system of relations

between the company and client. Net after-sales service of power equipment. Group activities with after sales service. Care System as part of the company image-producer.

Operational Reliability of Electrical Equipment in Agriculture. Accounting and inventory of power equipment. Definition of the technical state of planning maintenance and repair of power equipment. Calculation complexity of maintenance and repair, staffing requirements, materials, components and spare parts. Net after-sales service of electrical equipment. Preventive maintenance and repairs. System maintenance. Organization of service. Preventive maintenance and repairs. Organization of service. Net after-sales service and repair. Group activities after sales service.

Accounting and Regulation of Energy Resources Costs. Devices of accounting of active and reactive power. Regulators of reactive power. Multiple-metering. Devices for control of heat consumption Counters of water and gas.

Quality of energy resources. State standards on the quality of energy and energy resources. European standards for quality of energy and energy resources. Instruments for measuring software quality indicators of energy.

Economics of Energy Consumption. Method of estimates for the construction of rural energy. Methods of payment value technical products. Methods of assessing the economic efficiency of engineering solutions.

2.2.3. Specialization “Automation of Technological Processes and Computer-integrated Control Systems of Information and Technological Resources in Agriculture”

Automated Control Systems in the Area. Principles of control system. Information channels and their characteristics. Identification of control objects. Algorithms management. Technical means of automation. Reliability and economic efficiency of automation.

Engineering Service of Automation Systems. Procedure mounted delivery systems in operation. Formation and Organization of instrumentation and automation means an agricultural enterprise. Net after-sales service of power equipment. Group activities with after sales service. Care System as part of the company image - producer.

Economic Calculations in Engineering Activities. Method of cost estimates for the construction of rural energy. Methods of calculating the cost of technical work. Methods of assessing the economic efficiency of engineering solutions.

Typical Technological Objects and Processes in the Fields of Agriculture. Automation object; classification, structure and main characteristics of typical technological facilities, technologies and processes AIC branches. Physics and chemical basis of hydrodynamic, thermal, mass transfer, mechanical, chemical and technological processes. Calculation of the heat and mass transfer processes in agriculture technology processing and storage of agricultural products. Fundamentals of modeling and designing technological devices.

Modeling of Biotechnical Objects in the Fields of Agriculture. Analytical modeling processes. Methods of identification processes. Examples of typical modeling processes. Check adequacy of mathematical models of the process.

Methods and Tools of Modern Automated Control of Technological Processes in Area. Specifications processes as facilities management and their disturbances. Principles of automated process control systems. Automation of technological processes in crop and livestock production. Principles of the control system. Information channels and their characteristics. Identification and facilities management. Algorithms management. Technical means of automation. Reliability and economic efficiency of automation.

Technical Means of Automation and Equipment of Automated Control Systems. Information channels and their characteristics. Facilities management. Algorithms management. Technical means of automation. Reliability and economic efficiency of automation.

Microprocessor Control Systems. The architecture of the microprocessor and microcomputer, microprocessor programming in assembly language, microprocessor-based hardware systems. Development and debugging microprocessor systems in agricultural production. Discrete signals, their coding. DAC and ADC. The analysis in the time and frequency domains. Manageability. The synthesis of digital systems. Restrictions in microprocessor control systems.

Optimal Automated Control Systems. Problem optimal control. Criteria optimization in agricultural production. Methods of optimal control theory. Calculus of variations, Pontryagin maximum principle, dynamic programming. Analytical design of optimal controllers. Optimal control with random disturbances. The synthesis of stochastic systems. Optimal observer.

Information Technologies of Control Systems. Computer technology visualization modes and parameters of technological facilities and manufacturing processes. Packages for processing applications and information transfer. Technical means of information technology. The global network Internet.

2.2.4. Specialization “Electrical Networks and Systems”

Electrical Networks and Systems. The electric part of substations and reserve power. Protection of rural electrical surge. Increasing economic efficiency and reliability of power supply systems of agriculture. Automation and control systems.

Design of Power Supply Systems in Agriculture. Setting the specification, calculations, graphics creation and delivery of documents using CAD company Autodesk Ins. And subsystems CAD Mathcad, Autocad, and the best computer-integrated technologies. The mathematical description of the functioning ACS. Typical dynamic link ACS. Identification of facilities management models.

Automated Control Systems of Power Consumption. Modern principles, methods and tools for monitoring and control power consumption as an important direction of energy efficiency and energy saving in agriculture.

Transients in Power Supply Systems. Ensuring sustainable of normal functioning of supply for any violation. Transients in synchronous generators of electric stations and networks systems. Electromechanical transients in electrical systems for small and large disturbances.

Relay Protection and Automation of Energy Supply Systems. The theory and practice of automatic control modes of power supply systems using modern methods and means of automation and relay protection.

Automation and Telemechanics of Energy Supply Systems. Information management systems power supply. Means remotely control power supply systems. Telecontrol systems, telemeasuring and signaling. Channels of communication systems in automation and remote control. Dispatch of command and control equipment. Means of automation in the control systems of power supply. Techno-economic performance and automation.

Electrical Plants and Systems of Energy Supply. The electric part of substations and reserve power. Protection of rural electrical surge. Improving the efficiency and reliability of power supply systems of agriculture. Automation and control systems Telemechanization supply.

Small Power Stations in Agriculture. The types of small plants. Features of small power plants and their role in the power supply APC. Comparative characteristics of small sources of electricity. The construction of small power plants.

2.2.5. Specialization “Energy Supply in Agriculture”

Thermal Power Plants and Systems. Sources of heat. Burning fossil fuels. Boiler systems. Heat. Heating system. Thermal network. Gas agriculture. Alternative heating sources of agricultural production.

Accounting and Control of Energy Resources Distribution and Costs. Devices of accounting of active and reactive power. Regulators of reactive power. Multiple-metering. Devices for control of heat consumption. Counters of water and gas.

Alternative and Renewable Energy Sources in Agriculture. Types of alternative and renewable energy. Features of small power plants and their role in the power supply APC. Comparative characteristics of alternative and renewable energy sources. The construction of small power plants

Energy Efficiency of Energy Equipment of Agricultural Production. The principles of the state policy in the field of energy. The criteria for energy efficiency of heat and mass processes. Economic optimization of the heat-generating equipment and agricultural production. Energy efficiency in livestock production. Energy efficiency in thermal processes of processing and storage of agricultural products.

Energy Saving in Heating Technologies. Sources of heat and electricity. Losses in the transmission of energy. Losses in transformers. Losses in transmission lines. Technical measures to reduce energy losses. Arrangements reduce energy losses.

Biofuels. Resources of biofuel in agricultural production. Solid biofuels. Equipment for the preparation and use of solid biofuels. Liquid biofuels. Equipment for the production of bioethanol and biodiesel. Biogas. Technologies and equipment for the production of biogas. Gasification of solid biofuels. Environmental safety of production and use of biofuels.

Gas Supply. The main characteristics of gas as an energy source. Devices of the account of gas flow. Switchgears. Consumers.

Small Hydro and Wind Power Stations in Agriculture. Current Trends energy of small rivers and wind to hydro turbines and wind power plants, especially the structures of existing hydro and wind turbines, the theoretical foundations working process and selection of basic settings.

Heating Technologies of Production and Processing of Agricultural Product. Sources of heat. Burning fossil fuels. Boiler systems. Heat. Heating system. Thermal network. Gas in agriculture. Alternative heating sources of agricultural production.

Educational and scientific Master’s program

2.2. Disciplines offered by students

2.2.1. Specialization “Energy Efficient Control Systems of Biotechnical Objects”

Automated Control Systems in the Area. Principles of automation. Information channels and their characteristics. Identification control objects. Algorithms management. Technical means of automation. Reliability and economic efficiency of automation.

Typical Technological Objects and Processes in Agriculture. Automation object; classification, structure and main characteristics of typical technological facilities, technologies and processes AIC branches. Physico-chemical basis of hydrodynamic, thermal, mass transfer, mechanical, chemical and technological processes. Calculation of

the heat and mass transfer processes in agriculture technology processing and storage of agricultural products. Fundamentals of modeling and designing technological devices.

Modeling of Biotechnical Objects in the Field of Agriculture. Analytical modeling processes. Methods of identification processes. Examples of typical modeling processes. Check adequacy of mathematical models of the process.

Methods and Tools of Modern Automated Control of Technological Processes in Area. Characteristics processes as facilities management and their disturbances. Principles of automated process control systems. Automation of technological processes in crop and livestock production. Principles of the control system. Information channels and their characteristics. Identification facilities management. Algorithms management. Technical means of automation. Reliability and economic efficiency of automation.

Technical Means of Automation and Equipment of Automated Control Systems. Principles of automation. Information channels and their characteristics. Identification facilities management. Algorithms management. Technical means of automation. Reliability and economic efficiency of automation.

Microprocessor Control Systems. The architecture of the microprocessor and microcomputer, microprocessor programming in assembly language, microprocessor-based hardware systems. Development and debugging microprocessor systems in agricultural production. Discrete signals, their coding. DAC and ADC. The analysis in the time and frequency domains. Manageability. The synthesis of digital systems. Restrictions in microprocessor control systems.

Engineering Service of Automation Systems. Procedure mounted delivery systems in operation. Formation and Organization of control devices and automation farmer. Net after-sale servicing power equipment. Group activities with after-sale service. Care System as part of the company image-producer.

Economic Calculations in Engineering Activities. Method of cost estimates for the construction of rural energy. Methods of calculating the cost of technical work. Methods of assessing the economic efficiency of engineering solutions.

Optimal Automated Control Systems. Problem optimal control. Criteria optimization in agricultural production. Methods of optimal control theory. Calculus of variations, Pontryagin maximum principle, dynamic programming. Analytical design of optimal controllers. Optimal control with random disturbances. The synthesis of stochastic systems. Optimal observer.

Information Technology of Control Systems. Computer technology visualization modes and parameters of technological facilities and production processes. Applications for processing and transmitting information. Technical means of information technology.

Automated Control Systems in the Area. Principles of automation. Information channels and their characteristics. Identification control objects. Algorithms management. Technical means of automation. Reliability and economic efficiency of automation.

Neural Networks in Control Systems. Basic concepts of neural networks. The properties of the neural network training. Hopfield neural networks, Hemet. Basic concepts of fuzzy logic. Fuzzy sets and fuzzy neural network

Computer Simulation Control Systems in Agriculture. Work in Windows, word processor Word, spreadsheet Excel, image editors, database management system Access, scanning and recognition of texts, work in the computer network system mathematical calculations MathCAD.

2.2.2. Specialization “Scientific and Technical Principles of Electromechanical Energy Conversion”

Technical Service of Energy Equipment. Maintenance of transformer substations and power lines. Servicing of electrical consumers. Diagnosis of electrical equipment.

Energy Audit and Management in Agriculture. The scope of services for the preparation and provision of installation and operation of power equipment in agriculture. Energyservice in agriculture, nomenclature and implementation services. Marketing in energy services.

Engineering Service of Energy Systems. The procedure of putting into operation mounted systems. Formation and Organization of instrumentation and automation means an agricultural enterprise. Net after-sales service of power equipment. Group activities with after sales service. Care System as part of the company image - producer.

Reliability of Technical Systems, Technogenic Risks. The main categories and standards in reliability. Categories reliability of electricity supply. The quality of electricity. Man-made risks in the energy sector. Environmental aspects electrification of agriculture.

Technologies of Energy Engineering. Engineering as an independent field of activity. The range of engineering services. Engineering-consulting firms. Engineer-resident in engineering activities. Service as a means of creating a system of relations between the company and client. Net after-sales service of power equipment. Group activities with after sales service. Care System as part of the company image - producer.

Operational Reliability of Electrical Equipment in Agriculture. Accounting and inventory of power equipment. Definition of the technical state of planning maintenance and repair of power equipment. Calculation complexity of maintenance and repair, staffing requirements, materials, components and spare parts. Net after-sales service of electrical equipment. Preventive maintenance and repairs. System maintenance. Organization of service. Preventive maintenance and repairs. Organization of service. Net after-sales service and repair. Group activities after sales service.

Accounting and Regulation of Energy Resources Costs. Devices of accounting of active and reactive power. Regulators of reactive power. Multiple-metering. Devices for control of heat consumption. Counters of water and gas.

Quality of Energy Resources. State standards on the quality of energy and energy resources. European standards for quality of energy and energy resources. Instruments for measuring software quality indicators of energy.

Economics of Energy Consumption. Method of estimates for the construction of rural energy. Methods of payment value technical products. Methods of assessing the economic efficiency of engineering solutions.

Modern Scientific Problems in the Field of Energetics. The modern national and global processes associated with increasing energy needs, state power and its influence on the biosphere. Information on resources for energy trends and forecast of its development. Attention is paid to the person from whose actions influence the future of our civilization.

Patent Engineering and Theory of Experiment. The main goal of discipline is to obtain legal knowledge in the field of copyright and related rights, patent rights, products, works and services and relations in purchase and use of intellectual property and know-how. The course aims at developing students' knowledge system of the basic institutions of intellectual property, object, subject of intellectual property rights subjects, methods and procedure for the protection of intellectual property.

Modern Theory of Electromechanical Energy Conversion. Foundations of the theory of electromagnetism and general principles of electromechanical energy conversion, their practical use for design and operation of electrical machines.

Asynchronous Machines with High Energy Efficiency and Electromagnetic and Electromechanical Processes in Compensated Asynchronous Motors. Asynchronous machine as versatile electromechanical energy converter. Mathematical model of electric cars. Calculation of transients in the electrical machine. Operating of asynchronous machine.

Mathematical Modeling of Electromagnetic Devices and Electromechanical Energy Converters. Analytical methods of mathematical modeling of objects agricultural production. Methods of mathematical models. Construction of mathematical models electrotechnological equipment analytical method and the results of the experiment. Analysis models and their optimization.

Calculations of Electromagnetic Devices and Electromechanical Energy Converters. The method of conformal mapping and its application for the calculation of static fields in electromagnetic devices and electromechanical converters. Basic theory and technology of electric modeling. The method of calculation of integral equations of static fields.

Reliability of Electromagnetic Devices and Electromechanical Energy Converters. Basic concepts, performance and position of integrated program reliability, calculation methods and improve the reliability of the results of tests and operation of electromagnetic and electromechanical devices, power converters, reliability analysis, a system providing spare parts, determining the reliability of technical systems for an operator.

Research Methods for Electromagnetic Devices and Electromechanical Energy Converters. The method of finite differences, finite element method, method of integral equations and other techniques that are effectively used for the calculation of electromagnetic fields on a computer.

Testing of Electromagnetic Devices and Electromechanical Energy Converters. Physical test: bench, laboratory, field, model. Test methods using physical, mathematical modeling and statistical tests.

2.2.3. Specialization "Electrical Networks and Systems"

Electrical Networks and Systems. The electric part of substations and reserve power. Protection of rural electrical surge. Increasing economic efficiency and reliability of power supply systems of agriculture. Automation and control systems.

Design of Power Supply Systems in Agriculture. Setting the specification, calculations, graphics creation and delivery of documents using CAD company Autodesk Ins. And subsystems CAD Mathcad, Autocad, and the best computer-integrated technologies. The mathematical description of the functioning ACS. Typical dynamic link ACS. Identification of facilities management models.

Automated Control Systems of Power Consumption. Modern principles, methods and tools for monitoring and control power consumption as an important direction of energy efficiency and energy saving in agriculture.

Transients in Power Supply Systems. Ensuring sustainable of normal functioning of supply for any violation. Transients in synchronous generators of electric stations and networks systems. Electromechanical transients in electrical systems for small and large disturbances.

Relay Protection and Automation of Energy Supply Systems. The theory and practice of automatic control modes of power supply systems using modern methods and means of automation and relay protection.

Automation and Telemechanics of Energy Supply Systems. Information management systems power supply. Means remotely control power supply systems. Telecontrol systems, telemeasuring and signaling. Channels of communication systems in automation and remote control. Dispatch of command and control equipment. Means of automation in the control systems of power supply. Techno-economic performance and automation telemechanization.

Electrical Plants and Systems of Energy Supply. The electric part of substations and reserve power. Protecting rural of electrical surge. Improving the efficiency and reliability of power supply systems of agriculture. Automation and control systems

Small Power Stations in Agriculture. The types of small plants. Features of small power plants and their role in the power supply APC. Comparative characteristics of small sources of electricity. The construction of small power plants.

Economic Efficiency of Energy Systems in Agriculture. Bases methods for calculating the economic efficiency of energy systems in agriculture. Methods of calculation based on conducting a feasibility analysis of thermal and hydraulic processes occurring in power plants. It uses approaches based on determining the efficiency of the installation, its hydraulic and exergic efficiency.

Reliability of Energy Supply Systems. The main categories and standards in reliability. Categories reliability of electricity supply. The quality of electricity. Man-made risks in the energy sector. Environmental aspects electrification of agriculture.

Criteria Problems of Energy Supply in Agriculture. The discipline studies: electrical systems and their structures, structures in power generation, supervisory control, modeling elements and modes of electrical systems, electrical systems and methods of AIC calculations in the design and operational setting, optimization of electrical networks modes S K AP, redundancy and automation in the power supply system of agriculture, lightning protection and substation equipment from surges.

Modeling and Optimization of Energy Supply Systems. Basic definitions and concepts. As a model, modeling, object, subject of study. Requirements for the model with position specific goals and objectives of the study. Conditional distribution models for analytical, experimental and experimental, analytical. Main phases: setting objectives and research, construction of a mathematical model, algorithm development and application limitations of variable factors, verification of compliance and analysis of the obtained results.

Alternative and Renewable Energy Sources. Types of alternative and renewable energy. Features of small power plants and their role in the power supply APC. Comparative characteristics of alternative and renewable energy sources. The construction of small power plants.

Information Control Systems in Electrical Networks. Information management facilities and systems. Concept of building cars, power accounting systems in terms of the energy market of Ukraine. Structures and of construction and application of existing information management systems and systems for metering.

Functional Alloys in Electrical Vehicles. The course is designed to study electro electrothermomechanical and functional properties of alloys as electrical goods new generation. As a result of the course students should understand the phenomenology of functional alloys and their physical properties, to be able to calculate electrical parameters and design tools based on functional alloys.

2.2.4. Specialization "Energy Supply in Agriculture"

Thermal Power Plants and Systems. Sources of heat. Burning fossil fuels. Boiler systems. Heat. Heating system. Thermal network. Gas agriculture. Alternative heating sources of agricultural production.

Accounting and Control of Energy Resources Distribution and Costs. Devices of accounting of active and reactive power. Regulators of reactive power. Multiple-metering. Devices for control of heat consumption. Counters of water and gas.

Alternative and Renewable Energy Sources in Agriculture. Types of alternative and renewable energy. Features of small power plants and their role in the power supply APC. Comparative characteristics of alternative and renewable energy sources. The construction of small power plants.

Energy Efficiency of Energy Equipment of Agricultural Production. The principles of the state policy in the field of energy. The criteria for energy efficiency of heat and mass processes. Economic optimization of the heat-generating equipment and agricultural production. Energy efficiency in livestock production. Energy efficiency in thermal processes of processing and storage of agricultural products.

Energy Saving in Heating Technologies. Sources of heat and electricity. Losses in the transmission of energy. Losses in transformers. Losses in transmission lines. Technical measures to reduce energy losses. Arrangements reduce energy losses.

Biofuels. Resources biofuel in agricultural production. Solid biofuels. Equipment for the preparation and use of solid biofuels. Liquid biofuels. Equipment for the production of bioethanol and biodiesel. Biogas. Technologies and equipment for the production of biogas. Gasification of solid biofuels. Environmental safety of production and use of biofuels

Gas Supply. The main characteristics of gas as an energy source. Devices of the account of gas flow. Switchgears. Consumers.

Small Hydro and Wind Power Stations in Agriculture. Current Trends energy of small rivers and wind to hydro turbines and wind power plants, especially the structures of existing hydro and wind turbines, the theoretical foundations working process and selection of basic settings.

Heating Technologies of Production and Processing of Agricultural Product. Sources of heat. Burning fossil fuels. Boiler systems. Heat. Heating system. Thermal network. Gas agriculture. Alternative heating sources of agricultural production.

Economic Efficiency of Energy Systems in Agriculture. Bases methods for calculating the economic efficiency of energy systems in agriculture. Methods of calculation based on conducting a feasibility analysis of thermal and hydraulic processes occurring in power plants. It uses approaches based on determining the efficiency of the installation, its hydraulic and exergic efficiency.

Optimization of Energy Supply and Energy Saving Systems. The basic methods you can use to optimize power supply systems. Optimization methods based on the determination of thermal and hydraulic losses in power systems, such as heating and water systems, boilers, power plants and other facilities. Special attention is given to the use in energy systems and renewable energy use ekserho-economic analysis.

Nanotechnology of Intensification of Heat and Mass Transfer Processes. Nanotechnologies are an effective tool for intensification of heat and mass transfer in power plants and systems. The analysis of the main approaches that are allowed to apply nanotechnology in agriculture. The basic principles of discrete input pulse energy installations in the agricultural and food production. Using this approach makes it possible to significantly improve the efficiency of thermal power equipment.

Modeling of Heat and Hydrodynamic Processes. Bases mathematical modeling of mass and energy transfer in thermal power plants and systems. The modeling is based on the development of physical models transfer, use transport equations and boundary conditions describing these processes. For the solution of transport equations using numerical methods, including software packages that allow you to get all the local thermal characteristics of the process. Simulation is an effective means for optimizing power equipment.

Integrated Using of Alternative and Renewable Energy Sources. The use of alternative and renewable energy is an effective method of energy saving and energy resources. The principles of these energy sources, which include heat pumps, solar collectors, biogas and wind installations, geothermal installations, etc. Stated the method of calculation and means of the integrated use of various energy sources for various objects and structures APC.

Heat and Mass Transfer of Production and Processing of Agricultural Product. Expounded the basic principles of heat and mass transfer processes in technologies of processing of agricultural products. These processes include energy transfer conduction, convection and radiant heat exchange involving the processes of boiling, condensation and others. The method of calculating these processes and their applications, such as processing, drying and storage of agricultural products.

Cogeneration Plants. The essence of cogeneration and cogeneration technology features. The basic types of cogeneration units by type of power generating equipment, and variety of heat-generating equipment. The analysis of key performance indicators cogeneration plants. Provided by comparing the effectiveness of different types of cogeneration plants and especially their use in agriculture. The basic modes of operation of cogeneration plants and the possibility of increasing the reliability and efficiency of their work. Comparative calculations effectiveness of CHP in different modes of coordination for individual objects agriculture.

**Master's course
in specialty "ELECTRIFICATION AND AUTOMATION OF AGRICULTURE "
branch of knowledge "Techniques and Energetics of Agricultural Production"**

Form of training, licensed number of persons	
– Full-time	70 persons
– Part-time	70 persons
Duration of Training:	
– Full-time educational and professional program	1,5 years
– Full-time education and scientific program	2 years
– Part-time	2 years
Credits:	
– educational and professional program	90 ECTS
– education and scientific program	120 ECTS
Language of Teaching	Ukrainian
Qualification	Research engineer with the electrification of agriculture

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 efficiency based on a systems approach and interdisciplinary learning principles to educate students broadmindedness non-standard thinking, the ability to address overhead and socio-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 Master's program
*Specialization "Computer-integrated Control Systems of Technological Processes in the Fields of Agriculture"***

Research, development and implementation of computer-integrated systems management in farms for the production and primary processing of agricultural products. Technology and mathematical modeling of processes in the areas of agriculture, automated process control systems in the fields of agribusiness.

Areas of employment for graduates

Engineer CEA of poultry, engineer of automated control systems for the production and management of primary milk processing, engineer of ACS of piggery, engineer of ACS in greenhouses, engineer of automated systems at the enterprise.

Specialization "Automation of Technological Processes and Computer-integrated Control Systems of Information and Technological Resources in Agriculture"

Research, development and implementation of computer-integrated control systems of information and technological resources in agriculture. Technology and

mathematical modeling of information and technological resources in agriculture. Automated control systems' information and technological resources in agriculture.

Areas of employment for graduates

Engineer of automated control systems. Engineer of automation and computer-integrated technologies, engineer of automation systems at the enterprise.

Specialization "Electrified Technologies and Electrical Equipment in Animal Husbandry"

Research, development and introduction of modern technologies in electrified farms for the production and processing of agricultural products. Simulation controlled electric actuators and livestock. Design of electrical power and lighting systems and networks in livestock.

Areas of employment for graduates

Electrotechnology of livestock farms. Repair, maintenance and operation of electrical equipment in animal husbandry. Installation works. Design works.

Specialization "Electrified Technologies and Electrical Equipment in Seed and Crop Production"

Research, development and introduction of modern technologies in electrified farms for the production and processing of agricultural products. Modeling and controlled electric actuators in the seed and seedling. Design of electrical power and lighting systems and networks in the seed and seedling.

Areas of employment for graduates

Electrotechnology of livestock. Repair, maintenance and operation of electrical equipment in animal husbandry. Installation works. Design work.

Educational and scientific Master's program

Specialization "Energy Efficient Control Systems of Biotechnical Objects"

Research and development of advanced energy efficiency control systems of biotechnical objects. Technology and mathematical modeling of processes in the areas of agriculture, automated process control systems in agriculture.

Areas of employment for graduates

Engineer of automated control systems, research engineer of research institutions, scientific assistant of research institutions.

Specialization "Electrified Technologies and Electrical Equipment in Agricultural Production"

Improving the efficiency of agricultural production using new technologies of electrification. Modeling and controlled electric actuators in agriculture. Methods of processing quality product in agriculture

Areas of employment for graduates

Engineer electrified technology, research engineer research institutions, research associate research institutions.

Practical training

Practical training is carried out in educational and research facilities of the university: Separated subdivision of NULES of Ukraine "Velykosnytsinske 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 "Kyivsilelectro", regional electricity networks.

Proposed Topics for Master's Thesis

1. Electrification processes in the processing of animal products.
2. Electrification processes in the food industry.
3. Electrification processes in the processing plant production.
4. Automated system of accounting and regulation of the energy resources and energy.
5. Computer-integrated SAR packaging dairy products.
6. Intelligent automated control system TP.
7. Automated Control System TP based networks neuro information.
8. Assessment of quality agricultural Products by visual discharge electrography.
9. Magnetic treatment of water and nutrient fuel solvent in greenhouses.
10. Research ultraviolet radiation on animals.

Academic rights of applicants entering Master course

Applicants with the Diploma of Bachelor can continue training in connected specialties including ones of the field of knowledge "Specific categories", (table 2) and other specialties (table 3) in accordance with the Terms of enrolment to higher educational institutions of Ukraine in 2015 approved by the Order of the Ministry of education and science of Ukraine on October 15, 2014 № 1172 and the Regulations of enrolment to National University of Life and Environmental Sciences of Ukraine (basic institution, Kyiv) for 2015.

Curriculum of Master training in specialty "Electrification and Automation of Agriculture" Educational and professional Master program

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	Philosophy of Science and Innovation	1	90	3
2	Energy Supply of Industry	2	90	3
3	Design of Electrification, Automation and Energy Supply Systems in Agriculture	1	90	3
4	Alternative Energy Sources in Agriculture	1	90	3
5	Electrical Technologies in Agriculture	2	90	3
6	Technologies of Service and Repair of Power Equipment and Means of Automation	1	120	4
7	Safety in the Area (Electricity Safety)	2	120	4
8	Mathematical Ensuring for Master's Programs	2	90	3
9	Information Technologies	2	90	3
10	Computer-integrated Technologies of Electrification and Automation in Agriculture	2	90	3

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
11	Electric Drive of Agricultural Machines, Aggregates and Production Lines	1	90	3
12	Instrument Ensuring of Scientific Researches	1	90	3
Total for standard part			1140	38
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by University				
1	Agricultural Policy	3	90	3
2	Methodology and Organization of Scientific Research on the Basics of Intellectual Property	2	90	3
3	Business Foreign Language	1	150	5
Total (Disciplines offered by University)			330	11
2.2. Disciplines offered by students				
2.2.1. Specialization "Computer-integrated Control Systems of Technological Processes in the Fields of Agriculture"				
1	Automated Control Systems in the Area	2	210	7
2	Engineering-Service of Automation Systems	3	90	3
3	Economic Calculations in Engineering Activities	3	90	3
4	Typical Technological Objects and Processes in the Fields of Agriculture	3	90	3
5	Modeling of Biotechnical Objects in the Fields of Agriculture	3	90	3
6	Methods and Tools of Modern Automated Control of Technological Processes in Area	3	90	3
7	Technical Means of Automation and Equipment of Automated Control Systems	3	90	3
8	Microprocessor Control Systems	3	90	3
9	Optimal Automated Control Systems	3	90	3
10	Information Technologies of Control Systems	2	90	3
Total (Disciplines offered by students)			750	25
2.2.2. Specialization "Automation of Technological Processes and Computer-integrated Control Systems of Information and Technological Resources in Agriculture"				
1	Automated Control Systems in the Area	2	210	7
2	Engineering Service of Automation Systems	3	90	3
3	Economic Calculations in Engineering Activities	3	90	3
4	Typical Technological Objects and Processes in the Fields of Agriculture	3	90	3
5	Modeling of Biotechnical Objects in the Fields of Agriculture	3	90	3
6	Methods and Tools of Modern Automated Control of Technological Processes in Area	3	90	3
7	Technical Means of Automation and Equipment of Automated Control Systems	3	90	3
8	Microprocessor Control Systems	3	90	3
9	Optimal Automated Control Systems	3	90	3
10	Information Technologies of Control Systems	2	90	3
Total (Disciplines offered by students)			750	25
2.2.3. Specialization "Electrified Technologies and Electrical Equipment in Animal Husbandry"				
1	Electric Drive of Actuators in Automated Plants	2	120	4
2	Modeling of Adjustable Electric Drives, Aggregates and Production Lines	3	90	3
3	Electrotechnologies of Agricultural Products Processing	2	90	3
4	Engineering Activities for Maintenance of Electrical Power Systems	3	90	3
5	Electromagnetic Processing of Agricultural Products	3	90	3
6	Design of Electrical Power Installations and Networks	3	90	3

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
7	Design of Lighting Systems and Networks	3	90	3
8	Optical Electrotechnologies	3	90	3
Total (Disciplines offered by students)			750	25
2.2.4. Specialization "Electrified Technologies and Electrical Equipment in Seed and Crop Production"				
1	Electric Drive of Actuators in Automated Plants	2	120	4
2	Modeling of Adjustable Electric Drives, Aggregates and Production Lines	3	90	3
3	Electrotechnologies of Agricultural Products Processing	3	90	3
4	Engineering Activities for Maintenance of Electrical Power Systems	3	120	4
5	Electromagnetic Processing of Agricultural Products	3	120	4
6	Electron-ion Technologies in Agriculture	3	120	4
7	Optical Electrotechnologies	3	120	4
Total (Disciplines offered by students)			750	25
Total for elective part			1080	36
3. OTHER TYPES OF TRAINING				
1	Practical Training	1	300	10
2	Writing and Defense of Master's Thesis	3	180	6
Total			480	16
Total for Specialty			2700	90

**Curriculum of Master training
in specialty "Electrification and Automation of Agriculture"
Educational and scientific Master program**

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	Philosophy of Science and Innovation	1	90	3
2	Energy Supply of Industry	2	90	3
3	Design of Electrification, Automation and Energy Supply Systems in Agriculture	1	90	3
4	Alternative Energy Sources in Agriculture	1	90	3
5	Electrical Technologies in Agriculture	2	90	3
6	Technologies of Service and Repair of Power Equipment and Means of Automation	1	120	4
7	Safety in the Area (Electricity Safety)	2	120	4
8	Mathematical Ensuring for Master's Programs	2	90	3
9	Information Technologies	2	90	3
10	Computer-integrated Technologies of Electrification and Automation in Agriculture	2	90	3
11	Electric Drive of Agricultural Machines, Aggregates and Production Lines	1	90	3
12	Instrument Ensuring of Scientific Researches	1	90	3
Total for standard part			1140	38
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by University				
1	Agricultural Policy	3	90	3
2	Methodology and Organization of Scientific Research on the Basics of Intellectual Property	2	90	3

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
3	Business Foreign Language	1	150	5
Total (Disciplines offered by University)			330	11
2.2. Disciplines offered by students				
2.2.1. Specialization "Energy Efficient Control Systems of Biotechnical Objects"				
1	Automated Control Systems of the Area	2	120	4
2	Typical Technological Objects and Processes in the Fields of Agriculture	3	120	4
3	Modeling of Biotechnical Objects in the Fields of Agriculture	3	120	3
4	Methods and Tools of Modern Automated Control	3	120	4
5	Technical Means of Automation and Equipment of Automated Control Systems	3	120	4
6	Microprocessor Control Systems	4	120	4
7	Engineering Service of Automation Systems	4	120	4
8	Economic Calculations in Engineering Activities	4	120	4
9	Optimal Automated Control Systems	4	120	4
10	Information Technologies of Control Systems	2	120	4
11	Automated Control Systems in the Area	4	120	4
12	Neural Networks in Control Systems	4	120	4
13	Computer Simulation Control Systems in Agriculture	4	120	4
Total (Disciplines offered by students)			1650	55
2.2.2. Specialization "Electrified Technologies and Electrical Equipment in Agricultural Production"				
1	Electric Drive of Actuators in Automated Plants	2	120	4
2	Modeling of Adjustable Electric Drives, Aggregates and Production Lines	3	90	3
3	Electrotechnologies of Agricultural Products Processing	3	90	3
4	Engineering Activities for Maintenance of Electrical Power Systems	3	90	3
5	Electromagnetic Processing of Agricultural Products	3	90	3
6	Design of Electrical Power Installations and Networks	3	90	3
7	Design of Lighting Systems and Networks	3	90	3
8	Optical Electrotechnologies	3	90	3
9	Electron-ion Technologies in Agriculture	3	120	4
10	Electro-technological Methods of Research and Processing of Agricultural Products	2	210	7
11	Mathematical Modeling of Technological Processes in Agriculture	3	180	6
12	Methods and Means of Efficiency Monitoring of Electrical Processing of Agricultural Products	3	180	6
13	Electrified Technology in Agriculture	3	180	6
14	Energy Efficiency of Closed Biosystems	3	150	5
15	Spectrographic Methods of Processing Quality Researching of Agricultural Products	3	150	5
Total (Disciplines offered by students)			1650	55
Total for elective part			1980	66
3. OTHER TYPES OF TRAINING				
1	Practical Training	1	300	10
2	Writing and Defense of Master's Thesis	4	180	6
Total			480	16
Total for Specialty			3600	120

Annotations educational plan disciplines**1. STANDARD ACADEMIC DISCIPLINES**

Philosophy of Science and Innovation. Ideologically and methodological training of students, formation of their philosophical culture as the theoretical basis of university level training. Coverage of philosophical knowledge of the main parts of philosophy that would develop the type of consciousness of students. The philosophical image of science. Philosophical problems of modern science.

Energy Supply of Industry. External electric networks, substations and rural power reserve. The equipment for power stations and substations. Relay protection and automation. Reliability of power supply. The quality of electricity.

Design of Electrification, Automation and Energy Supply Systems in Agriculture. Methodology Electrification system design, automation and energy agriculture. Computer technologies in design. Requirements for projects.

Alternative Energy Sources in Agriculture. Plans and design features of heating using heat of thermal power plants and nuclear power plants, gas compressor stations of main gas pipelines. Method of calculation of heat exchangers for heat recovery ventilation air of livestock premises. Theoretical Foundations of cogeneration – a joint production of heat and electricity. Scheme cogeneration plants executed based on gas turbines, internal combustion engines and more.

Electrical Technologies in Agriculture. Electrophysics, electrochemical, electrobiological factors in nature. The use of strong electric fields. The cultivation of electric shock. Of electric machinery and technology. Magnetic materials processing.

Technologies of Service and Repair of Power Equipment and Means of Automation. Operation of equipment power supply systems of agriculture. Operation of transformer substations, switchgear, power lines, electric, lighting and Irradiation plants, electrically and electric equipment, communication means. Adjustment of sensors, controllers, actuators automatic control systems. The procedure for putting into operation mounted systems. Formation and Organization of instrumentation and automation means an agricultural enterprise. Operation of boilers, heat generators and heaters. Operation of water supply and heating systems. Operation of gas plants. Handling equipment power supply systems of agriculture.

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

Mathematical Ensuring for Master's Programs. Analytical methods of mathematical modeling facilities of agricultural production. Construction of models of typical objects by experiment. Algorithms implementation models for PC. Algorithms of Euler, Runge-Kutta.

Information Technologies. Computer technology visualization modes and parameters of technological facilities and manufacturing processes. Packages for processing applications and information transfer. Technical means of information technology. The global network Internet.

Computer-integrated Technologies of Electrification and Automation in Agriculture. Work in Windows, word processor Word, spreadsheet Excel, image editors, database management system Access, scanning and recognition of texts, work in the computer network system mathematical calculations MathCAD.

Electric Drive of Agricultural Machines, Aggregates and Production Lines. Driving characteristics of machines and mechanisms. The principles and control electronic

circuits. Complete equipment for automatic control. Experimental methods of driving characteristics.

Instrument Ensuring of Scientific Researches. Devices provide accounting of active and reactive power. Regulators of reactive power. Multiple-metering. Devices for control of heat consumption. Counters of water and gas. Devices for measuring the characteristics of agricultural products.

2. ELECTIVE ACADEMIC DISCIPLINES

2.1. Disciplines offered by University

Methodology and organization of research with the principles of intellectual property. The aim of the discipline is formation of the system of knowledge in methodology, theory of method and research process, methodical support of scientific and research activity at the stages of preparation of a Master paper, formation of the ability to organize research of a specific issue using the whole complex of the traditional methods of research including general and special methods. The main task of the theoretical part of the course is introduction to students the current concepts of research creation, the principles of methodology of scientific perception and methods of research. The main task of the practical part is the development of self-education ability, mastering skills of formation and application of perceived methodological position of research. In case of mastering the course students have to improve their skills of search, assortment and processing of scientific information, accurate formulation of a problem, aim, task, object, subject, methods of research. Introduction to students the principles of intellectual property and direction of them to gain knowledge and skills concerning registration of rights of ownership, their protection, commercialization, estimation and management are envisaged.

Business foreign language. The general aim of the program of teaching of foreign language for the professional purpose is formation students' professional linguistic competencies that will contribute to their efficient operating in cultural variety of training and professional environment. The methods of search of new information in another language sources, linguistic methods of analytical study of another language sources are learned. Students study published original literature in another language and increase their lexical and grammatical skills. Methods and linguistic peculiarities of annotation and synopsis of another language sources, the principles of translation of professional oriented another language sources are studied.

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.

Educational and professional Master program

2.2. Disciplines offered by students

2.2.1. Specialization "Computer-integrated Control Systems of Technological Processes in the Fields of Agriculture"

Automated Control Systems in the Area. Principles of the control system. Information channels and their characteristics. Identification control objects. Algorithms

management. Technical means of automation. Reliability and economic efficiency of automation.

Engineering-Service of Automation Systems. Procedure mounted delivery systems in operation. Formation and Organization of instrumentation and automation means an agricultural enterprise. Net after-sales service of power equipment. Group activities with after sales service. Care System as part of the company image - producer.

Economic Calculations in Engineering Activities. Method of cost estimates for the construction of rural energy. Methods of calculating the cost of technical work. Methods of assessing the economic efficiency of engineering solutions.

Typical Technological Objects and Processes in the Fields of Agriculture. Items automation; classification, structure and main characteristics of typical technological facilities, technologies and processes AIC branches. Physics and chemical basis of hydrodynamic, thermal, mass transfer, mechanical, chemical and technological processes. Calculation of the heat and mass transfer processes in agriculture technology processing and storage of agricultural products. Fundamentals of modeling and designing technological devices.

Modeling of Biotechnical Objects in the Fields of Agriculture. Analytical modeling processes. Methods of identification processes. Examples of typical modeling processes. Check adequacy of mathematical models of the process.

Methods and Tools of Modern Automated Control of Technological Processes. Characteristics processes as facilities management and their disturbances. Principles of automated process control systems. Automation of technological processes in crop and livestock production. Principles of the control system. Information channels and their characteristics. Identification and facilities management. Algorithms management. Technical means of automation. Reliability and economic efficiency of automation.

Technical Means of Automation and Equipment of Automated Control Systems. Principles of automation. Information channels and their characteristics. Dentyfikatsiya and facilities management. Algorithms management. Technical means of automation. Reliability and economic efficiency of automation.

Microprocessor Control Systems The architecture of the microprocessor and microcomputer, microprocessor programming in assembly language, microprocessor-based hardware systems. Development and debugging microprocessor systems in agricultural production. Discrete signals, their coding. DAC and ADC. The analysis in the time and frequency domains. Manageability. The synthesis of digital systems. Restrictions in microprocessor control systems.

Optimal Automated Control Systems. Problem optimal control. Criteria optimization in agricultural production. Methods of optimal control theory. Calculus of variations, Pontryagin maximum principle, dynamic programming. Analytical design of optimal controllers. Optimal control with random disturbances. The synthesis of stochastic systems. Optimal observer.

Information Technologies of Control Systems. Computer technology visualization modes and parameters of technological facilities and manufacturing processes. Packages for processing applications and information transfer. Technical means of information technology.

2.2.2. Specialization “Automation of Technological Processes and Computer-integrated Control Systems of Information and Technological Resources in Agriculture”

Automated Control Systems in the Area. Principles of the control system. Information channels and their characteristics. Identification control objects. Algorithms management. Technical means of automation. Reliability and economic efficiency of automation.

Engineering Service of Automation Systems. Procedure mounted delivery systems in operation. Formation and Organization of instrumentation and automation means an agricultural enterprise. Net after-sales service of power equipment. Group activities with after sales service. Care System as part of the company image - producer.

Economic Calculations in Engineering Activities. Method of cost estimates for the construction of rural energy. Methods of calculating the cost of technical work. Methods of assessing the economic efficiency of engineering solutions.

Typical Technological Objects and Processes in the Fields of Agriculture. Automation object; classification, structure and main characteristics of typical technological facilities, technologies and processes AIC branches. Physics and chemical basis of hydrodynamic, thermal, mass transfer, mechanical, chemical and technological processes. Calculation of the heat and mass transfer processes in agriculture technology processing and storage of agricultural products. Fundamentals of modeling and designing technological devices.

Modeling of Biotechnical Objects in the Fields of Agriculture. Analytical modeling processes. Methods of identification processes. Examples of typical modeling processes. Check adequacy of mathematical models of the process.

Methods and Tools of Modern Automated Control of Technological Processes in Area. Characteristics processes as facilities management and their disturbances. Principles of automated process control systems. Automation of technological processes in crop and livestock production. Principles of the control system. Information channels and their characteristics. Identification control objects. Algorithms management. Technical means of automation. Reliability and economic efficiency of automation.

Technical Means of Automation and Equipment of Automated Control Systems. Principles of automation. Information channels and their characteristics. Identification control objects. Algorithms management. Technical means of automation. Reliability and economic efficiency of automation.

Microprocessor Control Systems. The architecture of the microprocessor and microcomputer, microprocessor programming in assembly language, microprocessor-based hardware systems. Development and debugging microprocessor systems in agricultural production. Discrete signals, their coding. DAC and ADC. The analysis in the time and frequency domains. Manageability. The synthesis of digital systems. Restrictions in microprocessor control systems.

Optimal Automated Control Systems. Problem optimal control. Criteria optimization in agricultural production. Methods of optimal control theory. Calculus of variations, Pontryagin maximum principle, dynamic programming. Analytical design of optimal controllers. Optimal control with random disturbances. The synthesis of stochastic systems. Optimal observer.

Information Technologies of Control Systems. Computer technology visualization modes and parameters of technological facilities and manufacturing processes. Packages for processing applications and information transfer. Technical means of information technology.

2.2.3. Specialization "Electrified Technologies and Electrical Equipment in Animal Husbandry"

Electric Drive of Actuators in Automated Plants. Driving characteristics of machines and mechanisms. The principles and control electronic circuits. Complete equipment for automatic control. Experimental methods of driving characteristics.

Modeling of Adjustable Electric Drives, Aggregates and Production Lines. Parameters drive. Simulation parameters drives. Requirements regarding efficiency and ways to support them. Criteria for parameter optimization drives. Optimization methods. Analysis modes of occasions. Management modes of the drive. Technical support.

Electrotechnologies of Agricultural Products Processing. Research and electro-technological processes of electro-technological equipment in terms of agriculture. Electrical installation source and electrophysical processing of agricultural materials. Basic theory using strong electric fields seed treatment considering its features. Ozonation. Processing electric shock. Electro equipment and technology, ultrasound and magnetic materials processing.

Engineering Activities for Maintenance of Electrical Power Systems. The procedure of putting into operation mounted systems. Engineering as an independent field of activity. The range of engineering services. Engineering-consulting firms. Service as a means of creating a system of relations between the company and client. Net after-sales service of power equipment. Care System as part of the company image - producer.

Electromagnetic Processing of Agricultural Products. The mechanism of action of the electromagnetic field in the processing of seed potatoes and aqueous solutions. Indication effect of electromagnetic treatment. Changing the properties of agricultural products in the electromagnetic treatment. Determining the best mode of the electromagnetic treatment. The impact of electromagnetic processing potatoes for plant growth and development, biometric performance, productivity, storage.

Design of Electrical Power Installations and Networks. Calculation methods and electrotechnological electrothermal power plants; methods of calculating electric production lines; designing power grids; characteristics of electrical power supply systems

Design of Lighting Systems and Networks. Design of lighting systems. Types of lighting and their systems. Rationing light level, light level, systems, methods of calculation. Designing lighting networks. The choice of voltage and power schemes, layout of networks. Methods of selection and calculation wirings and cables. Security lighting networks. Features of lighting livestock buildings. Methods for calculating the combined (natural and artificial) lighting. Making the project design.

Optical Electrotechnologies. Technological features radiant energy installations. Designing of optical energy. Designing of microwave radiation. Ultrasonic treatment.

2.2.4. Specialization "Electrified Technologies and Electrical Equipment in Seed and Crop Production"

Electric Drive of Actuators in Automated Plants. Driving characteristics of machines and mechanisms. The principles and control electronic circuits. Complete equipment for automatic control. Experimental methods of driving characteristics.

Modeling of Adjustable Electric Drives, Aggregates and Production Lines. Parameters drive. Simulation parameters drives. Requirements regarding efficiency and ways to support them. Criteria for parameter optimization drives. Optimization methods. Analysis modes of occasions. Management modes of the drive. Technical support.

Electrotechnologies of Agricultural Products Processing. Research and electro-technological processes of electro-technological equipment in terms of

agriculture. Electrical installation source and electrophysical processing of agricultural materials. Basic theory using strong electric fields seed treatment considering its features. Ozonation. Processing electric shock. Electro equipment and technology, ultrasound and magnetic materials processing.

Engineering Activities for Maintenance of Electrical Power Systems. The procedure of putting into operation mounted systems. Engineering as an independent field of activity. The range of engineering services. Engineering-consulting firms. Service as a means of creating a system of relations between the company and client. Net after-sales service of power equipment. Care System as part of the company image - producer.

Electromagnetic Processing of Agricultural Products. The mechanism of action of the electromagnetic field in the processing of seed potatoes and aqueous solutions. Indication effect of electromagnetic treatment. Changing the properties of agricultural products in the electromagnetic treatment. Determining the best mode of the electromagnetic treatment. The impact of electromagnetic processing potatoes for plant growth and development, biometric performance, productivity, storage.

Electron-ion Technologies in Agriculture. Characteristics electric fields and ways of charging particles. Electric separators. Artificial air ionization and electric filters. Elektroaerzolna technology. Power plants of electron-ion technology.

Optical Electrotechnologies. Technological features radiant energy installations. Designing of optical energy. Designing of microwave radiation. Ultrasonic treatment.

Educational and scientific Master program

2.2. Disciplines offered by students

2.2.1. Specialization "Energy Efficient Control Systems of Biotechnical Objects"

Automated Control Systems of the Area. Principles of the control system. Information channels and their characteristics. Identification control objects. Algorithms management. Technical means of automation. Reliability and economic efficiency of automation.

Typical Technological Objects and Processes in the Fields of Agriculture. Automation object; classification, structure and main characteristics of typical technological facilities, technologies and processes AIC branches. Physico-chemical basis of hydrodynamic, thermal, mass transfer, mechanical, chemical and technological processes. Calculation of the heat and mass transfer processes in agriculture technology processing and storage of agricultural products. Fundamentals of modeling and designing technological devices.

Modeling of Biotechnical Objects in the Fields of Agriculture. Analytical modeling processes. Methods of identification processes. Examples of typical modeling processes. Check adequacy of mathematical models of the process.

Methods and Tools of Modern Automated Control. Simulation of technical and biological objects under uncertainty: Markivski random processes. Statistical modeling of random processes. Decision making under uncertainty using gaming techniques. Create and work with databases. Software. Technical support intelligent systems.

Technical Means of Automation and Equipment of Automated Control Systems. Principles of PCS. Information channels and their characteristics. Identification facilities management. Algorithms management. Technical means of automation. Reliability and economic efficiency of automation.

Microprocessor Control Systems. The architecture of the microprocessor and microcomputer, microprocessor programming in assembly language, microprocessor-based hardware systems. Development and debugging microprocessor systems in

agricultural production. Discrete signals, their coding. DAC and ADC. The analysis in the time and frequency domains. Manageability. The synthesis of digital systems. Restrictions in microprocessor control systems.

Engineering Service of Automation Systems. Procedure mounted delivery systems in operation. Formation and Organization of instrumentation and automation means an agricultural enterprise. Net after-sales service of power equipment. Group activities with after sales service. Care System as part of the company image - producer.

Economic Calculations in Engineering Activities. Method of cost estimates for the construction of rural energy. Methods of calculating the cost of technical work. Methods of assessing the economic efficiency of engineering solutions.

Optimal Automated Control Systems. Problem optimal control. Criteria optimization in agricultural production. Methods of optimal control theory. Calculus of variations, Pontryagin maximum principle, dynamic programming. Analytical design of optimal controllers. Optimal control with random disturbances. The synthesis of stochastic systems. Optimal observer.

Information Technologies of Control Systems. Computer technology visualization modes and parameters of technological facilities and manufacturing processes. Packages for processing applications and information transfer. Technical means of information technology. The global network Internet.

Automated Control Systems in the Area. Principles of the control system. Information channels and their characteristics. Identification control objects. Algorithms management. Technical means of automation. Reliability and economic efficiency of automation.

Neural Networks in Control Systems. Basic concepts of neural networks. The properties of the neural network training. Hopfield neural networks, Hemet. Basic concepts of fuzzy logic. Fuzzy sets and fuzzy neural network.

Computer Simulation Control Systems in Agriculture. Methods of computer-modeling systems management (KMSU). Structure and function KMSU. Gathering and processing information. Mathematical modeling. Algorithms of optimal and adaptive management. Implementation of control functions. Examples KMSU in agriculture.

2.2.2. Specialization "Electrified Technologies and Electrical Equipment in Agricultural Production"

Electric Drive of Actuators in Automated Plants. Driving characteristics of machines and mechanisms. The principles and control electronic circuits. Complete equipment for automatic control. Experimental methods of driving characteristics.

Modeling of Adjustable Electric Drives, Aggregates and Production Lines. Parameters drive. Simulation parameters drives. Requirements regarding efficiency and ways to support them. Criteria for parameter optimization drives. Optimization methods. Analysis modes of occasions. Management modes of the drive. Technical support.

Electrotechnologies of Agricultural Products Processing. Research and electro-technological processes of electro-technological equipment in terms of agriculture. Electrical installation source and electrophysical processing of agricultural materials. Basic theory using strong electric fields seed treatment considering its features. Ozonation. Processing electric shock. Electro equipment and technology, ultrasound and magnetic materials processing.

Engineering Activities for Maintenance of Electrical Power Systems. The procedure of putting into operation mounted systems. Formation and Organization of instrumentation and automation means an agricultural enterprise. Net after-sales service

of power equipment. Group activities with after sales service. Care System as part of the company image - producer.

Electromagnetic Processing of Agricultural Products. Research and electromagnetic processes of electro-technological equipment in terms of agriculture. Power sources and installation of electromagnetic processing of agricultural materials, basic theory of strong magnetic fields using seed treatment considering its features. ozonation. Electric pulse technology.

Design of Electrical Power Installations and Networks. Calculation methods and electrotechnological electrothermal power plants; methods of calculating electric production lines; designing power grids; characteristics of electrical power supply systems

Design of Lighting Systems and Networks. Design of lighting systems. Types of lighting and their systems. Rationing light level, light level, systems, methods of calculation. Designing lighting networks. The choice of voltage and power schemes, layout of networks. Methods of selection and calculation wirings and cables. Security lighting networks. Features of lighting livestock buildings. Methods for calculating the combined (natural and artificial) lighting. Lighting. Making the project design.

Optical Electrotechnologies. Technological features radiant energy installations. Designing of optical energy. Designing of microwave radiation. Ultrasonic treatment.

Electron-ion Technologies in Agriculture. Characteristics electric fields and ways of charging particles. Electric separators. Artificial air ionization and electric filters. Power plants of electron-ion technology.

Electro-technological Methods of Research and Processing of Agricultural Products. Research and electro-technological processes of electro-technological equipment in terms of agriculture. Electrical installation source and electrophysical processing of agricultural materials. Basic theory using strong electric fields seed treatment considering its features. Ozonation. Processing electric shock. Electro equipment and technology, ultrasound and magnetic materials processing.

Mathematical Modeling of Technological Processes in Agriculture. Analytical Methods of mathematical modeling of objects agricultural production. Methods of mathematical models. Construction of mathematical models electrotechnological equipment analytical method and the results of the experiment. Analysis models and their optimization

Methods and Means of Efficiency Monitoring of Electrical Processing of Agricultural Products. The main categories and standards in reliability. The quality of agricultural products. Man-made risks in the energy sector. Environmental aspects electrification of agriculture.

Electrified Technology in Agriculture. The use of strong electric fields. The cultivation of electric shock. Energy efficient electron-ion technology in agricultural production. Thermoelectric converters and installation. Electrolysis feed electroosmosis, magnetic water treatment, ultrasound and electro diagnostics.

Energy Efficiency of Closed Biosystems. Techniques and methods of calculating energy efficiency Biosystems closed. Concepts and definitions Biosystems and their characteristics. Performance measures and their calculation. Optimizing energy efficiency.

Spectrographic Methods of Processing Quality Researching of Agricultural Products. We study the types of spectrometry, nuclear magnetic resonance (NMR), electron - magnetic resonance imaging (EMRT), electron paramagnetic resonance (EPR), optical spectrometry. We study the spectral characteristics corresponding change in the quality of agricultural products after various treatments.

**EDUCATIONAL AND RESEARCH INSTITUTE
OF FORESTRY AND PARK GARDENING**

Director – Doctor of Agricultural Sciences, Professor Petro I. Lakyda

Tel: (044) 527-85-28

E-mail: lakyda@nubip.edu.ua

Situated: educational building №1, room 119

The ERI organizes and coordinates training of masters in the field:

8.05180101 “Wood processing technologies”

Graduating department:

Woodworking technologies

Tel.: (044) 527-81-67

E-mail: opinchewskaya@gmail.com

Head of the Department – doctor of science, professor Olena Pinchevska

8.09010301 “Forestry”

Graduating departments:

Forest Biology and Wildlife Management

Tel.: (044) 527-82-38

E-mail: biol_misl_kaf@ukr.net

Head of the Department – doctor of science, professor Anatoly Goychuk

Forest management.

Tel.: (044) 527-83-70

E-mail: lakyda@nubip.edu.ua

Head of the Department – doctor of science, professor Petro Lakyda

Silviculture

Tel.: (044) 527-82-82

E-mail: levchenko@nubip.edu.ua

Head of the Department – doctor of science, professor Anatolii Bondar

Forest melioration and optimization of forest-agricultural landscapes

Tel.: (044) 527-82-37

E-mail: yukhnov@ukr.net

Head of the Department – doctor of science, professor Vasily Yukhnovsky

Reforestation and afforestation

Tel.: (044) 527-87-47

E-mail: fmbrovko@ukr.net

Head of the Department – candidate of Agricultural Sciences, professor Viktor

Maurer

Forest Mensuration and inventory

Tel.: (044) 527-85-23

E-mail: aagirs@ukr.net

Head of the Department – doctor of science, professor Girs Oleksandr

8.09010302 "Hunting industry"

Graduating departments:

Forest Biology and Wildlife Management

Tel.: (044) 527-82-38

E-mail: biol_misl_kaf@ukr.net

Head of the Department – doctor of science, professor Anatoly Goychuk.

8.09010303 "Park and Gardening Management"

Graduating departments:

Landscape architecture and landscape construction:

Tel.: (044) 527-82-96

E-mail: stplyt@yandex.ru

Head of the department – candidate of Biological Sciences, associated Professor
Irina Sidorenko

Landscape gardening and floristic:

Tel.: (044) 258-47-27

E-mail: sp_fito_pzs@ukr.net

Head of the department – doctor of Biological Sciences, Professor Serhii Popovych

**Master's course
in specialty "WOOD PROCESSING TECHNOLOGIES"
branch of knowledge "Wood processing"**

Form of training, licensed number of persons	
– Full-time	40 persons
– Part-time	40 persons
Duration of Training:	
– Full-time educational and professional program	1,5 years
– Part-time	2 years
Credits:	
– educational and professional program	90 ECTS
Language of Teaching	Ukrainian
Qualification	Master of woodworking 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 Master's program

Specialization "Modern woodworking technologies"

The basis of the master's program is a systematic approach to the study of woodworking technology and forming of students' ability to use rationally the equipment, wood and energy. 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, 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 for graduates

The masters of "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, Ukrainian Research Institute of Nanobiotechnologies, government and commercial woodworking and furniture 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, senior researcher, lecturer, assistant in research and educational institutions, to participate in the international research projects.

Proposed Topics for Master Theses

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.

Academic rights of applicants entering Master course

Applicants with the Diploma of Bachelor can continue training in connected specialties including ones of the field of knowledge "Specific categories", (table 2) and other specialties (table 3) in accordance with the Terms of enrolment to higher educational institutions of Ukraine in 2015 approved by the Order of the Ministry of education and science of Ukraine on October 15, 2014 № 1172 and the Regulations of enrolment to National University of Life and Environmental Sciences of Ukraine (basic institution, Kyiv) for 2015.

Curriculum of Master training in specialty "Wood processing technologies" Educational and qualification Master program

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	Labor protection (in the production industry and educational and research institutions)	3	90	3
2	Pedagogy and teaching methods in higher education	2	60	2
3	Intellectual property	2	60	2

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
4	Theory And Practice Of Wood Cutting	1	180	6
5	Theory Of Thermal Treatment Of Wood	2	180	6
6	Theory And Technology For Agglutination Of Wood	2	180	6
7	Actual Problems Of Mechanical Wood Working	1	180	6
8	Philosophy of Science	1	90	3
Total for standard part			1020	34
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by University				
1	Forest policy	1	90	3
2	Foreign language (professional orientation) .	1,2	180	6
3	Methodology and organization of scientific research on the basics of intellectual property	2	90	3
Total (Disciplines offered by University)			360	12
2.2. Disciplines offered by students				
2.2.1. Specialization "Modern woodworking technologies"				
1	Planning At The Woodworking Industry	3	120	4
2	Simulation And Optimization Of Manufacturing Processes	3	120	4
3	Planning and design of wood	2	180	6
4	Ergonomics of furniture products	1	90	3
5	Technology Of Special Woodworking Industries	3	90	3
6	Management Of Timber Drying Quality	3	90	3
7	Innovative woodworking machinery	3	90	3
8	Foreign trade in the wood-processing enterprises	3	90	3
Total (Disciplines offered by students)			870	29
Total for elective part			1230	41
3. OTHER TYPES OF TRAINING				
1	Production Practice	1, 2	270	9
2	Preparation and defense of master's thesis	3	180	6
Total			450	15
Total for Specialty			2700	90

Annotations educational plan disciplines

1. STANDARD ACADEMIC DISCIPLINES

Labor protection (in the production industry and educational and research institutions). System safety standards and occupational health, protection systems of the human body from: heat balance disorders, harmful effects of evaporation and gas, industrial dust, noise, vibration, electric current. Fire protection systems, safety systems at sites State Committee.

Pedagogy and teaching methods in higher education. Scientific concept of pedagogy as a science, methodological foundations, main categories, the field of pedagogy, methods of educational research, the nature of the learning process, its drivers' forces didactic principles, forms and methods of training and education, types of education, educational technology.

Intellectual property. The concept of intellectual property. Intellectual property as a result of creative activity. Intellectual property as a right. The evolution of intellectual property. Intellectual property rights. Classification of intellectual property rights. Of copyright and related rights. Subjects intellectual property rights. The system of Ukraine legislation on intellectual property.

Philosophy of Science. Philosophy and its object, the function and place in contemporary culture. Knowledge as a subject of philosophical analysis. Variety of forms of knowledge. Features of scientific knowledge. Methods and forms of scientific knowledge. Philosophy of science, its genesis and development stages. Philosophy of science in the XX century. Theoretical models and laws of science. Ontological problems of modern science. Logical and epistemological problems of modern science. Axiological problems of modern science. Historical and philosophical questions: from antiquity to the present. Ontology. Epistemology. Philosophy of Science, Logic and Methodology of scientific knowledge. Social Philosophy.

Theory and Practice Of Wood Cutting. 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.

Theory of Thermal Treatment Of Wood. Convective heat transfer. Similarity theory. Heat treatment of wood. Technology and equipment of the heat treatment. Heat and moisture exchange in the drying process. Aerodynamics. Equipment and technology of sheet and powdered materials drying. Alternative heat sources.

Theory and Technology For Agglutination Of Wood. Structure and properties of the wood composite materials. Modern understanding of the mechanisms of wood composite materials creation. Polymers destruction mechanism. Kinetic concept of strength. Formation terms of the adhesive joints. Basics of the compaction theory. The essence of the compaction process. Modification of wood composites.

Actual Problems Of Mechanical Wood Working. Theoretical foundation of wood cutting and wood-based materials, the direction of the cutting theory, ways of improving of wood cutting tools and woodworking equipment, modes of cutting, milling, turning, grinding and deep processing of wood, ways of increasing the period of stability of wood-cutting tools.

2. ELECTIVE ACADEMIC DISCIPLINES

2.1. Disciplines offered by University

Foreign language (professional orientation). Speech Etiquette communication: language models salutation, civility, forgiveness, coordination and more. Linguistic and cultural aspects of international exhibitions. Lexico-grammatical and a minimum of linguistic communicative level presentations. Professionally-oriented foreign-language sources. Methods of finding new information in the foreign-language sources. Linguistic methods for analytical processing of foreign sources. The study of foreign language printed original literature and expansion of vocabulary and grammatical skills. Methods and linguistic features of annotation and summarization of foreign sources. Electronic foreign-language sources. Finding information on the Internet by using keywords. Fundamentals of Translation professionally oriented foreign-language sources. Machine translation of large volumes of foreign language information. Lexical minimum computer (information) technology.

Methodology and organization of scientific research on the basics of intellectual property. 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.

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.

Educational and professional Master's program

2.2. Disciplines offered by students

2.2.1. Specialization "Modern woodworking technologies"

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.

Ergonomics of furniture products. Methods, Theory and Practice of ergonomics, ergonomic requirements and basic standards required in the design.

Planning At The Woodworking Industry. Subject, method and objectives of the discipline. The system of plans operated at the woodworking industry. Business planning at the workplace. Regulatory information management of the planning process. Production program and its formation. Work and wages planning over/on plants. Planning of production costs according to the market conditions. Financial planning for the woodworking enterprises.

Innovative woodworking machinery. Modern technical solutions in the construction of equipment for processing wood and wood materials, construction of modern technological equipment.

Management Of Timber Drying Quality. The quality of timber drying; the factors influencing the achievement of the required drying quality; simulation of the drying process, taking into account the characteristics of the probabilistic dryers and wood features, the selection of the optimal drying mode, drying quality prediction.

Planning and design of wood. Designs, classification, connections for wood products, the technology of design, production and design, ergonomics requirements

Simulation And Optimization Of Manufacturing Processes. Assessment of the main parameters of the statistical population. Analysis of the functional dependencies from the parameters of influence. The method of the smallest squares for the unifactor models construction. Planning principles the full factor experiments. Construction of the mathematical models using the experimental plans of the second and third order. Optimization of the study objects by the coordinate-wise search and steep climb. Simplex method to optimize the planning of research facilities.

Foreign trade in the wood-processing enterprises. Purpose of the course - acquisition of theoretical foundations in the area of foreign trade the forestry sector, and to develop practical skills and the ability to apply the acquired knowledge in export-import operations woodworking industry.

**Master's course
in specialty "FORESTRY"
branch of knowledge "Agriculture and Forestry"**

Form of training, licensed number of persons	
– Full-time	100 persons
– Part-time	75 persons
Duration of Training:	
– Full-time educational and professional program	1,5 years
– Part-time	2 years
Credits:	
– educational and professional program	90 ECTS
Language of Teaching	Ukrainian
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 Master's program
*Specialization "Sylvics and practical silviculture"***

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 for 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, engineer of forest use, forestry engineer, engineer of forest plantations) Ukrainian center for training, retraining and development of forestry "Ukrtsentrkadrylis" related higher education institutions of I-IV accreditation levels, zoological parks, the Nature Reserve fund, Ukrainian State design Institute of Forestry "Ukrdiprolis", Ministry of Ecology and Natural Resources of Ukraine (researcher).

Specialization "Forest melioration"

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 for 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 (ranger, chief ranger, forestry engineer, forestry engineer, agroforestmeliorator), Ukrainian Research Institute of Forestry and agroforestry, Ukrainian center for training, retraining and advanced training of forestry "Ukrtsentrkadrylis" related higher education institutions of I-IV accreditation levels, zoological parks, the Nature Reserve Fund, Ukrainian State Design Institute of Forestry "Ukrdiprolis", Ministry of Environment and Natural Resources of Ukraine (researcher).

Specialization "Forest Protection"

The program focuses on the cultivation of complex professional knowledge and practical skills for developing bio-ecological fundamentals of a comprehensive protection and recovery of forest biomes, researching forest pathogens and improving system measures to combat them.

Areas of employment for graduates

Post-graduates are employed in such enterprises: state forestry and hunting enterprises of the State Agency of Forest Resources of Ukraine (as forest ranger, chief forest ranger, forestry engineer, forestry engineer, forest protection engineer), State forest protection association (forest pathologist, chief forest pathologist), Ukrainian center for training, retraining and advanced training of forestry, associated higher education institutions of I-IV accreditation levels, zoological parks and Nature Reserve Fund institutions, Forestry Project Institute, Ministry of Ecology and Natural Resources of Ukraine (researcher positions).

Specialization "Renewal and breeding of the forest"

Program foresees the deep capture of theoretical knowledges and newest technologies from organization and exploitation of permanent forest seed base, forest seed, microklonal 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 productivity of the forests of silvicultural methods.

Areas of employment of graduates

Upon termination of city council graduating students can be employed on such enterprises: State forestry and huntings 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.

Specialization "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 for 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 (researcher).

Proposed Topics for Master Theses

1. Analysis and improvement of methods for stands growing stock assessment of forest enterprise.
2. Role of erosion and reclamation properties ravine and gully vegetation in forest enterprises.
3. Sanitary condition of arboretum: cells of pathogens and insect pests.
4. Increasing of productivity and improving of the quality of the forest plantations by care cuttings in forestry enterprises.
5. Improvement of forest fire protection in forestry enterprises.
6. An improvement of high-quality composition and increase of the productivity of the forest planting is in forest enterprises.
7. Natural renewal of main forestry breeds is in the prevailing types of site conditions in lisogospodarskih enterprises.
8. Ways of perfection of growing of forest cultures are in forestry enterprises
9. Sanitary condition Arboretum: cell pathogens and insect pests.
10. Current status and characteristics game management in Ukraine.

Academic rights of applicants entering Master course

Applicants with the Diploma of Bachelor can continue training in connected specialties including ones of the field of knowledge "Specific categories", (table 2) and other specialties (table 3) n accordance with the Terms of enrolment to higher educational institutions of Ukraine in 2015 approved by the Order of the Ministry of education and science of Ukraine on October 15, 2014 № 1172 and the Regulations of enrolment to National University of Life and Environmental Sciences of Ukraine (basic institution, Kyiv) for 2015.

Curriculum of Master training in specialty "Forestry" Educational and qualification Master program

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	Philosophy of Science	1	120	4
2	Office of Forestry	1	120	4
3	Regulation of forest productivity	1	150	5
4	Safety labor	1	120	4
5	Information technology in forestry	1	120	4
6	Planning Forestry	1, 2	180	6
7	Psychology of Management	3	120	4
Total for standard part			930	31
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by University				
1	Forest policy	1	90	3
2	Business foreign language	1	90	3

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
1	Methodology and organization of scientific research on the basics of intellectual property	2	90	3
Total (Disciplines offered by University)			270	9
2.2. Disciplines offered by students				
2.2.1. Specialization "Silvics and practical silviculture"				
1	Forest logging	2, 3	150	5
2	Forest roads and forest vehicles	2	90	3
3	Forestry products study	2	90	3
4	Wood processing	2	90	3
5	Game science	2	90	3
6	Forest tapping	2	90	3
7	Forest Ecology and typology	3	90	3
8	Increasing the productivity of forests by forestry methods	3	120	4
9	Industrial methods of forest growing	3	60	2
10	Non- wood products and adverse use of forests	2	90	3
11	Biological bases of thinning	3	90	3
Total (Disciplines offered by students)			1050	35
2.2.2. Specialization "Forest melioration"				
1	Inventory of protective plantations	2	90	3
2	Erosion science	2	90	3
3	Forest land reclamation	2	90	3
4	Forest-agricultural landscapes	2	90	3
5	Systems of erosion soils control	2-3	180	6
6	Protective afforestation	3	120	4
7	Optimization of forest-agricultural landscapes	3	120	4
8	Zonal anti-erosion systems	3	90	3
9	Protective plantations in the ways vehicles	2	90	3
10	Hydrotechnical reclamation	2	90	3
Total (Disciplines offered by students)			1050	35
2.2.3. Specialization "Forest Protection"				
1	Forest pathology	2	120	4
2	Mathematical modeling of pest and pathogen populations	3	90	3
3	Forest nematology	2	90	3
4	Technology integrated protection	2,3	240	8
5	Diagnosis of pests and pathogens	2	90	3
6	Woody plants immunity to pathogens	2	120	4
7	Forecast pathogens and pests	3	120	4
8	Bacterioses forest tree species	2	90	3
9	Mycotrophy woody plants	3	90	3
Total (Disciplines offered by students)			1050	35
2.2.4. Specialization "Renewal and breeding of the forest"				
1	Modern technologies of nursery	2	180	6
2	Microclonal propagation of woody plants	2	150	5
3	Forestry methods of rehabilitation of the technogenic-broken earth	3	90	3
4	Forest plantations	3	120	4
5	Ecological bases of reforestation and afforestation	2	120	4
6	Increase of the productivity of the forests by forestry	3	120	4
7	Forestry sort study	2	90	3
8	Forest plants of green belts	2	90	3
9	Application of fertilizers in forestry	3	90	3
Total (Disciplines offered by students)			1050	35

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
2.2.5.Specialization "Management of forest resources and forestry business"				
1	Management of forest resources	2, 3	150	5
2	Forest commodity science	2	90	3
3	Information systems in forestry	2	120	4
4	Finances	2	90	3
5	Economics of nature use	2	90	3
6	Foreign trade in forest sector	2, 3	90	3
7	GIS in forestry	3	120	4
8	Forest Productivity Modeling	3	120	4
9	Marketing in forestry	2	90	3
10	Computer technology in forestry	3	90	3
Total (Disciplines offered by students)			1050	35
Total for elective part			1320	44
3. OTHER TYPES OF TRAINING				
1	Production Practice	1, 2	270	9
2	Preparation and defense of master's thesis	3	180	6
Total			450	15
Total for specialty			2700	90

Annotations educational plan disciplines

1. STANDARD ACADEMIC DISCIPLINES

Psychology of Management. The purpose and main objectives of the course is to introduce Master of Management Psychology as a science that studies the patterns of management, the role of psychological factors in the management, psychological decision-making, methods of optimal use of knowledge about the structure of the individual, group dynamics, how accurate mastering, restoration and interpretation basic concepts of psychology of management, an effective competition and the application of management skills.

Philosophy of Science. Philosophy and its object, the function and place in contemporary culture. Knowledge as a subject of philosophical analysis. Variety of forms of knowledge. Features of scientific knowledge. Methods and forms of scientific knowledge. Philosophy of science, its genesis and development stages. Philosophy of science in the XX century. Theoretical models and laws of science. Ontological problems of modern science. Logical and epistemological problems of modern science. Axiological problems of modern science. Historical and philosophical questions: from antiquity to the present. Ontology. Epistemology. Philosophy of Science, Logic and Methodology of scientific knowledge. Social Philosophy.

Office of Forestry. Provides a systematic approach to the study of production management, mastery of organizational, functional and official regulation of the business of forestry, assessing personal and professional qualities of workers, developing creative approaches to reasoning and decision making, taking into account the specific characteristics and forest production.

Planning Forestry. Subject, method and objectives of the discipline. Basic principles and methods of planning in market conditions. The system plans that operate in the forestry industry. Methodology formation of tactical and strategic plans for forest production. Regulatory information management planning process. Analysis of the implementation plan of the enterprise for the last time. The product and its formation.

Business planning for forest enterprises. Plan your work and wages in forest enterprises. Planning logistics for l/d plants. Planning costs of forest products in market conditions. Financial planning for forest enterprises. Features pricing and their bottom Forestry enterprise.

Regulation of forest productivity. The discipline is studied after students have covered the tasks on the program issues in Silviculture, Forest Measuring, Forest Plantation, Forest and Hydro technical Melioration, Forest Selection and Genetics, that enables them to solve comprehensively the problem of forest productivity and improving their quality. In the course underlined the notion productivity and its kinds, nature of wood productivity, and the ways of its increasing by both silviculture and reforestation methods and also genetics and selection base.

Safety labor. Legislation on health. Fundamentals of occupational health and industrial hygiene. Providing first to medical care. Providing healthy working conditions in forestry.

Information technology in forestry. The subject aims to study the basic information tools for forest management and processing information for decision-making. Working with databases, standard office applications, network tools, database "forest management".

2. ELECTIVE ACADEMIC DISCIPLINES

2.1. Disciplines offered by University

Business foreign language. Speech Etiquette communication: language models salutation, civility, forgiveness, coordination and more. Linguistic and cultural aspects of international exhibitions. Grammatical and a minimum of linguistic communicative level presentations. Professionally-oriented foreign-language sources. Methods of finding new information in the foreign-language sources. Linguistic methods for analytical processing of foreign sources. The study of foreign language printed original literature and expansion of vocabulary and grammatical skills. Methods and linguistic features of annotation and summarization of foreign sources. Electronic foreign-language sources. Finding information on the Internet by using keywords. Fundamentals of Translation professionally oriented foreign-language sources. Machine translation of large volumes of foreign language information. Lexical minimum computer (information) technology.

Methodology and organization of scientific research on the basics of intellectual property. The concept of scientific knowledge, science, classification and basic science concepts of the content of research are expand. General information about the methodology and classification of research, especially research in the forest and methods used for this purpose are set out. The questions on planning and consistency of research students and young researchers working on the scientific literature are set out.

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.

Educational and professional Master's program**2.2. Disciplines offered by students****2.2.1. Specialization "Sylvics and practical silviculture"**

Forest logging. Technology of the upper warehouses, loading and unloading at upper warehouses in the plains and mountains conditions. Lower warehouses: organization of work at lower landing. Vehicles and transportation: optimization of the parameters of the vehicle. Downloads of wood to wagons. Technology and rules. Export of products.

Forest roads and forest vehicles. Study course "Forest roads and forest vehicles" forms the scientific knowledge concerning the design, construction and maintenance of forest roads and vehicles, which can effectively solve the problem of reforestation, forest protection organization of forest management and apply their received skills in practice .

Forestry products study. The structure of wood, its physical and mechanical properties. Defects of wood. Properties, methods of drying and storage of timber. Accounting, sorting and labeling. Requirements for materials.

Wood processing. Methods for mechanical processing of wood. Elementary cutter. Wood cutting resistance, strength and power of cuts. The main types of woodworking machines. Wood on lower warehouses and woodworking shops.

Game science. The history of hunting and game management. Systematics and biology of game species. Game management. Hunting ordering, inventory and bonitation of hunting grounds. Methods and tools for hunting wildlife. Types of hunting products. Wildlifebreeding. Fur farming and commodity study. Breeding of hunting dogs. Hunting legislation. The Nature Conservation and protection. World practice, economics, organization and planning of game management.

Forest tapping. Knowledge of the: anatomic structure of resinaceous system, properties of resin and processed products, stimulants for improving receiving of resin, tools and accessories for tapping work, tapping techniques and technology, technology of chemical processing of wood, resin and pine needles.

Forest Ecology and typology. The study of forest ecology the necessary theoretical knowledge of forest ecology and skills for management and restoration of forest ecosystems has formed. The basic concept autecology synecology and the impact of environmental factors on forest ecosystems are studied. The need for ecological approaches to studying the nature of the forest is reveals. Ecological principles approach to the study the processes of formation of forests, forest care outlined the concept of forest typology, its development and use for the purposes of science and practice are emphasizes.

Increasing the productivity of forests by forestry methods. Based on in-depth study of the formation of organic substances in woody plants the of ways silvicultural effect on the activation of growth processes to improve wood productivity of forests and improve the quality of future stands are considered. The place of forestry sciences of Ukraine in international structures is studied.

Industrial methods of forest growing. Potential productivity of forest plantation and selection of woody plants, optimizing of habitat conditions and principles of organization of forest plantations, regional technology of conifer plantations of forest woody plants and regional technology of plantation of forest deciduous woody plants are studied.

Non-wood products and adverse use of forests. *Types of non-timber forest* products and methods of rational utilization and ways to improve the quality and productivity of forest fruit plants, medicinal plants, grasslands, methods of harvesting discipline are studying. The extraction technology of birch sap and growing forest fruit

plants on plantations are considered. Honey plants and their resources and the ways to increase it amount in the forests of Ukraine are studied.

Biological bases of thinning. Mechanism of thinning stands and its influence to change lighting and microclimate in forests that has a positive effect on physiological processes in woody plants, their growth and development are revealed.

2.2.2. Specialization "Forest melioration"

Inventory of protective plantations. Basics of ordering protective plantations. Legal basis of regulation of protective vegetation. Agroforestry regulation of protective forest plantations on agricultural lands. Contemporary forest management.

Erosion science. The concept, classification and categories of soil erosion. Water erosion: ancient and modern, factors of development, physical properties and erosion of rain, runoff energy structure. Wind erosion (deflation) dust storms. Prediction of erosion modeling of deflation. Research. Erosive zoning. Methods and properties of eroded soils. Justification zone of erosion.

Forest land reclamation. Objects and types of land reclamation. Forestry of disturbed lands. Value of bioecological characteristics of trees and shrubs species for forest restoration. Technology of plantation establishment on disturbed lands. Ecological and economic aspects of forest land reclamation.

Forest-agricultural landscapes. Forest and field. Structure of forest-agricultural landscape. Features of protective forest plantations on agricultural land.

Systems of erosion soils control. Rationale for zonal systems. The system measures against water erosion: organizational and economic, agronomic and agroforestry, hydraulic measures. The set of measures to combat wind erosion (deflation). Erosion in mountainous areas and measures to combat it. Features of zonal systems. Economics and Organization works to protect the soil from erosion.

Optimization of forest-agricultural landscapes. Crop rotations and farming systems. Land Management and agroforestry ordering. Organization of erosion area. Agroforestry plantations in the structure of FAL - types, placement, efficiency. Forest area. Principles of creation of FAL. The criterion of optimality, optimization model FAL. System of normative reference data for assessing environmental and economic efficiency of FAL.

Zonal anti-erosion systems. Rationale for zonal systems. The system measures against water erosion: organizational and economic, agronomic and agroforestry, hydraulic. The set of measures to combat wind erosion (deflation). Erosion in mountainous areas and measures to combat it. Features of zonal systems. Economics and Organization works to protect the soil from erosion.

Protective afforestation. The theoretical justification for the use of protective plantations. Features of water erosion and deflation of soils and expression of harmful climatic effects. Shelter afforestation. Protective afforestation as part of the zone of erosion. Agroforestry plantations on sand, in the mountains, on reclaimed lands and waterways transport.

Protective plantations in the ways vehicles. Experience of the protective afforestation in the ways vehicles. Types of protective forest plantations, their properties and accommodation. Forms of snow deposits. Categories of snow accumulation ways of transport. Design of protective forest plantations in the ways of transport. Cost-effectiveness of afforestation in the ways vehicles.

Hydrotechnical reclamation. Environmental aspects of hydrotechnical melioration. Key elements of hydrology, hydraulics and hydrometry. Irrigation and water supply. Drainage of forest lands. Irrigation. Irrigation regime. Irrigation system. Salinization of soils and how they are demineralized.

2.2.3. Specialization "Forest Protection"

Forest pathology. The theoretical principles of infestation and biological protection from pathogens. Genetic interactions between host plant, pathogen and environment.

Mathematical modeling of pest and pathogen populations. Types of mathematical models. Technological stages of mathematical modeling. Theories of mass reproduction of pests and pathogens. Regulatory mechanisms of population dynamics. Forest stand resistance, pathogen dynamics, and correlation analysis.

Forest nematology. Morphology, biology, ecology and systematics nematodes. The relationship of nematodes in plant groups. Nematodosis in tree crops and nurseries. Useful nematodes. Antinematodes measures in forest protection.

Technology integrated protection. Forest protection enterprises and their goals. Forest pathology control. Pest accounting and population forecast. Forest entomology examination. Forest entomology monitoring. Planning forest protection operations and assessing their effectiveness. Forest quarantine. Mechanical, physical, biological, chemical, and genetic methods. Bacterial, fungal and viral agents. Antibiotics.

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

Woody plants immunity to pathogens. Passive and active natural immunity. Methods of artificial propagation of active biological resistance of woody plants. Methods of hybrid woody plant development and evaluation.

Forecast pathogens and pests. Short-term and long-term forecasts for major pathogens and pests for the purpose of timely introduction of prevention and control measures.

Bacteriosis forest tree species. Plant pathogenic bacteria in general forest pathology. Morphological, biological, physiological and cultural characteristics of bacteria. Classification and taxonomy of bacteria. Reproduction and dissemination of bacteria. Bacterial diseases of forest plantations.

Mycotrophy woody plants. Structure, nutrition, growth and development of fungi. Technology of mushroom cultivation. Protection of mushrooms against pests and pathogens.

2.2.4. Specialization "Renewal and breeding of the forest"

Modern technologies of nursery. Growing of planting-stock is with the closed rootage. Container growing of propagating material. Experience of creation of nurseries abroad.

Microclonal propagation of woody plants. Morphogeny and regeneration of invitro. Making healthy of arboreal plants. Adaptation of plants-regenerated.

Forestry methods of rehabilitation of the technogenic-broken earth. Technogenesis. Regional and technological features of creation of the forest planting on earth, that tested contamination. Features of creation of the forest planting on earth, that tested technogenic influence.

Forest plantations. Possible productivity of forest plantations and selection of arboreal plants. Optimization of terms of habitat and principles of organization of forest plantations. Regional technologies of creation of forest plantations of coniferous arboreal plants. Regional technologies of creation of forest plantations of leafy arboreal plants.

Ecological bases of reforestation and afforestation. Factors are mechanisms and conformities to law of forming of forest cenosis. Biocenotic successions of forest structures cultivated area. Silvicultural and ecological districting of Ukraine. A recreation of

forest cenosis is in different cultivated areas. A recreation of forest cenosis is on unforest lands. Ecological rehabilitation of the broken lands by silvicultural methods.

Increase of the productivity of the forests by forestry. The silvicultural methods of increase of the productivity of the forest planting are considered due to the improvement of types of forest cultures, application of fertilizers, and also due to the reconstruction of the low-value stands, creation, under tent cultures and by reduction of introduction.

Forestry seed study. Modern normative and legal base of high quality forest seed. Organization of seed base. Temporal, permanent seed areas and arcival-pestle plantations. Measures of improvement and stimulations of seed are on permanent lisonasinniv objects. Methods of defence of harvest of forest seed are from wreckers and exciters of illnesses.

Forest plants of green belts. Classification and principles of forming of the forest-park planting. Composition principles of forming of the forest-park planting. Silvicultural methods of improvement of sanitary-hygenic properties of forest-park objects. A landscape reconstruction is in the suburban forests.

Application of fertilizers in forestry. Theoretical principles of the use of fertilizers. Modern types of fertilizers are their description and features. Choice of fertilizers and determination of doses of their bringing. The systems and features of application of fertilizers are on the objects of permanent seed base, in nurseries, forest planting and forest plantations. An estimation of forestry efficiency and ecofriendliness of application of different types of fertilizers is in forestry.

2.2.5. Specialization "Management of forest resources and forestry business"

Management of forest resources. Description and main features of management of forest resources and forestry businesses. Methods inform decisions in the management of forest resources. The economic risks associated with the management of forest resources and forest business. Management of forest resources in crisis situations. Management of forest resources on the basis of sustainable development. Management of forest resources in the natural reserve fund. Conflicts in forest use: theory and management. Strategic management in forestry: theoretical foundations and features.

Forest commodity science. Structure of wood, its physical and mechanical properties. Defects of wood. Properties, methods of drying and storage of timber. Accounting, sorting and labeling. Requirements for raw materials.

Information systems in forestry. The subject aims to study main information tools for acquiring forest management information and its processing for decision-making support. Work with databases, standard office applications, network tools, database management system "Forest resources management".

Finances. Theoretical Foundations of Finances. Historical aspects of finances origin and development. System of National Accounts. Financial System of Ukraine. Theoretical basis of enterprise' finances. Money receipts and expenditures of forestry enterprises. Settlement of forestry enterprises. Taxation of forest enterprises. Theoretical basis of origin and circulation of money. The role and function of credit in financial system.

Economics of nature use. Involves study of causes of ecological and economic problems, setting goals and priorities of sustainable development of different areas of environmental management, environmental and economic substantiation of efficiency of management decisions in environmental management, mastering economic evaluation of natural resources, practical skills in formation and use of environmental policy instruments in framework of economic mechanism of nature use.

Foreign trade in forest sector. The main purpose of discipline is: studying theoretical foundations in area of foreign trade in forestry sector, and to develop practical

skills and ability to apply the acquired knowledge in export-import operations on enterprises of forest sector. The main areas of learning material are: legal principles of foreign trade and business activities in the forest sector, theoretical and practical bases of foreign investment in the forest sector of Ukraine and choice of organizational forms of foreign investment, issues of justification and choice of forms and methods of entering foreign markets; procedure of concluding external contracts, their features in forestry, planning, control and reporting in foreign trade in forestry.

GIS in forestry. Modern computer systems. Methods for collection, transmission and use of information. Industry data banks. Information and functional patterns of production, storing and use of information resources. Modern geographic information systems. Geographic coordinate system. Fundamentals of Databases. Data Structures and data models. Technology for data entry. Analysis of spatial data. System for collecting and processing data - Field-Map.

Forest Productivity Modeling. Classification of models. Modeling as the main process of study of forest objects. Criteria for optimal stands. Development of regression models using modern mathematical methods. Peculiarities of development of models of dynamics and prognosis. Modeling growth functions with modern computing techniques. Planning of active experiment. Development of mathematical models using full and partial factor plans. General knowledge on numerical methods for solving optimization tasks.

Marketing in forestry. Socio-economic nature of marketing. Features of marketing activities on forest enterprises. Marketing research as a basis for adoption of marketing decisions. Functions of marketing (analytical, production, sales, management and control). Marketing planning on forest enterprises. Financial aspects of marketing.

Computer technology in forestry. Effective work with documents in MS Word, practical application of tabular processor MS Excel: approximation of dependences, analysis and optimization, tasks of linear programming; preparation of charts in Visio system, use of statistical software package SPSS.

**Master's course
in specialty "HUNTING INDUSTRY"
branch of knowledge "Agriculture and Forestry"**

Form of training, licensed number of persons

- | | |
|-------------|------------|
| – Full-time | 25persons |
| – Part-time | 25 persons |

Duration of Training:

- | | |
|--|-----------|
| – Full-time educational and professional program | 1,5 years |
| – Part-time | 2 years |

Credits:

- | | |
|--|---------|
| – educational and professional program | 90 ECTS |
|--|---------|

Language of Teaching

Ukrainian

Qualification

Master of game management

The concept of training

In the sustainable management of sectors of the economy Ukraine urgent problem arises integrated approach to the management, restoration and conservation of natural resources. An integral part of this problem is the regulation of wildlife resources, particularly wildlife, to organize, regulate and improve the use of which there is a separate form of human activity - game management. The successful development of this industry provides for an appropriate infrastructure, which is an important element of qualified human resources.

**Educational and professional Master's program
*Specialization "Game management"***

The program focuses on the development of professional knowledge to manage populations and habitat for game animals, conservation and sustainable use of game animal resources, evaluation and optimization of hunting grounds.

Areas of employment for graduates

Post-graduates are employed in such enterprises: state forestry and hunting enterprises of the State Agency of Forest Resources of Ukraine (as forest ranger, chief forest ranger, forestry engineer, forestry engineer, forest protection engineer), State forest protection association (forest pathologist, chief forest pathologist), Ukrainian center for training, retraining and advanced training of forestry, associated higher education institutions of I-IV accreditation levels, zoological parks and Nature Reserve Fund institutions, Forestry Project Institute", Ministry of Ecology and Natural Resources of Ukraine (researcher positions).

Proposed Topics for Master Theses

1. Means and prospects of hunting and wildlife management on conservation forest lands.
2. Population dynamics of ungulate game species in forestry hunting enterprises and its regulation
3. Approaches to improve biotechnical activities in forestry hunting enterprises.
4. Problems and perspectives of bat habitat conservation in forestry hunting enterprises.
5. Game population dynamics and means for its optimization in forestry hunting enterprises.

6. Comparative aspects and prospects of hunting in forestry hunting enterprises.
7. Current status and characteristics of hunting and wildlife management in forestry hunting enterprises.
8. Current status and approaches to optimize hunting and wildlife management in Kiev region.
9. Ways to optimize the number of game animals in forestry hunting enterprises.
10. Prospects and stages of hunting ground establishment in forestry hunting enterprises.

Academic rights of applicants entering Master course

Applicants with the Diploma of Bachelor can continue training in connected specialties including ones of the field of knowledge "Specific categories", (table 2) and other specialties (table 3) in accordance with the Terms of enrolment to higher educational institutions of Ukraine in 2015 approved by the Order of the Ministry of education and science of Ukraine on October 15, 2014 № 1172 and the Regulations of enrolment to National University of Life and Environmental Sciences of Ukraine (basic institution, Kyiv) for 2015.

Curriculum of Master training in specialty "Hunting industry" Educational and qualification Master program

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	Philosophy of Science	1	90	3
2	Information technology in game management	1	120	4
3	Re-acclimatization and resettlement of game animals	1	120	4
4	Breeding and selection of game animals	1, 2	180	6
5	Labor protection	2	90	3
6	Innovative technologies in game management	2	120	4
7	Population management	2	90	3
8	Management and marketing in game management	3	90	3
9	Pedagogy and teaching methods in higher education	3	90	3
10	Rational use and optimization of hunting grounds	3	90	3
11	Hunting and environmental law	3	90	3
12	Range management of wild ungulates	3	90	3
13	Standardization and certification of hunting products	3	90	3
Total for standard part			1350	45
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by University				
1	Forest policy	1	90	3
2	Foreign language (for professional purposes)	1	90	3
3	Methodology and organization of scientific research on the basics of intellectual property	2	90	3
Total (Disciplines offered by University)			270	9
2.2. Disciplines offered by students				
2.2.1. Specialization "Game management"				
1	Zoogeographical and hunting zoning	1	90	3
2	Hunting resources of Ukraine and the world	1	90	3
3	Immobilization and transport of animals	2	90	3
4	The evolution of the animal world	2	90	3

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
5	Zoo management	2	120	4
6	Regional game management industry in Ukraine	3	90	3
7	Hunting tourism	3	90	3
Total (Disciplines offered by students)			660	22
Total for elective part			1080	36
3. OTHER TYPES OF TRAINING				
1	Production Practice	1, 2	270	9
2	Preparation and defense of master's thesis	3	210	7
Total			480	16
Total for specialty			2700	90

Annotations educational plan disciplines

1. STANDARD ACADEMIC DISCIPLINES

Labor protection. Legislation on health. Fundamentals of occupational health and industrial hygiene. Providing first to medical care. Providing healthy working conditions in forestry.

Philosophy of Science. Philosophy and its object, the function and place in contemporary culture. Knowledge as a subject of philosophical analysis. Variety of forms of knowledge. Features of scientific knowledge. Methods and forms of scientific knowledge. Philosophy of science, its genesis and development stages. Philosophy of science in the XX century. Theoretical models and laws of science. Ontological problems of modern science. Logical and epistemological problems of modern science. Axiological problems of modern science. Historical and philosophical questions: from antiquity to the present. Ontology. Epistemology. Philosophy of Science, Logic and Methodology of scientific knowledge. Social Philosophy

Pedagogy and teaching methods in higher education. Scientific concept of pedagogy as a science, methodological foundations, main categories, the field of pedagogy, methods of educational research, the nature of the learning process, its drivers' forces didactic principles, forms and methods of training and education, types of education, educational technology.

Information technology in game management. Possibilities of modern databases and data warehouses to assess the current status and planning hunting economy. Statistical and mathematical software packages for assessment, prediction and simulation of hunting economy. The use of relational databases and GIS systems for the assessment of hunting.

Management and marketing in game management. Functions, principles and methods of effective management in hunting enterprises. Strategic management. Static and dynamic methods of investment project analysis in hunting. Personnel management in hunting enterprises.

Population management. Planning of hunting grounds, developing of breeding plans and managing population dynamics of game animals. Managing game populations in intensive and extensive hunting enterprise types. Selective exclusion of unwanted genotypes from game populations.

Rational use and optimization of hunting grounds. Program development and implementation to improve the quality of hunting grounds while accounting for recreation use, in cooperation with forestry and agricultural enterprises.

Innovative technologies in game management. Using modern databases to analyze and achieve hunting and wildlife management goals. Programs remediation and reclamation of hunting grounds. Contemporary breeding technologies suitable for keeping and breeding of game animals in natural and artificial environments. Genetic methods and cryobiology. Statistical and mathematical software packages for assessment, prediction and forecasting of hunting and wildlife.

Hunting and environmental law. Hunting regulations and environmental legislation. Hunting land allocation agreements and other contracts. Penalties. Organization of public hearings.

Breeding and selection of game animals. Genetic parameters identification and patterns inheritance of economically useful traits for game animals. Karyotype and immunogenic identification of game animals. Optimal breeding technology of game animals in captivity. Selection of genetic material and hybridization to generate new genotypes. Hatching technology for game birds, and their management.

Range management of wild ungulates. Assessment, prediction and forecasting. Program for creating range facilities and shelters for breeding, rearing and keeping of game animals in semi-captivity. Technology of keeping and breeding ungulates for trophy and meat production purposes.

Standardization and certification of hunting products. Standards for hunting products and their certification. Licensing actions for hunting products. Control of hunting products for compliance certification

Re-acclimatization and resettlement of game animals. History, population and habitat of acclimatized and re-acclimatized game species of the fauna of Ukraine. Examples of successful and unsuccessful acclimatization, based on biological and economic results. Methods for acclimatization, re-acclimatization and resettlement of moving animals. Qualitative assessment of land designated for game resettlement. Resettlement forecasting.

2. ELECTIVE ACADEMIC DISCIPLINES

2.1. Disciplines offered by University

Foreign language (for professional purposes). English terminology in hunting industry. Derivation of model phrases. Verb participle. See, The. Adjective, the comparison. Pronoun. Adverb. Preposition and conjunction. The use of time and how clause. Listening. Methods and linguistic features of annotation and summarization of foreign sources. Electronic foreign-language sources. Finding information on the Internet by using keywords. Fundamentals of Translation professionally oriented foreign-language sources. Machine translation of large volumes of foreign language literature.

Methodology and organization of scientific research on the basics of intellectual property. Scientific topics of research schemes of their conduct. Making scientific documentation. Selection of animals for experiments and their distribution in groups. Development of methodology and organization of research. Settlements area of hunting grounds, food supply, land productivity, species and quantities of game animals. Math (biometric) data processing. Justification of the research results and conclusions. Literary execution of scientific work (qualifying master thesis, scientific articles, abstracts, etc.). Expand the concept of scientific knowledge, science, classification and basic science concepts to the content of research. Set out general information about the methodology and classification research, especially research in the forest and methods used for this purpose. The questions on planning and consistency of research students and young researchers working on the scientific literature.

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.

Educational and professional Master's program

2.2. Disciplines offered by students

2.2.1. Specialization “Game management”

Zoogeographical and hunting zoning. Patterns of geographical distribution of animals. Zoogeographical zoning. Zoogeographical areas and their fauna. Zoogeographical fauna characteristics of Ukraine. Active and passive settlement. Migration paths (historical and contemporary aspects). Zoogeographical elements of flora and fauna complexes. Hunting zoning in Ukraine.

Immobilization and transport of animals. Means and effects of chemical immobilization of wild animals. Remote injection animal anesthesia. Requirements for transportation and vehicle design.

Hunting resources of Ukraine and the world. Inventory of hunting resources. Classification of hunting methods and tools. Regional hunting in Ukraine. Hunting ethics. Changes of hunting fauna in Ukraine in the context of historical periods. Game species and hunting traditions in the world. Utilization and reproduction of game fauna.

Regional game management industry in Ukraine. Structure of the hunting industry in Ukraine. Hunting grounds utilization. Regional differences. Regional conservation status of game animals. Problems and prospects of hunting in different regions of Ukraine.

The evolution of the animal world. Stages of development of fauna and main representatives of the faunal complexes during different geological eras. Configuration principles of species composition of hunting. Biotechnical principles allowing for the evolution of animals.

Hunting tourism. Domestic and international tourism and game population management. Promoting hunting services and trophies. Tour design and implementation, green tourism, range tourism etc.

Zoo management. Zoos in forest hunting enterprises. Modern technology of keeping, breeding, exhibiting and preserving wildlife in ex-situ. Organization of scientific, educational and environmental activities in zoos.

**Master's course
in specialty "PARK AND GARDENING MANAGEMENT"
branch of knowledge "Agriculture and Forestry"**

Form of training, licensed number of persons	
– Full-time	75 persons
– Part-time	75 persons
Duration of Training:	
– Full-time educational and professional program	1,5 years
– Part-time	2 years
Credits:	
– educational and professional program	90 ECTS
Language of Teaching	Ukrainian
Qualification	Master of Park and Gardening

The concept of training

The concept and goal of training specialists in Park and Gardening Management is the necessity of training specialists with system knowledge in use of Park and 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 Master's program
*Specialization "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 for 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 spesialist, landscape design specialist, park-gardening worker.

Specialization "Decorative Nursery"

Foresees mastering by students 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 for 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.

Specialization "Landscape building"

Foresees mastering by students 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 for 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.

Specialization "Ornamental horticulture"

Forms theoretical knowledge and practical skills in reproduction, technology of growing planting stock in hothouse complex and in decorative nursery gardens for creating landscape objects.

Areas of employment for graduates

Graduates of master's program "Ornamental horticulture" 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.

Proposed Topics for Master Theses:

1. Territory reconstruction project of the landscape art memorial park.
2. Ornamental painting of stones in small gardens' design.
3. Project of recreation-demonstrational area organization in decorative nursery garden.
4. Project of landscaping and improvement school and kindergartens territories.
5. Experience of school territories in Ukraine landscaping.
6. European experience of using species of *Buxus* L. genus in landscaping.
7. Dendrological grade of existing assortment of Gymnosperms and prospects of replenishment the decorative forms collection of botanical gardens.
8. Technological peculiarities of forcing flowering plants varieties.
9. Baroque, rococo and classicism in modern phytodesign aspect.
10. Woody plants reproduction peculiarities.

Academic rights of applicants for a master program

Applicants with a bachelor's degree can continue their studies on related, including field of knowledge "Specific categories" (Table. 2) and other specialties (Table. 3) Under the terms of admission to the higher educational institutions of Ukraine in 2015 approved by the Ministry of Education and Science of Ukraine from October 15, 2014 number 1172

and Rules Admission to the National Agricultural University of Ukraine (basic institution, m. Kyiv) in 2015.

**Curriculum of Master training in specialty “Park and Gardening Management”
Educational and qualification Master program**

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	Computer design technologies	2	150	5
2	Greenhouse facility	3	90	3
3	Ornamental horticulture	1	120	4
4	Park and gardens planning	2	90	3
5	Reconstruction and restoration of landscape-gardening objects	1	150	5
6	Dendrological projecting	1	150	5
7	Forest-parks management	2	90	3
8	Inner phytodesign	3	90	3
9	Landscape-gardening objects exploitation	3	90	3
10	Soils and soils compounds	2	90	3
Total for standard part			1110	37
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by University				
1	Business foreign language	1	150	5
2	Methodology and organization of scientific research on the basics of intellectual property	1	90	3
3	Management and marketing in Park-gardening	3	90	3
4	Accounting and audit	2	90	3
Total (Disciplines offered by University)			420	14
2.2. Disciplines offered by students				
2.2.1. Specialization “Landscape architecture”				
1	Landscape design	2	150	5
2	Recultivation of affected landscapes	2	150	5
3	Park studies	3	90	3
4	Landscape planning	3	90	3
5	Form diversity of ornamental woody plants	3	90	3
6	Ecological examination	3	90	3
Total (Disciplines offered by students)			660	22
2.2.2. Specialization “Landscape building”				
1	Vertical planning of landscape objects	2	150	5
2	Agricultural engineering in park- garden building	2	150	5
3	Parks and garden constructions, mechanisms and equipment	3	90	3
4	Landscape planning	3	90	3
5	Recultivation of affected landscapes	3	90	3
6	Ornamental plants protection	3	90	3
Total (Disciplines offered by students)			660	22
2.2.3. Specialization “Ornamental Nursery”				
1	Modern technologies in ornamental nursery	2	150	5
2	Woody plants growth and mineral nutrition regulation	2	150	5
3	Potted woody plants growing	3	90	3
4	Nurseries rules and regulations	3	90	3
5	Biotechnology methods in decorative nursery	3	90	3
6	Planting stock quality and methods of its estimation	3	90	3
Total (Disciplines offered by students)			660	22
2.2.4. Specialization “Ornamental horticulture”				
1	Plant breeding and seed study	2	150	5

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
2	Recultivation of affected landscapes	2	150	5
3	Ornamental plants protection	3	90	3
4	Ornamental horticulture	3	90	3
5	Form diversity of ornamental woody plants	3	90	3
6	Modern technologies in ornamental nursery	3	90	3
Total (Disciplines offered by students)			660	22
Total for elective part			1080	36
3. OTHER TYPES OF TRAINING				
1	Academic Practice	2	30	1
2	Production Practice	1, 2	270	9
3	Preparation and defence of master's thesis	3	210	7
Total			510	17
Total for Speciality			2700	90

Annotations educational plan disciplines

1. STANDARD ACADEMIC DISCIPLINES

Greenhouse farming. Detailed studying of the technologies of blooming plants on the industrial base; acquainting with the main types of pests and measures of pest control – expects deeper studying of technological processes, detailed familiarization with technologies of growing different flower production, accounting of industrial space requirement, organization of the manufacturing process and as a result – organization of greenhouse facility with taking into account specifics of its work.

Ornamental horticulture. The course of “Ornamental horticulture” is dedicated for studying theoretical and practical bases of reproduction, growing and using of the woody plants during the creation of ornamental plantings. “Ornamental horticulture” gives theoretical and practical knowledge to future specialists about the assortment of ornamental plants, ways of reproduction, technologies of growing, creation of man-made qualities of woody plants and their keeping in ornamental plantings.

Park and gardens planning. Planning of cost, profit, and commodity production. Prices. Enterprise financing. Financial plan. Types of accounting. Professional activity analysis.

Reconstruction and restoration of landscape-gardening objects. Forming of professional approach to the accomplishment of reconstruction, concervation, adaptation, and protection of existing landscape architecture objects is the main task for landscaping specialist. Discipline takes the leading part in the landscaping cycle disciplines, because the bigger part of town's complex green zone objects are the objects of reconstruction and restoration.

Dendrological projecting . The subject observes the main principles of projecting green plantations systems, specifics of landscape-dimensional and landscape-planning composition, peculiarities of woody plants assortment selection during the creating of main plantations elements of composition. When studying the subject students consider physionomical types of woody plants according to L.I. Rubtsov.

Forest-parks management. Modern forest-parks management is directed to understanding the bases of biological essence of the forest, regularities of its growth and development, mastering the methods of forest typology, knowlage of different kinds of forest use, including recreational, studying the bases and methods of management of forest-parks and the green belts of cities. Using the mastered principles and methods of formation the park plantings future landscaping specialist should form the forest-park

landscapes purposeful, ecological correctly, with taking into consideration peculiarities of growth arboreal, shrubbery and meadow phytocoenosis, which are resistant to the antropogenic loading and unreceptive nature factors.

Inner phytodesign. The “Inner phytodesign” subject gives theoretical and practical knowledge about the phytodesign of the specific Earth regions plants, forming of the long-lasting groupings of a leafy-decorative and flowering subtropical and tropical plants to the future specialists, acquaints with the rules of their keeping. It studies the rules of creating compositions and combination plants according to ecological, decorative and functional principles in different types and styles of interior, opens specifics of keeping plants in this type of compositions.

Landscape gardening objects exploitation. Landscape gardening objects exploitation is an important part of town planning and city economy complex. It includes a number of different complicity problems, connected with the building of landscape-gardening objects, creating, forming, and keeping their important part – green plantings. Landscape gardening objects exploitation is a complicated complex of measures, which provide the solution of different tasks of law, agrotechnical, aesthetic, organizational, economical-exploitation, economical character, directed to creation, forming and keeping landscape gardening objects of different functional purposes.

Soils and soil compounds. The course program allows mastering the bases of controlling the soil nutrition conditions for the ornamental plants. It provides the preparation of specialist in possession of knowledge and skills, and gives an ability to create the optimal models of the nutrition regime and manage it according to the biological requirements of the plants.

Computer design technologies. Designing of park-gardening objects using computer programs. Students perform the course project within such programs as ArhiCAD, REALTIME, Photo Land Designer, SIERRALANDDESIGNER 3D, etc.

ELECTIVE ACADEMIC DISCIPLINES

2.1. Disciplines offered by University

Business foreign language. Speech Etiquette communication: language models salutation, civility, forgiveness, coordination and more. Linguistic and cultural aspects of international exhibitions. Grammatical and a minimum of linguistic communicative level presentations. Professionally-oriented foreign-language sources. Methods of finding new information in the foreign-language sources. Linguistic methods for analytical processing of foreign sources. The study of foreign language printed original literature and expansion of vocabulary and grammatical skills. Methods and linguistic features of annotation and summarization of foreign sources. Electronic foreign-language sources. Finding information on the Internet by using keywords. Fundamentals of Translation professionally oriented foreign-language sources. Machine translation of large volumes of foreign language information. Lexical minimum computer (information) technology.

Methodology and organization of scientific research on the basics of intellectual property. The concept of scientific knowledge, science, classification and basic science concepts of the content of research are expand. General information about the methodology and classification of research, especially research in the forest and methods used for this purpose are set out. The questions on planning and consistency of research students and young researchers working on the scientific literature are set out.

Accounting and audit. Main concepts of the accounting. Accounting balance. Documents, inventory and organization forms of accounting. Audit and audit activities.

Park-gardening management and marketing. Origins and developing of management. Specifics of management activity on park-gardening enterprises.

Management functions and their realization on park-gardening enterprises. Principles and methods of management. The essence of the process of making decisions in park-gardening management. Socially-economic essence of marketing. Specifics of marketing activity on enterprises. Marketing research and marketing information system. Marketing communication, commodity and distribution policy.

Educational and professional Master's program

2.2. Disciplines offered by students

2.2.1. Specialization “Landscape architecture”

Landscape design. Landscape design as a modern direction of landscape architecture. Landscape design practice considering individual components and elements of landscape: relief geoplastics; water structures; plant forms; colouristics of plantations; small architectural forms. Creation of small garden.

Recultivation of affected landscapes. In a course basic information is given about factors, kinds and degree of violation of landscape structure, classification of basic forms of technogenic relief of earth surface. The program is based on modern information of theoretical and practical value, which is necessary for organization of work for recultivation of affected land and formation of phytocenosis for melioration.

Park studies. Studies the aspects of dendrological composition of different categories of park plantations, longevity of woody plants, analyze territories of parks and forest-parks as a phytocenosis objects, investigates general progress of park phytocenosis and phytogeographical aspect, ecology of park environment trends, in thereby to monitoring of green plantations and ground conditions. Lights up physiognomic groups and types of arboreal plants, studies natural landscapes as feedstock for park building, features of creation of some types of park and garden landscapes, forming of displays of botanical gardens and dendrological parks.

Landscape planning. Within the limits of discipline the historical, social and town planning aspects of landscape objects forming are studied. The historical review of development of park and garden styles and their influence are brought around to modern progress of landscape architecture trends. Theoretical bases and practical methods of the landscape planning are examined, in particular an architectonically-plan and volume-spatial system of municipal space forming, use of natural and artificial components in the construction of landscape objects composition.

Form diversity of ornamental woody plants. Form diversity of ornamental woody plants is part of dendrology, that studies the cultures of woody plants, classification of decorative characteristics, methods of receipt, biological and ecological features are studied students the most widespread and interesting cultures of arboreal plants and their classification. On completion of study of discipline students must be oriented in the varietal diversity of woody plants and own skills of the use in green planting.

Ecological examination. Course of discipline "Ecological examination" studies the estimation of possible influence of the envisaged or pre-arranged activity on the state of environment, its accordance to the requirements of ecological legislation.

2.2.2. Specialization “Landscape building”

Vertical planning of landscaping objects. Basic concepts, principles, methods, requirements of normative documents and sequence of implementation of work are studied at traditional and automated methods of stowage of projects of the vertical planning of municipal territory, housing building, areas of green plantations.

Agricultural engineering in park-garden building. Park-garden building is important component in the general complex of town-planning and municipal economy.

Includes the circle of various after the degree of complication questions of related to planning, building, exploitation of park and garden objects, creation, forming and maintenance of their important constituent - decorative planting. An agrotechnics in park and garden building is the complex of measures, which envisage the decision of the various tasks of legal, aesthetic, organizational, operating-economic, economic character, sent to creation and maintenance of the high-decorative planting of park and garden objects various purposes.

Park-garden constructions, mechanisms and equipment. Modern landscape building is important component part in the general complex of town-planning and municipal economy. It includes the circle of various questions, what planning, building, creation, forming, related to the features, and also further exploitation and maintenance of park-gardening garden objects. A considerable place in the list of the marked questions is occupied by park and garden constructions, mechanisms and equipments that allow realization of complex works on park-gardening objects with the use of modern machines, mechanisms and appliances.

Landscape planning. Within the limits of discipline the historical, social and town planning aspects of landscape objects forming are studied. The historical review of development of park and garden styles and their influence are brought around to modern progress of landscape architecture trends. Theoretical bases and practical methods of the landscape planning are examined, in particular an architectonically-plan and volume-spatial system of municipal space forming, use of natural and artificial components in the construction of landscape objects composition.

Recultivation of affected landscapes. In a course basic information is given about factors, kinds and degree of violation of landscape structure, classification of basic forms of technogenic relief of earth surface. The program is based on modern information of theoretical and practical value, which is necessary for organization of works from recultivation of affected land and forming phytocenosis for melioration.

Ornamental plants protection. Methods of observation and entomopathological inspections, pest quantity accounts and level of pathogenicity of plant diseases pathogens, and also methods and facilities of decorative plant protection, prognostication of possible pathological changes in biocenoses, facilities of protection during the stowage of the complex systems of pest control and pathogens in corresponding biocenoses.

2.2.3. Specialization “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.

Woody plants growth and mineral nutrition regulation. Subject embraces basic knowledge in relation to growing and nutrition of ornamental woody plants, using chemical and biological preparations for strengthening basic plant functions.

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.

Nurseries rules and regulations. A legislation is in relation to a seed-growing and nursery. Normative and regulating materials in the sphere of nursery. Documents about the seed quality and planting stock quality.

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.

Planting stock quality and methods of its estimation. General approaches in relation to determination of the planting stock quality. Home and world standards are for planting stock. Features of quality determination of the woody plants nursery transplants.

2.2.4. Specialization “Ornamental horticulture”

Plant breeding and seed study. Subject studies fruits and determination of purity and germination of annual, biennial, and perennial herbaceous plants seeds; classification of the most widespread annuals, biennials, tuberous, corms, rhizome plants; creation of module flower-gardens using different types of plants; general terms of methodology of plant sort determination.

Recultivation of affected landscapes. In a course basic information is given about factors, kinds and degree of violation of landscape structure, classification of basic forms of technogenic relief of earth surface. The program is based on modern information of theoretical and practical value, which is necessary for organization of works from recultivation of affected land and forming phytocenosis for melioration.

Ornamental plants protection. Methods of observation and entomopathological inspections, pest quantity accounts and level of pathogenicity of plant diseases pathogens, and also methods and facilities of decorative plant protection, prognostication of possible pathological changes in biocenoses, facilities of protection during the stowage of the complex systems of pest control and pathogens in corresponding biocenoses.

Ornamental horticulture. A study of theoretical and practical principles of reproduction, growing and use of arboreal plants is at creation of the decorative planting. The "Ornamental horticulture" gives to future specialists theoretical and practical knowledge about the assortment of decorative plants, methods of reproduction, technology of growing, creation of decorative artificial characteristics of woody plants and supervision upon them in the decorative planting.

Form diversity of ornamental woody plants. Form diversity of ornamental woody plants is part of dendrology, that studies the cultures of woody plants, classification of decorative characteristics, methods of receipt, biological and ecological features are studied students the most widespread and interesting cultures of arboreal plants and their classification. On completion of discipline study students must be oriented in the varietal diversity of woody plants and own skills of the use in green planting.

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

LAW FACULTY

Dean – Candidate of Science in Law, Associate professor Yara Olena Sergiivna
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The faculty (ERI) organizes and coordinates Bachelor training in the following courses:

8.03040101 “Law science”

Graduating department:

Agrarian, land and environmental law named after V.Z. Yanchuk

Tel.: (044) 259-97-25

E-mail: agrolaw_chair @twin.nubip.edu.ua

Head of Department – Doctor of Law, Professor Yermolenko Volodymyr Mykhaylovych

International Law and Comparative Law

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Head of the Department – Doctor of Law, Professor Ladychenko Viktor Valerijovych

Administrative and Finance Law:

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E-mail: adminlaw@twin.nauu.kiev.ua

Head of the Department – Doctor of Law, Professor Kurylo Volodymyr Ivanovych

**Master's course
in specialty "LAW SCIENCE"
branch of knowledge "Law"**

Form of training, licensed number of persons	
– Full-time	75 persons
– Part-time	40 persons
Duration of Training:	
– Full-time educational and professional program	1,5 years
– Part-time	2 years
Credits:	
– educational and professional program	90 ECTS
Language of Teaching	Ukrainian
Qualification	Master of Law

The concept of training

Program goal-oriented training of legal experts in law to meet the needs for legal services of the state agricultural sector, including agricultural enterprises of all forms of ownership and legal organizational forms, the sphere of land relations, provision with qualified legal personnel of state organs, public organizations, other enterprises and organizations.

**Educational and professional Master's program
*Specialization "Agrarian Law"***

Master's program was created based on the state and prospects of development of agricultural science in Ukraine and abroad. The curriculum provides training experts who have deep theoretical base on agrarian, land, environmental and natural resource law, and also be able to apply modern legal techniques for basic and applied research in law. Training oriented in-depth mastery of academic knowledge and skills of their application in practice.

Areas of employment for graduates

The program of training for lawyers of agrarian direction provides for personnel needs of Agro-industrial complex and rural social sphere. The level of training and qualifications of graduates gives them the opportunity to work as a lawyer in various economic entities in AIC, in the state executive authorities, local government bodies, relevant departments and offices that exercise powers concerning implementation of state agricultural policy. The program also provides adequate training of future researchers, namely: a graduate student, a teaching assistant, a senior lecturer, a researcher.

Specialization "Environmental Law"

Master's program was created based on the state and prospects of development of environmental science in Ukraine and abroad. The curriculum provides training experts who have deep theoretical framework for environmental and natural resource law, and also be able to apply modern legal techniques for basic and applied research in law. Training oriented in-depth mastery of academic knowledge and skills of their application in practice.

Areas of employment for graduates

The training of lawyers ecological enables them to employment in the central executive authority in the field of Environment and Natural Resources and its territorial divisions; Poresursovyh State agencies, services and inspections; State Emergency Service of Ukraine; local executive bodies and local authorities; the internal affairs of Ukraine; the Prosecutor's Office of Ukraine; judicial authorities; of environmental organizations.

Specialization "Land Law"

The master's program aims to meet social needs in a professional lawyer and provide theoretical, practical and scientific training of qualified personnel who would have acquired deep knowledge to perform professional tasks Research and practical in the sphere of land relations.

Areas of employment for graduates

State Service for geodesy, cartography and cadastre and its territorial bodies; Ministry of ecology and natural resources of Ukraine; Ministry of agrarian policy and food of Ukraine; main administration of agroindustrial development administrations; State environmental inspectorate of Ukraine and its territorial bodies; SLC Centre and its affiliates; local authorities and local authorities; prosecution service of Ukraine; the judicial authorities; enterprises of land management profile.

Specialization "Administrative law"

Programme Specialist EQL "Master" with specialization "Administrative law" getting and deepening students scientific knowledge of administrative and legal activities of state executive, practical skills application of the law in this area, monitor its compliance and familiarization with the organization of public institutions and development of draft regulations on legal support of state executive bodies.

Areas of employment for graduates

Prepared within specialization legal professionals have the opportunity to work on a specialty in public administration of Ukraine (public authorities and bodies of local government), as well as enterprises, institutions and organizations. The level of training and qualifications enable students to work on teaching positions in research institutes, graduates are entitled to continue postgraduate study.

Specialization "The Court. Office of Public Prosecutor. The legal profession"

Programme Specialist EQL "Master" with specialization "The Court. Office of Public Prosecutor. The legal profession" getting and deepening students scientific knowledge of administrative and legal activities of judicial, law enforcement and advocacy, practical skills application of the law in this area, monitor its compliance and familiarization with the organization of the judiciary and law enforcement. Development of draft regulations on legal support of judicial and law enforcement and ensure the implementation of lawful action in making management decisions.

Areas of employment for graduates

Prepared within the specialization legal professionals have the opportunity to work on a specialty in the judiciary and prosecutors; as lawyers; notaries; consultants of notaries; judge of the court; assistant of the head of the court; in government and local government as, head of legal department. The level of training and qualifications enable

students to work on teaching positions in research institutes, graduates are entitled to continue postgraduate study.

Specialization "International Commercial Law"

Specialization "International Commercial Law" gives a deep understanding and knowledge of law in international business, commerce, contractual issues and the effective resolution of disputes. The program includes a course on international commercial arbitration, trade law, legal regulation of foreign trade. Thanks to the program "International Commercial Law" important skills of analysis and research in various aspects of international business and corporate law will be acquired.

Areas of employment for graduates

Training program for lawyers in the field of international commercial law provides staffing needs of the enterprises, institutions and organizations engaged in foreign economic activity and represent the state in the sphere of international trade. The level of training and qualifications of graduates allows them to work as advisers in different foreign economic activity entities, in bodies of state executive power, bodies representing the country abroad, diplomatic and trade missions, relevant departments and offices of the Ministry of Economic Development and Trade of Ukraine. The program provides proper training of future scientists, namely: graduate student, assistant, senior lecturer, researcher.

Specialization "International consumer law"

Specialization "International Consumer Law" provides a deep understanding and knowledge of international consumer law, food law, contractual issues and effective protection from poor quality products. The program includes courses on international food law, European consumer law, international legal regulation of food trade, international insurance law. Thanks to the program "International consumer law" important skills of analysis and research in various aspects of international food and consumer rights will be acquired.

Areas of employment for graduates

Training program for lawyers in international consumer law provides staffing needs of the enterprises, institutions and organizations that monitor the quality and safety of products and represent the country in international food trade. The level of training and qualifications of graduates allows them to work as advisers in different subjects of economic activity, bodies of state executive power, bodies that monitor quality and safety of products in Ukraine and relevant departments and offices of the Ministry of Economic Development and Trade of Ukraine. The program provides also proper training of future scientists, namely: graduate student, assistant, senior lecturer, researcher.

Practical training

The aim of the practice is obtaining by the master students of practical skills in agriculture, agricultural production and environmental management. The difficulty lies not only in the problems of application of the imperfect legislation, but, chiefly, in the need to master the many different law provisions of different areas of law, the knowledge of which eventually form a real professional, able to withstand any competition in the legal services market. This knowledge enable practicing lawyers to find an optimal solution of a complex legal problems and achieve its implementation through the competent public authorities.

Proposed Topics for Master's Thesis

1. Rights of sustainable rural development.
2. Rights diversification of agricultural activities.
3. Social development of the village as the Institute of Agricultural Law.
4. Principles of environmental law.
5. The system of environmental law.
6. The subject of environmental law.
7. Legal aspects of the State Land Cadastre.
8. Legal regulation of the state registration of rights to land.
9. Legal aspects of resolving land disputes.

Academic rights of applicants entering Master course

Applicants with the Diploma of Bachelor can continue training in connected specialties including ones of the field of knowledge "Specific categories", (table 2) and other specialties (table 3) in accordance with the Terms of enrolment to higher educational institutions of Ukraine in 2015 approved by the Order of the Ministry of education and science of Ukraine on October 15, 2014 № 1172 and the Regulations of enrolment to National University of Life and Environmental Sciences of Ukraine (basic institution, Kyiv) for 2015.

Curriculum of Master training in specialty "Law science" Educational and qualification Master program

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	Philosophy of Law	1	120	4
2	Rule-Making Technicality	1	120	4
3	Civil Procedure Document	1	120	4
4	International legal regulation of food security	1	90	3
5	International treaty law	1	90	3
6	Problems of Information Law	1	90	3
7	The law of international organizations	2	120	4
8	Interpretation of Law	2	90	3
9	The problems of ownership	2	120	4
10	Theoretical issues of civil law	2	120	4
11	Current issues preventing and combating corruption in Ukraine	2	90	3
12	Current issues of agrarian law	2	120	4
13	Current problems of natural resource law	2	120	4
14	The law on environmental safety	3	90	3
15	Advisory activities of a lawyer	3	90	3
Total for standard part			1590	53
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by University				
1	Methodology and organization of scientific research and the principles of intellectual property	2	90	3
2	Foreign language for specific purposes	1	150	5
3	Agrarian policy	1	90	3
Total (Disciplines offered by University)			330	11
2.2. Disciplines offered by students				
2.2.1. Specialization “Agrarian Law”				
1	Features of legal regulation of labor relations in agriculture	3	90	3
2	Problems of legal regulation of the agricultural market	3	90	3

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
3	The legal quality and safety of agricultural products	3	90	3
4	Legal protection of the environment in agriculture	3	90	3
5	The agrarian law of foreign countries	3	120	4
6	Legal regulation of financial activity of industrial agriculture	3	90	3
Total (Disciplines offered by students)			570	19
2.2.2. Specialization "Land Law"				
1	State registration of land and rights to them	3	90	3
2	Legal aspects of the protection of land rights	3	90	3
3	The legal regulation of the land market	3	90	3
4	Legal protection of lands	3	90	3
5	Land law of foreign countries	3	120	4
6	Legal problems acquisition and sale of land rights	3	90	3
Total (Disciplines offered by students)			570	19
2.2.3. Specialization "Environmental Law"				
1	International and European environmental law	3	90	3
2	Legal problems of landscape law formation	3	90	3
3	Problems fauna and flora law	3	90	3
4	Actual problems of water law	3	90	3
5	Rights biotechnology	3	120	4
6	Legal problems of forest law	3	90	3
Total (Disciplines offered by students)			570	19
2.2.4. Specialization "Administrative law"				
1	Administrative jurisdiction in the agricultural sector	3	90	3
2	Administrative responsibility	3	90	3
3	Current issues of administrative law	3	90	3
4	Legal support public administration	3	90	3
5	Rights of public revenues and expenditures in Ukraine	3	120	4
6	Administrative and legal regulation of nature	3	90	3
Total (Disciplines offered by students)			570	19
2.2.5. Specialization "The Court. Office of Public Prosecutor. The legal profession"				
1	Modern problems of the judicial system in Ukraine	3	90	3
2	The Prosecutor's Office of Ukraine	3	90	3
3	Actual problems of reforming law enforcement bodies of Ukraine	3	90	3
4	Current issues of criminal proceedings in Ukraine	3	90	3
5	Actual problems of criminal legal qualifications	3	120	4
6	Actual problems of forensic activities	3	90	3
Total (Disciplines offered by students)			570	19
2.2.6. Specialization "International Commercial Law"				
1	Commercial law	3	90	3
2	International Commercial Arbitration	3	90	3
3	Legal regulation of FEA	3	90	3
4	International food law	3	90	3
5	WTO Law	3	120	4
6	Consumer protection in the EU and Ukraine	3	90	3
Total (Disciplines offered by students)			570	19
2.2.7. Specialization "International consumer law"				
1	International food legislation	3	90	3
2	European consumer rights	3	90	3
3	International legal regulation of trade in food products	3	90	3
4	International insurance law	3	90	3
5	Legal liability in the field of consumer protection	3	120	4
6	International economic law	3	90	3
Total (Disciplines offered by students)			570	19
Total for elective part			900	30

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
3. OTHER TYPES OF TRAINING				
1	Production Practice	2	60	2
2	Pedagogical practice	2	60	2
3	Writing and defense of master's thesis	3	90	3
Total			210	7
Total for Specialty			2700	90

Annotations educational plan disciplines

1. STANDARD ACADEMIC DISCIPLINES

Philosophy of Law. The philosophy of law is a specific sphere of the theoretic legal knowledge which borders on such philosophy branches as ethics, ontology, anthropology, axiology, epistemology etc. The purpose of the “Philosophy of law” academic discipline is to explore the philosophic principles of the legal science and practice of law, to deepen knowledge of the legal sciences as to the conditions of the future professional law enforcement and compliance activities.

Rule-Making Technicality. The rule-making technicality is a set of legal and technical rules, procedures, means and methods of the implementation by the authorized entities of presentation of the state’s rule-making will with the purpose of efficiently regulating and guarding social relations and ensuring system links of regulatory legal acts of different legal force. The purpose of the “Rule-making technicality” academic discipline is to shape knowledge about the main methods and procedures of the rule-making technicality which is used for forming content and external drawing up of regulatory legal acts as well as its varieties and peculiarities of use in the modern Ukrainian state.

Civil Procedure Document. Most of appeals to the court by members procedural relations submitted in writing. The court, in turn responds to these appeals enacting a decree or ruling on the case. Its decision the court sets out exclusively in writing. Based on the knowledge that students have after studying civil procedural law and the foundations of business communication, students must learn how to made procedural documents. Also the special course deals with the design appeals to international courts if the possibility of protecting the rights and legitimate interests in courts of Ukraine. During the development of this discipline students focused on claims that procedural law raises procedural documents such as claims, counter-claims court, the court, procedural documents consisting mandatory and special proceedings. Attention focus on features content relevant procedural documents with regard to the subject of the dispute. In workshops with special course offered for familiarization and analysis of samples procedural documents published in the literature, and taken from judicial practice. Practiced professional skills up to procedural documents in accordance with the Civil Procedure Code of Ukraine.

International legal regulation of food security. The main purpose of this discipline is to obtain knowledge about: the concept, the essence, the main characteristics of the international legal food security, sources of international law in the field of food security, international legal regulation of food safety within the UN and its specialized agencies, international regulation of food safety within the World trade Organization. Special attention is paid to international legal regulation of food security at regional level, including legal regulation of food security in the EU.

International treaty law. Academic discipline is aimed at developing students' knowledge on appropriate concepts and codification of international treaty law, the concept of an international treaty, its language, form, structure and species and stages of

the procedure concluding international agreements, action, reality and termination of international treaties.

Problems of Information Law. Introducing students to the concept of information relations in society, which are the subject of legal regulation. Highlights of the determination information law as a science, its tasks and place in the law, the formation history of the industry and its individual institutions, but also includes issues of theoretical concepts of information law and information law of foreign countries.

The law of international organizations. The main objective of the discipline is mastering by students a wide range of concepts and ideas about the complex process of formation and development of international structures, deepening integration interaction between states, new international alliances as a source of stability and peace.

Interpretation of Law. The subject of the law interpretation occupies an important place in the jurisprudence as it is related to solution of important issues of the legal rules' implementation. The purpose of the "Law interpretation" academic discipline is to equip the students as future highly qualified specialists with a necessary foundation of knowledge and practical skills as to clarification and explanation of the meaning of the legal acts' directions with a view to clearly and effectively use them both in the conditions of a specific simulated situation and in a future practical activities.

The problems of ownership. Special course is aimed at mastering of theoretical material on the legal nature of the of ownership, the content of the legal relations and the legal status of participants of property relations. The practical component consists in studying the questions of establishment and protection of the rights of owners. The student should know: theoretical principles of ownership, the main provisions of ownership in the works of scientists-lawyers and current legislation in this area. The student should be able to: analyze current legislation and apply this knowledge in practice.

Theoretical issues of civil law. The academic discipline involves learning of legal regulations, which have some positive features and direct the state efforts to meeting customer needs, providing conditions for the development of entrepreneurship, diligence, business and creative initiative, development of legal civil society where a person with dignity will feel independent.

Current issues preventing and combating corruption in Ukraine. Familiarizing students with the modern paradigm of public policies to prevent corruption legal framework of public policies on prevention of corruption, international legal and regulatory acts applicable law system in combating and preventing corruption, effective international experience in combating and preventing corruption system of counteraction and prevention of corruption, their functions and powers, novellas national legislation to combat and prevent corruption, with the implementation of anti-corruption reform and so on.

Current issues of agrarian law. Involves the study of peculiarities of the formation of agricultural legislation in the modern period. Particular attention is paid to the study of the legal regulation of reformation processes of land and property relations in the countryside. We study the basic directions of state support for agricultural commodity producers, namely the system of tax incentives, loans and insurance. The ways of investment in the agricultural sector of the country as a means of removing it from the crisis.

Current problems of natural resource law. Issues to be studied: doctrinal approaches concerning the development of the areas of natural-resource law. Natural resources as complex subjects of the legal regulation. Ecological-legal nature of the objects of natural-resource legal relationships in the process of their implementation: the

problem of conflicts overcoming. Problems of further integration of the areas of natural resource of law.

The law on environmental safety. Issues to be studied: the scientific and legal basis of environmental security provision; subject, technique, principles, system and source of law on environmental safety; mechanism for legal provision of environmental safety; liability as a guarantee of environmental safety; legal principles of environmental safety provision in industry; legal principles of environmental security provision on transport; legal principles of environmental security provision in agriculture; legal principles of environmental security provision in the field of waste handling; legal provision of environmental security in the production and sale of food products; legal principles of environmental security provision in genetic engineering activities; legal principles of environmental security provision when locating and development of human settlements; legal principles of environmental security provision in the use of nuclear energy; legal regime of zones of environmental emergency and guarantee of the realization of rights by victims.

Advisory activities of a lawyer. Familiarizing students with modern advocacy organization, theoretical knowledge and practical skills of counseling relationships, customer. Application of this knowledge in practical work.

2. ELECTIVE ACADEMIC DISCIPLINES

2.1. Disciplines offered by University

Methodology and organization of research with the principles of intellectual property. The aim of the discipline is formation of the system of knowledge in methodology, theory of method and research process, methodical support of scientific and research activity at the stages of preparation of a Master paper, formation of the ability to organize research of a specific issue using the whole complex of the traditional methods of research including general and special methods. The main task of the theoretical part of the course is introduction to students the current concepts of research creation, the principles of methodology of scientific perception and methods of research. The main task of the practical part is the development of self-education ability, mastering skills of formation and application of perceived methodological position of research. In case of mastering the course students have to improve their skills of search, assortment and processing of scientific information, accurate formulation of a problem, aim, task, object, subject, methods of research. Introduction to students the principles of intellectual property and direction of them to gain knowledge and skills concerning registration of rights of ownership, their protection, commercialization, estimation and management are envisaged.

Business foreign language. The general aim of the program of teaching of foreign language for the professional purpose is formation students' professional linguistic competencies that will contribute to their efficient operating in cultural variety of training and professional environment. The methods of search of new information in another language sources, linguistic methods of analytical study of another language sources are learned. Students study published original literature in another language and increase their lexical and grammatical skills. Methods and linguistic peculiarities of annotation and synopsis of another language sources, the principles of translation of professional oriented another language sources are studied.

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.

2.2. Disciplines offered by students

2.2.1. Specialization "Agrarian Law"

Features of legal regulation of labor relations in agriculture. Is to better understanding of the legal regulation of labor relations in the village / h. Registration of employment, especially wages, health and safety, working time, rest periods and other issues.

Problems of legal regulation of the agricultural market. Studied problems of legal provision of agricultural market infrastructure. Special attention is paid to the study of the legal status of Agrarian Exchange, the Agricultural Fund, wholesale markets for agricultural products and agri-trading houses.

The legal quality and safety of agricultural products. Studied general provisions on the requirements and standards for Agricultural Products, allowing for the manufacture and sale of certain types of agricultural products. Analyzed international experience and scientific achievements in the field of quality and food safety in agriculture.

Legal protection of the environment in agriculture. Issues to be studied: the general theoretical principles of legal protection of the environment and natural resources in agriculture. The sources of legal protection of the environment and natural resources in agriculture are to be analyzed. The mechanism of legal protection of the environment and natural resources in agriculture are to be revealed. The legal provision of environmental security during implementation of various agricultural activities (while handling pesticides and agrochemicals, in livestock farms activity, etc.) is to be studied. The following elements of the legal provision of environmental security are to be considered: food, biological and genetic safety in agriculture. The features of liability for violations of legislation on environmental security in agriculture are to be studied.

The agrarian law of foreign countries. The purpose and objectives of the course "Agrarian Law of foreign countries" are building knowledge of legal regulation of agrarian relations in foreign countries. Special attention is devoted to the experience of agro-regulation in Russia and Belarus and the EU.

Legal regulation of financial activity of industrial agriculture. Studied problems of legal regulation of production and financial activities in agriculture. Agricultural financial analyzes legal and legal relations in livestock and crop production.

2.2.2. Specialization "Land Law"

State registration of land and rights to them. In the study of the course students will be asked to study the legal nature of the land cadastre, relationship management in the State Land Cadastre, peculiarities of legal regulation of its individual components, legal support of state registration of land, as well as responsibility for violation of legislation of the State Land Cadastre. The aim of the course is also the formation of students theoretical knowledge of the legal nature of the registration of land rights, legal principles of state registration of land rights, legal aspects of the procedure of state registration of rights to land and place it in the registration system of Ukraine, as well as the formation of practical skills for independent solution liabilities problems associated with the implementation of the norms land legislation in that area.

Legal aspects of the protection of land rights. Discipline aimed at forming students adequate knowledge about the general characteristics of land rights of land relations, constitutional guarantees and legal tools for legal protection of land rights, institutional and functional to protect land rights, land characteristics offenses and practical skills for solving features land disputes, their procedural provision, jurisdiction of the courts in land relations.

The legal regulation of the land market. Discipline aimed at forming students adequate knowledge about the legal nature of the land market, legal, institutional and functional aspects of the software market circulation of land, regulation concluding civil contracts for the alienation of land, land sales on a competitive basis, legal basis for forming market of agricultural land.

Legal protection of lands. Studying discipline ensures the proper formation of students knowledge on the legal regulation of land protection system of measures aimed at sustainable use of land, protecting them from adverse anthropogenic influence, reproduction and improvement of soil fertility, improving land productivity, particularly regarding legal support reclamation, revegetation, conservation land.

Land law of foreign countries. In the study of the course students possess knowledge of the basic institutions of the land rights of foreign countries of different legal systems of the world on the basis of theoretical research and legislative principles of land reform, the right to land use and protection of land, government regulation of land relations, ensuring the rights and legal protection on the ground.

Legal problems acquisition and sale of land rights. Discipline aimed at forming students appropriate knowledge in the field of theoretical principles of legal support of land rights and legal issues of purchase and sale of land ownership and land use rights, improving security of land rights and features of legal liability offense for land and formation of students practical skills for independent problem solving related to the acquisition and sale of land rights.

2.2.3. Specialization "Environmental Law"

International and European environmental law. Issues to be studied: the major global environmental problems; the concepts of international environmental law, its formation and development, sources, principles, codification issues; The concept of environmental safety and sustainable development; international legal protection of environmental rights of a human; institutional mechanism of international environmental law; liability in international environmental law; environmental protection during armed conflicts; international regulation of handling with hazardous to environment materials and substances; international legal protection of marine and freshwater environment.

Legal problems of landscape law formation. Issues to be studied: landscapes as integrated objects of environmental legislation. Features of the legal regime of natural landscapes. Anthropogenic landscapes as objects of legal regulation. The problems of implementation of legal regime of natural-anthropogenic landscapes. The problems of consolidation of the legal regime concerning hazardous landscapes. Legal aspects of the formation and development of landscape law.

Problems fauna and flora law. Issues to be studied: historical foundations of fauna law. The concept, subject, methods, principles and system of fauna law. The sources of fauna law. Title to and use of objects of fauna law. State management and control in the area of protection and use of wildlife. Legal regulation of hunting business and hunting. Legal regulation of fish farming and fishing. Legal basis of the use, protection and reproduction of water living resources. Legal basis of keeping the Red Book of

Ukraine. Legal regulation of protecting animals from cruelty. Liability for violations of the legislation on fauna.

Actual problems of water law. Issues to be studied: historical foundations of water law development. The concepts, subject, methods, principles and the system of water law. Sources of water law. Title to and use of water objects. The order of use of water. General and special use of water. Types of water use agreements. Easements. Payment for the use of water. The functions and powers of water use management bodies. Land of water fund and water resources protection zones. The legal regime of marine waters.

Rights biotechnology. Objectives of the course lies in the deep learning by students of law faculty of methodology of issues research in the field of biotechnologies, concept, subject and object of legal relations on the development and use of biotechnologies, problematic aspects of the formation and legal fixation of the modern biotechnology doctrine in Ukraine, legislation in the field of biotechnologies.

Legal problems of forest law. Issues to be studied: historical foundations of forest law development. The concepts, subject, methods, principles and the system of forest law. Sources of forest law. Title and the right to use under forest law. Legal basis of permanent use of forests. Legal basis of temporary use of forests. Legal basis forest easements. The general use of forests. Stay of citizens in forests. Target use of forests. Types of target use of forests. The procedure for granting citizens, legal persons of forest plots, which are in state or municipal property. Harvesting timber. Harvesting of secondary forest materials. The use of forests for hunting business, amateur and sport hunting.

2.2.4. Specialization "Administrative law"

Administrative jurisdiction in the agricultural sector. Provides students acquiring knowledge about the legal framework of inspection bodies in agriculture, their system, types, structure and powers of each inspection, especially administrative proceedings for offenses in the field of agriculture.

Administrative responsibility. Familiarizing students with knowledge on legal ensuring the rights, freedoms and interests of citizens in relation to administrative - jurisdictional authorities and courts, students master the basic assumptions of the theory of administrative law, the Constitution of Ukraine, laws and other normative - legal acts, implementation of theoretical knowledge in practice.

Current issues of administrative law. Provides familiarize students with contemporary problems of administrative legal relations, topical issues of regulation of administrative relations in implementing public authority, problematic aspects to ensure the proper protection of the rights and freedoms of man and citizen in the implementation of the functions and powers of the executive authorities and local governments.

Legal support public administration. Provides study of peculiarities of legal regulation of state management and ensuring legality in the activities of executive bodies and local authorities; analyze problems of structural and organizational restructuring of state power in Ukraine.

Rights of public revenues and expenditures in Ukraine. Involves the study of current tax and budget legislation, review of scientific papers on tax and budget law, as well as the practice of law in this area.

Administrative and legal regulation of nature. Provides familiarize students with the administrative and legal regulation of environmental protection.

2.2.5. Specialization "The Court. Office of Public Prosecutor. The legal profession"

Modern problems of the judicial system in Ukraine. Familiarizing students with the modern challenges of ensuring the right to a fair trial in Ukraine, organization and

functioning of the judicial system of Ukraine, possible prospects of the judicial system and status of judges.

The Prosecutor's Office of Ukraine. Familiarizing students with the basics of organization and activities of the prosecution, its capabilities in protecting the interests of individuals, society and the state, its place and role in the Ukrainian legal system needed not only to graduates of higher educational institutions, who decided to choose the location of their future prosecution.

Actual problems of reforming law enforcement bodies of Ukraine. Introducing students to the subject of discipline, which is the study of information on the regulatory framework, organization, tasks, functions, authority and main activities of state bodies which carry out law enforcement and not the state organization enable the law enforcement functions of the state.

Current issues of criminal proceedings in Ukraine. Familiarizing students with theoretical and practical applied problems of criminal legal qualification and solutions in the theory of criminal law, law enforcement practice and legislation.

Actual problems of criminal legal qualifications. Familiarizing students with the modern criminal law Ukraine (general and special parts), criminal procedural law and so on. We study under the following issues: the concept of the legal system and legal system, sources of law, of the right; basic concepts and categories, which operates the theory of criminal law qualifications, namely crime, the stage of the crime, complicity in the crime, the multiplicity of crimes, etc; Procedure and order of presentation of results of criminal legal qualifications.

Actual problems of forensic activities. Familiarizing students with forensic activities undertaken in the course of judicial expert institutions and government experts. It lies in the organization and conduct forensic examination. Legal proceedings - a set of principles and rules governing the organization and activity of the judiciary.

2.2.6. Specialization "International Commercial Law"

Commercial law. In the process of studying commercial law legal principles of trading activity, shops, conditions of work, patenting and licensing of commercial activities are investigated. Attention is paid to the analysis of legal problems arising from the conclusion of agreements in the field of international trade.

International Commercial Arbitration. The purpose of the discipline "International Commercial Arbitration" is obtaining by students the system of theoretical and practical skills of application of procedural law with the substantive law to resolve disputes related to foreign economic activities.

Legal regulation of FEA. The purpose of the said discipline is formation of special legal knowledge of foreign relations. The complex nature of legal relations of domestic and foreign legal entities determines specificity of the course, so special attention is paid to mastering a significant amount of international legal and national sources.

International food law. The main purpose of this discipline is to muster by students: the concept, the essence, the main characteristics of the international legal food security, sources of international law in the field of food security, international legal regulation of food safety in the UN and its specialized agencies, of international regulation of food safety within the World trade Organization.

WTO Law. The purpose of the discipline is to reveal the concept of WTO law, its features and characteristics. Special attention is given to familiarize students with the principles and rules of WTO law, institutional regulation mechanisms of modern international economic relations, modern standards and prospects of international investment.

Consumer protection in the EU and Ukraine. The purpose of the discipline is to obtain knowledge on the regulation of consumer protection in the EU and Ukraine. The student should know the basic EU directives relating to consumer protection. Particular attention is paid to the implementation of the legislation on consumer protection in the EU and Ukraine.

2.2.7. Specialization "International consumer law"

International food legislation. Educational discipline is aimed at study of the major sources of international food law, international organizations involved in food safety and food security. Particular attention is given to the Codex Alimentarius, the system guaranteeing food safety – HACCP, ISO 22000 series of standards.

European consumer rights. The purpose of the said discipline is formation at students of special legal knowledge on EU consumer policy, regulatory and legal framework for the protection of consumer rights in the EU, the development and regulation of competition and prevent abuses of its position in the market by manufacturers. Special attention is paid to the legal regulation of product safety, spectrum requirements concerning information on the labels, advertising and other marketing activities.

International legal regulation of trade in food products. The purpose and objective of the course is to develop students' knowledge on appropriate international rules of free trade in food. Masters should know the provisions of the Agreement on Trade-Related Aspects of Intellectual Property Rights, the WTO Agreement on Agriculture, WTO Agreement on Sanitary and phytosanitary measures, the WTO Agreement on Technical Barriers to Trade, the Agreement on the International Carriage of Perishable Foodstuffs and on the Special Equipment intended for these transport means of dispute settlement in the WTO.

International insurance law. The aim of this discipline is to study international regulation of insurance, global insurance market. Particular attention is paid to international insurance operations, licensing of insurance, inspection, supervisory responsibilities. We consider the standards of the International Association of national insurance supervisors, international experience of providing insurance and insurance regulation.

Legal liability in the field of consumer protection. The main purpose of this discipline is to obtain knowledge of civil, administrative, legal, financial, economic and criminal responsibility for violation of legislation on protection of consumers in Ukraine and the EU.

International economic law. The purpose and objective of the course is to develop in students the proper knowledge about the concept and the subject of international economic law, sources of international economic law, principles of international economic law, international economic organizations, international regulation of transnational corporations.

FACULTY OF LAND MANAGEMENT

Dean – Ph.D., Associate Professor, Taras O. Ievsiukov.

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The Faculty organizes training of Masters according to the specialty:

8.08010103 “Land Management and Cadastre”

Departments in charge of graduate training:

Land Resources Administration Management

Tel.: (044) 258-05-25

E-mail: Uzr_k@ukr.net

Head of department – Doctor of Economics, Professor D.S. Dobryak

Land-use Planning

Tel.: (044) 258-05-25

E-mail: agmartyn@gmail.com,

Head of department – Doctor of Economics, Professor A.G. Martyn

Geodesy and Cartography

Tel.: (044) 258-05-25

E-mail: Kovalchukip@ukr.net

Head of department – Doctor of geographical, Professor I.P. Kovalchuk

Geoinformation Systems and Technologies

Tel.: (044) 258-05-25

E-mail: k_svit@mail.ru

Head of department – Doctor of technical, Professor S.S. Kohan

**Master's course
in specialty "LAND MANAGEMENT AND CADASTRE"
branch of knowledge "Geodesy and Land Management"**

Form of training, licensed number of persons	
– Full-time	90 persons
– Part-time	85 persons
Duration of Training:	
– Full-time educational and professional program	1,5 years
– Part-time	2 years
Credits:	
– educational and professional program	90 ECTS
Language of Teaching	Ukrainian
Qualification	Master of Science in Land Management and Cadastre

The concept of training

The concept of training for specialty 8.08010103 "Land management and cadastre" aimed in training highly qualified specialists in land management, land conservation, land administration, environmental monitoring of geosystems and the state land cadastre. Training involves the formation of skills and abilities that allow Master students to solve independently complex issues of land use, land development projects and planning for environmental protection, monitoring and public control over rational use and protection of land, using modern information technologies for information on land resources.

**Educational and professional Master's program
*Specialization "Land Management and Cadastre"***

The master's program related to the study and preparation of land use at the national and regional levels, programs and use of land, land management schemes and feasibility studies of land use and protection of lands of the administrative-territorial units, land management projects on establishing and changing the boundaries of administrative units, organizations and delineation of areas of natural conservation, recreational areas and also areas of historical and cultural significance.

Areas of employment for graduates

Setting the boundaries of land plots, approval of boundaries with adjacent land users, making the cadastral plan.

Specialization "Land Conservation"

When studied in this master's program, students acquire skills and knowledge in the field of rational use and protection of land, restoration of soil fertility, increase productivity of forest land, providing special treatment of land use environmental, health, recreational, historical and cultural significance. Particular attention is paid to the learning standards and standardization in the field of land.

Areas of employment for graduates

Inspection activities in the field of land use and land conservation, prediction of land use changes, restrictions in land use and carry their registration.

Specialization “GIS in Land management”

Development and filling modern cadastral information systems.

Areas of employment for graduates

Modern GIS and remote sensing data necessary for carrying out work on the land, in municipal information systems, GIS management areas.

Specialization “Assessment of land and property”

Master's program aimed at creating specialized skills and knowledge to conduct regulatory and expert monetary value of land, determine the market value of real estate of the economic value of land and quality of soil, the use of automation systems evaluation activities, the conduct of local and regional databases of market value of land and property, service of civil operations for the disposal of real property.

Areas of employment for graduates

Regulatory and expert evaluation of land of all categories and custom real estate.

Specialization “Geodetic-cartographic technology in land management”

Provides training for field-geodetic mapping of land management, performance geodetic and cartographic works, land inventory, accounting and registration of land. Much attention is also paid to technology of mapping of land use, zoning maps, optimizing land use, land use cartographic modeling problems, including using GIS technology, the characteristics of the national geospatial data infrastructure and so on.

Areas of employment for graduates

Creation of maps of land use, zoning maps and zoning, optimizing land use, land inventory.

Specialization “Geoinformation Monitoring of Land Resources”

Provides training researchers who will own the application of modern geographic information technology, remote sensing data necessary for carrying out work on the land, in municipal information systems, GIS management areas.

Areas of employment for graduates

Future specialists gain knowledge in modern GIS software and computer-aided design, conducting automated cadastral system for use in land information systems in the bodies of land resources and SLC facilities.

Specialization “Cartographic Modeling of Land Use Issues”

Provides training for research and development works possessed geodetic, cartographic and GIS technology in land management, GIS modeling methods of environmental management, and thematic atlas mapping of land resources, the use of maps in solving the problems of land evaluation, land cadastre, environmental management.

Areas of employment for graduates

Modeling of use of natural resources and thematic atlas mapping of land resources.

Practical training

Curriculum of Master training on specialty “Land Management and Cadastre” has two practical trainings: production and pre-diploma practice. The practice of students is conducted to enhance the practical skills of the students by acquiring practical experience to solve production problems and the collection of materials about a specific company, which are necessary to perform the master's thesis. The leading databases and practical training are: State Agency on Land Resources and its units, the Center of the State land cadastre and its regional offices, scientific research and design institutes on land use, research institutions dealing with land management, monitoring, development; land management, State Inspection for Control over the use and protection of land and its regional offices.

Proposed Topics for Master Theses

1. Formation of territorial restrictions in land use, land management schemes.
2. Legal and technical support of state control over rational use and protection of land.
3. Agrolandscape optimization of land agricultural enterprises and administrative units.
4. The use of information technology, design and modern technology to create cadastral maps, evaluation of land and other real estate. Remote sensing for updating cadastral plans and maps.
5. Improved methods of economic and monetary value of land. Methods of soil evaluation.
6. Methods of land and real estate evaluation.
7. Analysis and evaluation of the transformation processes in land use.
8. Methods of forecasting, planning, rational use and protection of land resources.
9. Ecological and economic aspects of regulation of agricultural land.
10. Normative and expert monetary evaluation of various categories of land.

Academic rights of applicants entering Master course

Applicants with the Diploma of Bachelor can continue training in connected specialties including ones of the field of knowledge “Specific categories”, (table 2) and other specialties (table 3) in accordance with the Terms of enrolment to higher educational institutions of Ukraine in 2015 approved by the Order of the Ministry of education and science of Ukraine on October 15, 2014 № 1172 and the Regulations of enrolment to National University of Life and Environmental Sciences of Ukraine (basic institution, Kyiv) for 2015.

Curriculum of Master training in specialty “Land Management and Cadastre” Educational and qualification Master program

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	State Examination of land management decisions	1	90	3
2	Agricultural, land and environmental law	1	90	3
3	Land Resources Management	1	120	4
4	Organization of land surveying works	1	90	3
5	Land Monitoring and Conservation	2	180	6
6	The legal process of land management	2	150	5
7	The land market and real estate	2	120	4

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
8	Design engineering	2	180	6
9	Commercial and Labor Law	2	90	3
10	Legislative Support of Real Estate Cadastre	3	120	4
11	Licensing and patenting of research output	3	90	3
12	Information technologies in scientific research	3	90	3
13	GIS in cadastral systems	3	90	3
14	Economics of land use and land management	3	120	4
Total for standard part			1620	54
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by University				
1	Methodology and organization of scientific research on the basics of intellectual property	1	90	3
2	Business foreign language	1	150	5
3	Agricultural Policy	2	90	3
Total (Disciplines offered by University)			330	11
2.2. Disciplines offered by students				
2.2.1. Specialization "Land Management and Cadastre"				
1	Automation in land management	1	90	3
2	Planning Development of Territories	1	120	4
3	Standardization and Regulation of Land Management	2	150	5
4	Quality Management of Land Management Projects	3	150	5
5	Management of Municipal Lands	3	150	5
Total (Disciplines offered by students)			660	22
2.2.2. Specialization "Land Conservation"				
1	Formation of agrolandscapes	1	90	3
2	Evaluation and forecast of land quality	1	120	4
3	Environmental impact assessment of land use planning decisions	2	150	5
4	Technological aspects of land use	3	150	5
5	Prediction of land use	3	150	5
Total (Disciplines offered by students)			660	22
2.2.3. Specialization "GIS in land management"				
1	Information Modeling and programming in land management	1	90	3
2	Methods of remote sensing in land management	1	120	4
3	GIS analysis and geostatistics applied to land management	2	150	5
4	Geoprocessing tools	3	150	5
5	GIS of Natural Resources	3	150	5
Total (Disciplines offered by students)			660	22
2.2.4. Specialization "Evaluation of Land and Property"				
1	Information support of monetary evaluation of land	1	90	3
2	Registration of ownership	1	120	4
3	Landscape science basics of land management	2	150	5
4	Real Estate Evaluation	3	150	5
5	Regulatory and expert assessment of land parcels	3	150	5
Total (Disciplines offered by students)			660	22
2.2.5. Specialization "Geodetic-Cartographic Technologies in Land Management"				
1	Computer technologies of mapping	1	90	3
2	Cartographic supply of land management	1	120	4
3	Topographic, geodetic and cartographic supply of land management	2	150	5
4	Thematic Mapping: maps of land cover and use	3	150	5
5	Modeling in Cartography	3	150	5
Total (Disciplines offered by students)			660	22
2.2.6. Specialization "Geoinformation monitoring of land resources"				

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
1	Methods of remote sensing	1	90	3
2	Geospatial databases	1	120	4
3	Analysis of spatial data	2	150	5
4	Multivariate analysis techniques	3	150	5
5	GIS monitoring of natural resources	3	150	5
Total (Disciplines offered by students)			660	22
2.2.7. Specialization "Mapping Modeling land use issues"				
1	Computer technology mapping	1	90	3
2	Mapping supply of land management	1	120	4
3	Mapping as a method of research	2	150	5
4	Thematic mapping: map land resources	3	150	5
5	Mapping of Natural Resources	3	150	5
Total (Disciplines offered by students)			660	22
Total number of elected part			990	33
3. OTHER TYPES OF TRAINING				
1	Production Practice	2	45	1,5
2	Writing and defense of master's thesis	3	45	1,5
Total			90	3
Total for specialty			2700	90

Annotations educational plan disciplines

1. STANDARD ACADEMIC DISCIPLINES

Economic and Labor Law. The aim of the course - students form a system of theoretical knowledge and practical skills in the application of labor legislation, the development of the main provisions of the legal regulation of economic activity, clarifying the legal status of entities, the principles of business

Licensing and patenting of scientific production. The purpose of discipline is to master knowledge in the formation of patent licensing, copyright and related rights. The ability to use knowledge for the preparation of applications for industrial property rights and patents for the protection of copyright in works of scientific and technical purposes with the requirements of national and international laws and regulations in the field of intellectual property.

Information technology in scientific research. Discipline involves in-depth study of organizational and methodological foundations of information technology in research work, logic and stages of information research works, sources of information, design and implementation of others.

Safety in the industry. The discipline that studies the system of legal, socio - economic, organizational-technical, sanitary-hygienic and medical-preventive, aimed at maintaining a healthy and safe working environment professionals in the industry. Course Objective – to provide future engineers and technicians (environmental) knowledge and skills in a safe and friendly working environment in the industry.

Civil defense. The discipline that studies the theoretical, scientific, technical, technological, economic, environmental, social and political problems that disrupt normal life and activity of people in a specific area (basin) or objects on it (the objects on the sea) due to accidents, natural disasters or dangerous event that led or may lead to the inability to communities living on this territory or facility, conducting an economic activity, loss of life or significant property damage.

Land Management is a special discipline in the training of engineers and surveyors focused on the knowledge of the nature and patterns of land management, research methods and management mechanisms.

GIS cadastral systems. Discipline involves consideration of practical applications of GIS and geodata bases of cadastral systems and the acquisition of practical skills in using GIS for automated SLC.

Legislative support of Land Cadastre. The purpose and objectives is to develop an integrated system of property register which will lead to more effective management of real estate, improve property rights and open wider possibilities for the use of these rights will help to monitor the quality of cadastral objects and the environment, will create an objective system property taxation.

Monitoring and protection of land. The purpose of the discipline is learning and gaining listeners required theoretical knowledge and practical skills in monitoring land.

The legal process in land management. The main objective of the discipline is the study of procedural order of land management activities in relation to: the transfer of land ownership and provision for use of natural and legal persons; withdrawal (redemption) of land, privatization of land, the sale of land to individuals and companies, regulatory fees ground, the creation and operation of the farm, land acquisition, the formation of farms and so on.

The organization of land management projects. Discipline is based on the provisions of economics that studies the scientific methods of organizing and planning production activities in the field of land management.

Executive projects in Land Management. The aim of the discipline is to develop theoretical knowledge and its practical application in external and internal organization of land ownership, land use: and rational allocation of blocks, cells, working in areas of areas of perennial crops, vineyards, collective gardens, shelterbelts design, placement constructions for cattle, designing erosion waterworks, with terracing of slopes, land reclamation, etc.

Land market and real estate. Purpose – study of, basic functioning of the land market and real estate and use the knowledge gained in practical tasks. Students should be aware of the regulatory and legal framework for the functioning of the land market mechanisms mortgage have knowledge on how the alienation of land and real estate, to be able to analyze and use information.

Economics of land use and land management. Based on objective economic laws, a system of socio-economic and environmental measures aimed at implementing the provisions of the land laws, develop the methodology and techniques of effective reasoning and rational land use and protection of various categories, forms and types of land use, administrative-territorial units, by region and country as a whole. Includes patterns and specific guidelines for the explanation of design decisions on the improvement of the territory of the administrative-territorial units, land ownership and land use, territorial organization of agricultural and other industries under the conditions of different regions and ownership of land.

Philosophy of science and innovation. The object of study is the general patterns and trends of scientific knowledge as a special activity for the creation of new scientific knowledge, taken in their historical development and under consideration in the historically changing social and cultural context.

Strategy of sustainable development of nature and society. The purpose of discipline is to explore the key problems of interaction between humans and the environment in terms of policies and strategies for sustainable development.

State expertise of land management decisions. The purpose of discipline is to develop knowledge and ownership regulations on relevant research, analysis and evaluation of land documents for compliance with legal requirements, set standards, rules, regulations for objects of expertise.

Agricultural, land and environmental law. The course aims to create a system of knowledge of the legal regulation of agrarian relations in Ukraine, legal support agrarian and land reform, to determine the peculiarities of legal regulation of food and environmental safety, and mechanisms of its implementation.

International standardization and certification technologies, raw materials and finished products. Major International Organization for Standardization. Goals, objectives, functions, International Organization for Standardization. Objects and priorities of the International Organization for Standardization.

Higher Education and the Bologna Process. Learning courses designed to provide students with research and teaching expertise essence of the functioning and development of the European education system on the basis of Boulogne Declaration prepare them for self-education, self-help and self-determination.

2. ELECTIVE ACADEMIC DISCIPLINES

2.1. Disciplines offered by University

Methodology and organization of research with the principles of intellectual property. The aim of the discipline is formation of the system of knowledge in methodology, theory of method and research process, methodical support of scientific and research activity at the stages of preparation of a Master paper, formation of the ability to organize research of a specific issue using the whole complex of the traditional methods of research including general and special methods. The main task of the theoretical part of the course is introduction to students the current concepts of research creation, the principles of methodology of scientific perception and methods of research. The main task of the practical part is the development of self-education ability, mastering skills of formation and application of perceived methodological position of research. In case of mastering the course students have to improve their skills of search, assortment and processing of scientific information, accurate formulation of a problem, aim, task, object, subject, methods of research. Introduction to students the principles of intellectual property and direction of them to gain knowledge and skills concerning registration of rights of ownership, their protection, commercialization, estimation and management are envisaged.

Business foreign language. The general aim of the program of teaching of foreign language for the professional purpose is formation students' professional linguistic competencies that will contribute to their efficient operating in cultural variety of training and professional environment. The methods of search of new information in another language sources, linguistic methods of analytical study of another language sources are learned. Students study published original literature in another language and increase their lexical and grammatical skills. Methods and linguistic peculiarities of annotation and synopsis of another language sources, the principles of translation of professional oriented another language sources are studied.

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.

2.2. Disciplines offered by students

2.2.1. Specialization “Land management and cadastre”

Automation in Land Management. The need to quickly and efficiently perform land surveying work in the new socio-economic environment requires a broad application of the principles of formation and organization of scientific research, automated methods for the design and conduct of a database and the data in the field of land surveying. The development of modern land management is defined by methods and research means that is currently being improved, especially in connection with the use of a systematic approach, mathematics, computing and computer technologies. Land management is inextricably linked with the new progressive area of research - automation land management that occurred at the intersection of land management, economics and mathematical modeling in land management, geoinformatics, mathematics and other sciences.

Planning Development of Territories. The purpose of discipline is mastering modern scientific aspects of territories development, to further implement them in practice. Improve previously acquired knowledge and apply new techniques in this field.

Standardization and Regulation of Land Management. The purpose of discipline is: development of general knowledge on standardization and regulation of land management to conserve land resources, soil fertility, implementation and development of sustainable land use, land protection and protection of the environment in general, the definition of the main goals and objectives in the regulation of anthropogenic pressures on ecosystems is general and land resources partially, the definition of the structure and mechanisms of formation and functioning of standardization and regulation system (SRS), the definition of priorities for creating SRS, ensuring governance in process of creation and revision of existing international, national and industry standards and regulations regarding sustainable land management, land use and land protection.

Quality Management of Land Management Projects. The aim and purpose of discipline is the development of socio-economic activities in the program, project and working land documents that would ensure sustainable use and protection of land, the creation of the environment and improve the natural landscape with the introduction of the scientific organization of labor in the land management process, improving the quality of practical solutions and project documentation as a whole.

Management of Municipal Lands. For effective land management it's necessary to justify allocation of land for the intended purpose and to identify approaches to differentiation (separation) of land use that are largely addressed through the drafting of land documents (projects, schemes, etc.). All this underlines the relevance of the discipline.

2.2.2. Specialization “Land Concervation”

Formation of agricultural landscapes. The purpose of the study of the course - the mastery of general Theoretical Foundations of environmentally sustainable agricultural landscapes, the development of methodological approaches to the assessment and prediction of agricultural landscapes, the practical application of technology design and ameliorative soil-dimensional structure of agricultural landscapes.

Assessment and prediction of land quality. Purpose of the discipline - the development of modern methods of assessing the quality of land, the forecast change

their state under the influence of natural and anthropogenic factors, basis for the preservation and restoration of ecological values of natural and acquired qualities of land on different natural and economic conditions of areas of land use.

Environmental impact assessment of land use planning decisions. The course aims to develop in students have a professional approach to solving specific practical problem of the protection and rational use of land resources, environmental impact assessment of projects land.

Technological aspects of land use. The course reviews relations between the agricultural domain and the natural environment, helps to develop new approaches and principles of agricultural production on different soil and climatic conditions with minimal energy and material resources to carry out measures to predict and rationalize the use and protection of land, regardless of ownership and management

Prediction of use of land resources. The course is designed to help master the theoretical knowledge and practical skills of agroecological research in different soil-climatic zones of the study of the causes of degradation phenomena, assessment of the extent of their distribution and performance measures for their prevention, conducting environmental and agrochemical land evaluation

2.2.3. Specialization “GIS in land management”

Information modeling and programming in land management. The course provides learning basic programming skills in C++.

Methods of remote sensing in land management. Discipline involves consideration of remote sensing techniques and the possibilities of using contextual interpretation of results in problems of territory management and monitoring.

GIS analysis and geostatistics applied to land management. The discipline involves the study of the theoretical foundations of GIS analysis and provides practical skills to use spatial analysis and geostatistics in land management.

Geoprocessing tools. Spatial data features are reviewed in the course as well as main models of their displaying and operations with geodata in ArcInfo.

GIS of natural resources. Practical application of GIS technology for the purposes of natural resources monitoring and land management, application of geoprocessing procedures for research of natural resources is reviewed.

2.2.4. Specialization “Evaluation of land and property”

Information support of monetary evaluation of land. The aim of the course - mastering future specialist surveyors nature of information aspects land evaluation and use of information technologies in the implementation of evaluation. Determination of the real, fair value is essential for taxation and privatization of land and property transactions about the land and rights of its lease on the secondary market. In addition, the value of land is required for the development and implementation of investment projects, obtaining loans secured by real estate.

Registration of property rights. Purpose – to study methods of registration of title to land is required at the conclusion of civil agreements on land, including-sales transactions, rent relations, for the purposes of monitoring – monitoring system as the rights of ownership of land in order to timely detect changes in their assessment, prevention and elimination of negative effects, as well as public accounting.

Landscape science basics of land base. The aim of the course is to teach students landscape science principles and methods of research in the field of land management. This course content should cover the basics of Landscape and Landscape Research methodology, methodological approaches to address specific environmental

issues, identifying areas of applied research landscapes and their effectiveness in good housekeeping, setting up experiments, summarizing research results landscapes in targeted reports, advanced techniques and applications recommendations.

Real Estate Evaluation. Purpose – to learn to identify the objective market value of the property, which usually depends on the type of the property, the location of the property, the cost of construction of similar facilities, the general level of prices, the market situation.

Regulatory and expert assessment of land. Discipline is designed to give students the necessary knowledge that will enable them to have the implementation of regulatory and expert monetary value of land, including determining the impact that assessment has on the development of land relations. Study courses should prepare students for further creative thinking and solutions to practical and methodological problems associated with the assessment of land in specific circumstances.

2.2.5. Specialization “Geodetic-cartographic technology in land management”

Computer technology in cartography. The task of the discipline dates required theoretical knowledge of modern computer technology to teach methods of their use in the creation and design of maps, acquire skills and abilities while learning specialized software products that are used in the creation of cartographic products used in land surveying; familiarize students with technological features phases of cartographic products (plans, drawings and maps).

Cartographic supply in land management. We consider some elements of the theory of cartography, map projections and ways of maps used in land management. Posted technique to create and update planning and cartographic material for the purposes of land. The use modern computer technology and software in solving problems of land use mapping are reviewed.

Topographic-geodetic and mapping supply of land management. The task of the discipline: to give information on the current legal and organizational framework for the establishment and development of national infrastructure geospatial data gain skills and ability to use geospatial data in land management.

Thematic mapping: map of the land and its use - covers the basics of thematic mapping. Served classification of thematic maps and legends develop ways according to their types. Are explained ability to display a variety of objects, processes and phenomena through different ways of maps. The basic methods of creating thematic maps and their basic content and methods of their execution and coordination.

Cartographic Modeling in Land Management covers the basics of cartographic modeling and simulation tools in cartography. Served methods and guidelines simulations in cartography. Are explained in the nature of a sign system mapping, mathematical function, mapping and GIS mapping, the main task of modeling and thematic mapping problem. Considered and solved some problems creating models of objects, processes and phenomena both natural and socio-economic.

2.2.6. Specialization “Geoinformation monitoring of land resources”

Methods of remote sensing. Discipline involves consideration of remote sensing techniques and the possibilities of using contextual interpretation of results in problems of territory management and monitoring.

Geospatial databases review the features of the hierarchical, network, relational and object-oriented database models. We study the design of relational databases, relational algebra, functional dependencies and normalization, the basic elements of SQL and the use of ER-diagrams and UML for building database structures.

The analysis of spatial data. Students gain practical experience in conceptual, logical and physical data models, content database attributes constructing spatial component of the vector-based topological model and application requests to the spatial component.

Multivariate analysis techniques. Classification of spatial analysis functions. Overlay operations: types of overlay operations, the structure of input and output data, polygon overlay methods. Network analysis. Techniques and methods of statistical analysis. Examples of implementation in the GIS tool.

GIS monitoring of natural resources. We consider the practical application of GIS technology for monitoring natural resources and land management, application procedures geoprocessing the study of land and water resources, flora and mineral resources of use of software package ArcGIS.

2.2.7. Specialization “Mapping Modeling land use issues”

Computer technology in cartography. The discipline provides the theoretical knowledge and practical skills in the study of the application of modern technologies for their use, acquiring the ability to use methods and techniques of design, creation and update maps and other cartographic items on land management based on computer technology.

Cartographic supply in land management. We consider some elements of the theory of cartography, map projections and ways of maps used in land management. Posted technique to create and update planning and cartographic material for the purposes of land. The use modern computer technology and software in solving problems of land use mapping is reviewed.

Cartographic research method. “Mapping method of investigation” in the land surveying profession provides skills acquisition card reader and how to use them, learning different techniques and methods of analysis of maps and other cartographic models based on modern technologies.

Thematic mapping: maps of land resources. The task of the discipline: to give the necessary theoretical information about the visual, graphical, mathematical, GIS techniques and methods of analysis maps to teach the method of their application using maps, acquire skills and abilities in mastering the techniques and methods of analysis of the maps that are used to create them on the basis of other cartographic models, familiarize students with the features of levels and stages using maps.

Mapping of natural resources. Landscape science and landscape research are aimed at identifying the nature of the human impact on the environment. Preparation of forecast maps, the resulting integrated map of the environment is reviewed in the course.

FACULTY OF ECONOMICS

Dean – Doctor of Economics, Professor Anatoly Dmitrievich Dibrova

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Location: educational building number 10, room. 301

Faculty organizes and coordinates the educational process of preparation of masters in the field:

8.03050401 “Economics of Enterprise” (by economic activity)

The graduating department:

Economics of Enterprise

Tel.: (044) 527-89-78

E-mail: agrarna_economika@ukr.net

Head – Doctor of Economics, professor Svitlana Rogach

Organization of Agribusiness

Tel.: (044) 527-86-60

E-mail: Kaf_orgagro@ukr.net

Head – Doctor of Economics, Professor Nikolai Ilchuk

Labor Economics and Rural Development

Tel.: (044) 527-82-69

E-mail: 403-7@ukr.net

Acting Head of Department – PhD, Associate Professor Tkachuk Vadim Anatolievich

Global Economy

Tel .: (044) 527-86-60

Head – Doctor of Economics, professor Natalia Vdovenko

8.03050801 “Finance and Credit” (for specialized programs)

The graduating department:

Finance and credit

Tel .: (044) 527-87-59

E-mail: Kafedfin@ukr.net

Head – Doctor of Economics, Professor Ina Zelisko

Taxation and Insurance

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Head – Doctor of Economics, Professor Lubov Khudoliy

8.03050803 “Taxation”

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Head – Doctor of Economics, Professor Lubov Khudoliy

8.03050901 “Accounting and Auditing”

The graduating department:

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Head – Doctor of Economics, Associate Professor Tatyana Kaminska

Statistics and Economic Analysis

Tel .: (044) 527-83-61

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Head – Doctor of Economics, Professor Vasyl Savchuk

8.18010009 “Stockbroking”

The graduating department:

Exchange activity

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Head – Doctor of Economics, Professor Igor Okhrimenko

**Master's course
in specialty "ECONOMICS OF ENTERPRISE" (by economic activity)
branch of knowledge "Economics and Entrepreneurship"**

Form of training, licensed number of persons	
– Full-time	60 persons
– Part-time	60 persons
Duration of Training:	
– Full-time educational and professional program	1,5 years
– Full-time education and scientific program	2 years
– Part-time	2 years
Credits:	
– educational and professional program	90 ECTS
– education and scientific program	120 ECTS
Language of Teaching	Ukrainian, English
Qualification	Master's degree in economics

The concept of training

The transition to a market economy, reform of property relations necessitated a radical restructuring of curricula, sending them to deepen content and improve the quality of special education.

In addressing this important task should facilitate implementation in higher school speed training.

Master stage of training specialists in economics distinguish qualitatively new curricula and programs, innovative forms of educational process, which focused on providing a high level of theoretical knowledge, directly involved in the research and aprobaty their results in practice, mastering the scientific and methodological fundamentals teaching activities.

Master in economics should be an expert with the general level of education and culture to the international standard that has sufficient intellectual capacity to a wide selection of specific areas of practice.

Educational and professional Master's program

Specialization "Business planning production activities in agriculture"

Improved Agribusiness is an important area of economic growth in Ukraine. In agriculture continues irrational use of natural resources, labor and productive capacity. Resource efficiency depends on a large number of different organizational, economic, technical and financial factors that determines the real justification for the need of each project investment of existing or newly established companies. The experience of foreign and domestic enterprises shows that market conditions stable business success can not be achieved without making business planning. It helps distribute prioritize management efforts, rationally allocate the necessary resources and optimize the economic performance of the company. These problems need to solve economists qualifications. Their competence level of acquired knowledge on business planning of production activity depends solve practical problems related to business efficiency in agricultural enterprises.

Areas of employment of graduates

Managers and assistants economic departments of companies, associations, firms agriculture systems and so on.

Specialization "Organization of production services for enterprises of agrarian sphere"

Modern high-performance agricultural production is impossible without a developed infrastructure which is an important element of the production system maintenance and logistic support. Some combination and mutually beneficial operation of industrial and service sectors objectively caused social division of labor and commodity-money relations.

Therefore, given the current trends of economic development there is a need for professionals who have had knowledge of the service economy, were able to design, organize and effectively manage the business in this area.

This master's program aims at training highly qualified specialists and economists serving areas for agribusiness.

It involves the study of logistics farms, determining the optimal technological demand for various kinds of agricultural inputs, pricing them and forming marketing tariffs for production services. The development of modern approaches to the development of mutually beneficial economic relations across the system "agricultural producer – production service." Using the latest scientific and technological progress and modern economic and mathematical methods to optimize the use of production resources and rational system construction and maintenance of production logistics.

Areas of employment of graduates

Managers and assistants economic departments of companies, associations, firms serving the field of agriculture different ownership and so on.

Specialization "Socio-economic development of rural areas"

With the dismantling of central planning of economy actually disintegrated system of socio-economic development of the Ukrainian village. In the country there was no system for training specialists in these issues. In the transition to market relations the problem of sustainable development of the agricultural sector as a prerequisite exit from the crisis of agricultural economy and food security, the state has gained priority. It is further enhanced by the fact that market conditions have changed significantly mechanisms and levers of economic and social development of rural areas. Experts are now addressing these problems do not have sufficient skills-depth analysis of the processes occurring in the agricultural sector, and the more they are able to identify priority areas, to develop a set of measures and instruments to justify their implementation in order to brake the negative trends and to improve the economic, social, demographic and ecological situation in the country. There is an urgent need to change the situation and to begin production of the necessary specialists, so the study of the program allows for a deeper and wider understanding of the issues and trends in the rural sector at present, teaches them skills forecasting and selection of effective methods and ways to mitigate and overcome existing imbalances and enhance sustainable rural development under conditions of market relations.

Areas of employment of graduates

Heads of village councils, specialists of district and regional directorates of agriculture administration.

Specialization "Economics of agrarian sector"

Reform of the Ukrainian economy and its transition to market principles of operation require the development of new areas of economic science and practice. The issue market creation at the micro level, ie at the level of the enterprise.

In these circumstances, the successful development of the agricultural sector is based on competent and competent study of market requirements, the creation and organization of production of competitive products, providing a high yield. The total sectorial approach has important advantages compared to traditional projects and programs, as increases the responsibility of the Executive in studying the problems at regional and national levels, fully takes into account aspects sectorial policies and regulation. At the same time it is necessary to educate MSc sufficient standards of public accountability, which in future will form a proper institutional and administrative capacity for the formulation, implementation and coordination of common sectorial programs.

Concept and overall objective of the program reflects the need objective in increasing economic efficiency and effectiveness of the agricultural sector. Today there is a great need for training highly intelligent, educated professional of the business. Masters must learn to take the initiative and solve social and personal problems. Previously it was a system that focused only on the production, the future it becomes a system aimed at improving income and living standards of the rural population.

Areas of employment of graduates

Agricultural enterprises of various forms

Specialization "Exchange activities in the agricultural market"

In terms of economic development well functioning stock market agricultural takes a leading role in the stabilization of the agricultural sector as a whole. By providing transparent pricing of insurance price risks, commodity transfer and cash flow, commodity exchanges act as a tool for infrastructure commodity markets and designed to reduce the impact of destabilizing factors on the formation mechanism of domestic prices of major agricultural products. In this regard, the range of use of instruments of exchange agrarian market every year more and more participants covering economic relations from producers, traders, industrial and investment companies to public institutions.

The dramatic changes in recent years in global and domestic exchange industry, widespread adoption computers and information technology, the transition to a market economy pose new requirements for professional training exchange business. Therefore, in order to improve the functioning of the exchange of agricultural market and ensuring its highly qualified specialists at the National Agrarian University by the Ministry of Agrarian Policy of Ukraine, the Department open exchange of master's program "Exchange activities in the agricultural market" (Ministry of Agrarian Policy of Ukraine № 292 from 13.06.06).

Urgent needs in forming trading system state Agrarian Exchange and other commodity exchanges of the country for creating this master's program. Implementation of the modern state strategy in the development of agricultural market exchange revealed the need for training highly qualified specialists exchange of specialization for government agencies, and not the public sector.

Areas of employment of graduates

Agriculture and exchanges graduates Ukraine Occupation: Agriculture and exchanges Ukraine

Educational and scientific Master's program
Specialization "Sustainable development of agribusiness enterprises
in the conditions of global economic instability"

Development of organizational, legal and economic conditions for innovative economic development of agricultural production and improve on this basis of social accommodation of the rural population, first of all, increasing its employment and income:

- The acquisition of skills masters for the development of agricultural market infrastructure for innovative principles, regulation of supply and demand, quality and development of agro-industrial integration;
- Analysis of the competitive environment for the development of the agricultural sector with regard to WTO requirements, determination and support of innovative processes in the implementation of priority directions of development of the agricultural sector in modern conditions;
- The study and development of measures to improve the environmental situation.

Concept Master program provides for the formation of masters skills in drawing up business plans and integrated programs of investment and innovation development businesses in the countryside.

Social focus of the master's program of innovation development of the agricultural sector causes formation of Masters approaches to overcome the negative processes and phenomena in social and economic development of agriculture and sustainable living standards of the villagers, creating conditions for the development of business and on this basis to reduce unemployment and migration.

Areas of employment of graduates

Agricultural enterprises of different forms. Enterprises serving the areas of agriculture systems. Heads of village councils, specialists of district and regional directorates of agriculture administration.

Practical training

Teaching and research farms NULES Ukraine; advanced enterprise, association, firm system of agro-industrial complex of Ukraine and so on.

Proposed Topics for Master Theses

1. The development of agribusiness in the region and increase its efficiency.
2. Organization and prospects of development of agricultural enterprises.
3. Organization and economic efficiency of logistics farms.
4. Improvement of the forms of production maintenance of agricultural enterprises.
5. Social and economic principles of sustainable rural development.
6. Improving the forms of service production farms.
7. Formation and economic efficiency of sub zernoproduktov.
8. Formation and effective functioning of milk under complex.
9. The economic mechanism of functioning of the exchange of regional agricultural markets.
10. Features of formation and development of exchange market of agricultural products in Ukraine.

Academic rights of applicants entering Master course

Applicants with the Diploma of Bachelor can continue training in connected specialties including ones of the field of knowledge "Specific categories", (table 2) and other specialties (table 3) in accordance with the Terms of enrolment to higher educational

institutions of Ukraine in 2015 approved by the Order of the Ministry of education and science of Ukraine on October 15, 2014 № 1172 and the Regulations of enrolment to National University of Life and Environmental Sciences of Ukraine (basic institution, Kyiv) for 2015.

**Curriculum of Master training
in specialty “Economics of Enterprise”
Educational and professional Master's program**

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	Economic governance	1	150	5
2	competitiveness	1	150	5
3	Modeling in the management of socio-economic systems	2	150	5
4	Intelligent business	2	150	5
5	project management	2	120	4
6	Business Planning entrepreneurship in agriculture	2	120	4
7	Global Economy	3	150	5
8	Social responsibility	3	150	4
9	Innovative development company	3	150	4
10	State economic policy	3	150	4
11	Stock market	3	150	4
Total for standard part			1470	49
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by University				
1	Business Foreign Language	2	120	4
2	Methodology and organization of research	1	90	3
3	Intellectual Property	3	30	3
4	Agrarian policy	3	120	4
Total (Disciplines offered by University)			420	14
2.2. Disciplines offered by students				
2.2.1. Specialization “Agricultural economy”				
1	The economy of the agricultural sector	2, 3	330	11
2	Economy Cooperative Sector	2	180	6
Total (Disciplines offered by students)			510	17
2.2.2. Specialization “Business Planning entrepreneurship in agriculture”				
1	Design entrepreneurship in agriculture	2, 3	330	11
2	Agribusiness: development and evaluation	2	180	6
Total (Disciplines offered by students)			510	17
2.2.3. Specialization “Company production service enterprises of agrarian sphere”				
1	Economy and organization serving areas in agriculture	2, 3	330	11
2	Economic relations between the serving and the manufacturing sector	2	180	6
Total (Disciplines offered by students)			510	17
2.2.4. Specialization “Stockbroking on agricultural market”				
1	Technology futures trading	2, 3	240	8
2	Brokering	2	90	3
3	Organization of commodity exchange market	2	90	3
4	Price and pricing	2	90	3
Total (Disciplines offered by students)			510	17
2.2.5. Specialization “Socio-economic development of rural areas”				
1	Socio-economic development of rural areas	2, 3	330	11
2	The organization of local government	2	180	6
Total (Disciplines offered by students)			510	17
Total (Disciplines offered by students)			510	17

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
Total for elective part			930	31
3. OTHER TYPES OF TRAINING				
1	Production Practice	2	150	5
2	Preparation and defense of master's work	3	150	5
Total			300	10
Total for Specialty			2700	90

**Curriculum of Master training
in specialty "Economics of Enterprise"
Educational and scientific Master's program**

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	Economic governance now	1	150	5
2	competitiveness	1	150	5
3	Modeling in the management of socio-economic systems	2	150	5
4	Intelligent business	2	150	5
5	project management	2	120	4
6	Business Planning entrepreneurship in agriculture	2	120	4
7	Global Economy	3	150	5
8	Social responsibility	3	150	5
9	Innovative development company	3	150	5
10	State economic policy	3	150	5
11	Stock market	3	150	5
Total for standard part			1590	53
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by University				
1	Business Foreign Language	2	120	4
2	Methodology and organization of research	1	90	3
3	Intellectual Property	3	30	3
4	Agrarian policy	3	120	4
Total (Disciplines offered by University)			420	14
2.2. Disciplines offered by students				
2.2.1. Specialization "Sustainable development of agribusiness enterprises in the conditions of global economic instability"				
1	Sustainable development of agribusiness enterprises	2	180	6
2	Ensuring the efficiency of farms	2	180	6
3	Scientific principles of formation of self-sufficiency of rural communities	3	150	5
Total (Disciplines offered by students)			510	17
Total for elective part			930	31
3. OTHER TYPES OF TRAINING				
1	Production Practice	3	150	5
2	Educational practice	4	480	16
3	Preparation and defense of master's work	4	450	15
Total			1080	36
Total for Specialty			3600	120

Annotations educational plan disciplines

1. STANDARD ACADEMIC DISCIPLINES

The economic management. Formation of knowledge about patterns of changes

in economic parameters of enterprises, skills of application of methods and tools to justify the cost-effective management decisions. Formation of knowledge of financial management companies operating and investing activities, the definition of strategies and tactics to ensure financial entities.

The competitiveness of the enterprise. The study and practical implementation of modern concepts, methodological approaches to the evaluation of the competitiveness of the company and its management. The study of new approaches to the management of the formation, development, competitiveness potential of the company, the impact of its use on modern social and economic criteria; acquiring skills to justify and use mechanisms to prevent crisis and crisis management entities.

Modeling in the management of socio-economic systems. Forming students' knowledge system of methodologies and tools for modeling economic systems, forming practical skills of construction and application of mathematical methods and models of objects and processes functioning market economy, determining optimal control parameters of socio-economic systems.

Intelligent business. Learning basic theoretical and methodological foundations of intelligent business and specific disclosure of intellectual products, study of suitable business models and predictive modeling business, assessing the risks intelligent business models promoting the development and commercialization of intelligent products.

Project management. Providing knowledge about methods, techniques and tools of project management, study design principles of the company, specific methods and tools of project management; acquiring skills to perform the basic functions of project management - organization, planning and control.

Business Planning entrepreneurship in agriculture. Formation of theoretical knowledge and practical skills in business planning in enterprises in the sphere of agriculture, planning system, process, mechanism, technology and organization business planning activities of enterprises of agroindustrial complex.

Global economy. Forming students' understanding of the conditions and factors of development, mechanisms and tools of the global economy, study of market relations among the global economic system, awareness of its intellectual mission for balanced decision-making in the context of general civilized progress.

Social responsibility. Formation of basic knowledge of the theory and practice of social responsibility of professional competence, learning theoretical concepts and practice cooperation between the state, business, society and rights in the area of social responsibility.

Innovative development company. Forming students' knowledge and skills to ensure innovation development of economic systems, evaluation of innovative potential, justification and implementation of effective managerial decisions on the economy on innovative principles.

State economic policy. Formation of knowledge on the concept of economic policy. The theory of public choice in economic policy. The concept of the political process. Theory of Groups. The theory of rationalism. The theory of the game. The theory of open systems. The general scheme of economic policy. The content and results of the stages of formation and implementation of economic policy. Evaluation of economic policy. The economic order of society, its content, structure, patterns formation. System objectives of economic policy. The strategic objectives of economic policy. Methodological approaches to the implementation of economic policy. Measures of state economic policy.

Exchange market. Formation of knowledge on the organization and functioning of exchange trading of different types of stock market; the acquisition of practical skills: organization of trade on commodities, securities, currency; the establishment and activities

of broker offices; use the exchange of information for organizations highly efficient production and sales of agricultural products.

2. ELECTIVE ACADEMIC DISCIPLINES

2.1. Disciplines offered by University

Business foreign language. The general aim of the program of teaching of foreign language for the professional purpose is formation students' professional linguistic competencies that will contribute to their efficient operating in cultural variety of training and professional environment. The methods of search of new information in another language sources, linguistic methods of analytical study of another language sources are learned. Students study published original literature in another language and increase their lexical and grammatical skills. Methods and linguistic peculiarities of annotation and synopsis of another language sources, the principles of translation of professional oriented another language sources are studied.

Methodology and organization of research. Science and research. The essence of the problem and the types of research. The structure of scientific research. General scientific research methods. Special methods of financial research. The forms display the results of scientific research.

Intellectual Property. Learning the basics of intellectual property, registration of ownership, protection, commercialization, valuation and management, research foundations, legal and economic aspects of intellectual property.

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.

Educational and professional Master program

2.2. Disciplines offered by students

2.2.1. Specialization "Agricultural Economy"

The economy of the agricultural sector. Scientific aspects of agricultural resource potential for sustainable production. Status and trends of agricultural production. Improving economic efficiency of agricultural production in the innovation-based economic nature, character and main components of agricultural resources, ways to improve agricultural production in an innovative manner.

Economy cooperative sector. Definition of quantitative and qualitative parameters of the corporate sector in the future, as well as major activities through which these exercise parameters will be achieved, determining the economic efficiency of the cooperative sector, the use of production resources, the study of contemporary issues related cooperative sector.

2.2.2. Specialization "Business Planning entrepreneurship in agriculture"

Design entrepreneurship in agriculture. Formation of theoretical knowledge for the design of agricultural businesses, practical skills related to the development of technical, organizational and planning documents on which the operation is formed and provided manufacturing systems (companies) in the field of agribusiness.

Agribusiness: development and evaluation. It reveals the essence of agribusiness as economic activity and its specificity; organizational forms in the production agribusiness and its legal support; organizational and economic conditions efficient production and management of farms; specificity agribusiness in regions of Ukraine.

2.2.2. Specialization "Organization of production services for enterprises of agrarian sphere"

Economy and organization serving areas in agriculture. Formation of theoretical and practical knowledge about rational organization and efficiency of service production and logistics of agricultural enterprises, explore new approaches to organization and management system development production maintenance of agricultural enterprises, the formation of material base of agricultural production, provision of scientific policy in the field of mechanization, electrification, automation, agricultural construction, chemicals, agricultural product processing end, informational, logistical and scientific support of production of agrarian sphere.

Economic relations between the operating and non-production sphere. Provides for the study of logistics farms, pricing and marketing of formation of tariffs for production services determined how to optimize the use of production resources and rational construction system of production and service logistics.

2.2.4. Specialization "Exchange activities in the agricultural market"

Technology futures trading. Research and technology organization and functioning of futures trading various kinds of futures markets; the acquisition of practical skills: design and execution of transactions in the futures market; mastering the practice of hedging and speculation; analyzing and predicting the futures market; use of financial instruments futures market and stock information to organize highly effective production and marketing of agricultural products.

Brokerage activities. Learning the basics of organization and functioning of broker offices; the acquisition of practical skills: conducting brokerage operations brokers; mastering practice brokers transactions on the stock market; brokerage firms in the domestic stock market; study requirements for certification of brokers on the exchange agricultural market.

Organization of commodity exchange market. Study of specialized knowledge in the sphere of commodity exchange market, the main range of the stock market; the acquisition of theoretical knowledge for the organization and implementation of commodity exchange market.

Price and pricing. The theoretical basis of pricing; legislative and regulation of pricing in agriculture; organizational and economic mechanism of pricing; description of methods of regulation of pricing in Ukraine; types of prices and their classification; Pricing and problems equivalent exchange in agriculture; monitoring, control prices and their prediction.

2.2.5. Specialization "Socio-economic development of rural areas"

Socio-economic development of rural areas. Priorities and efficient instruments and mechanisms to address the problem of overcoming the depressed rural areas diversify their economic base and creating socially attractive and environmentally friendly living conditions of the rural population; methods of analysis for interdependence and interrelation of agriculture sector from external and internal factors in conditions of economic transition; training professionals able to work independently in a changing environment postplanovoyi economy.

The organization of local government. Learning and mastering the basics of the system of local government, economic nature, character and main components of local government, social and economic development of communities.

Educational and scientific Master's program

2.2. Disciplines offered by students

2.2.1. Specialization *"Sustainable development of agribusiness enterprises in the conditions of global economic instability"*

Sustainable development of agribusiness enterprises. Studying the efficiency of natural resources, labor and productive capacity that make business planning, solving practical problems related to business efficiency in agricultural enterprises, development of technical, organizational and planning documents on which the operation is formed and provided manufacturing systems (enterprises) in the field of agribusiness.

Ensuring the efficiency of agricultural enterprises. The study of market requirements, the creation and organization of production of competitive products, ensuring high profitability, the study components increasing economic effectiveness and efficiency of the agricultural sector of the country, the economic entity, the nature and main components of agricultural resources, ways to improve agricultural production in an innovative manner.

Scientific principles of formation of self-sufficiency of rural communities. The study of the problems of sustainable rural development sector as a prerequisite exit agrarian economy out of crisis and food security, mechanisms and levers economic and social development of rural areas. skills-depth analysis of the processes occurring in the agricultural sector priorities, a set of measures and justification of the instruments to implement them in order to brake the negative trends and to improve the economic, social, demographic and ecological situation in the country. Determination of effective methods and ways to mitigate and overcome existing imbalances and enhance sustainable rural development under conditions of market relations.

**Master's course
in specialty "FINANCE AND CREDIT"
branch of knowledge "Economics and Entrepreneurship"**

Form of training, licensed number of persons	
– Full-time	100 persons
– Part-time	100 persons
Duration of Training:	
– Full-time educational and professional program	1,5 years
– Full-time education and scientific program	2 years
– Part-time	2 years
Credits:	
– educational and professional program	90 ECTS
– education and scientific program	120 ECTS
Language of Teaching	Ukrainian, English
Qualification	Master in Finance and Credit

The concept of training

Training focused on in-depth study of the theory and practice to ensure effective financial management of enterprises of agrarian sphere of economy, support of training experts from the banking, insurance spheres for the needs of agricultural enterprises. An important direction of the program is targeting students for independent work, the development of creative activity of finding effective solutions to the problems studied, acquiring skills to the study of scientific literature, existing legislation and on this basis to acquire the ability to form internal and external financial relations, efficient use of financial Management successfully applied methodological tools of financial management.

Specialist "Finance and Credit" has to master the high level of basic knowledge in financial management, understand the features of information security and be able to use computer technology in the financial and economic activities of agricultural entities, to know and understand the basic principles of formation of agrarian policy .

Theoretical knowledge of financial subjects tested must pass directly to specific enterprises, financial institutions.

Practical training has been made to equip future masters of finance and credit practical knowledge in finance, professional skills and ability to work as head of financial departments of companies, financial analysts, financial directors.

Serious attention along with professional study of financial work should be paid to the study of effective methods of organization and financial management of enterprises.

Implementation of research, their implementation in practice, implementation skills to think creatively and take extraordinary decisions are urgent problem of preparation of future scientific personnel in finance and credit.

The purpose of the master's work is to systematize, to deepen and consolidate the theoretical knowledge of testing in the workplace.

Formation of a new type of modern economic thinking should be directed to development initiatives, increased business activity, finding creative ways that lead to the improvement of life in a market economy.

Effective teaching in master's programs "Finance and credit" provided:

- the involvement of the teaching staff qualifications;
- use in learning the latest educational technologies that provide theoretical knowledge and practical skills required for the provision of financial services;
- using flexible forms of education, individual approach to students, the possibility

of combining learning with research work in writing the master's works under the guidance of the most experienced teachers qualifications;

- conduct counseling sessions, training sessions on financial services businesses of the agricultural sector, participation of students in scientific conferences on topical issues of the financial activities of agricultural enterprises.

Studying a Master's Degree provides training that can independently take effective decisions on providing financial services to entrepreneurs and generates qualified specialists for finance.

Educational and professional Master's program

Specialization "Banking agricultural enterprises"

Agricultural enterprises characterized by specific economic conditions related to the seasonality of production, trafficking slow investment; inability to even simple reproduction without credit support; the need to obtain credit in due time, while all agricultural producers and others. The specificity of the industry lies in the fact that when taken long-term lending collateral may make farmland. The modern banking system of Ukraine does not consider the circumstances for various reasons, including the lack of specialists of the profile.

All this makes the need for training Masters in Banking for the agricultural sector.

The purpose of the master's program – providing training professionals who have deep knowledge of banking and skills provision of banking services to entrepreneurs in the agricultural sector.

Areas of employment of graduates

Managers and assistants economic financial departments of agricultural enterprises, associations, bank managers and others.

Specialization "Insurance business"

The master's program "Insurance business" involves students acquiring knowledge of the organization of insurers on the needs of citizens and legal entities in insurance services and explore the essence of insurance services, the organization of insurance companies, the terms of the insurance of the main types of personal, property insurance and liability management features in insurance companies, the basic conditions and market outlets for insurance services. Particular attention is paid to the agricultural insurance segment, its legal basis, state support.

As a result of the study of basic sciences master's program student must know the theoretical foundations of insurance services, the regulatory framework insurance and insurance services areas and be able to determine the sum insured, the value of the damage and insurance compensation in terms of objects of insurance, to make payments for payments various types of insurance to determine the financial stability and reliability of the insurer, analyze and assess the financial condition of insurance companies calculate the value of insurance rates and an analysis of their formation in various insurance companies know the ways of enterprise risk management to ensure timely neutralize their negative impact on economic activity via insurance.

Areas of employment of graduates

Leaders, assistants, managers of insurance companies, heads of financial departments of enterprises of agrarian sphere.

Specialization "Corporate Finance"

In a market economy Ukraine effective use of financial resources has become paramount. Efficient problem solving entities depend primarily on the make informed financial decisions. For professionals of the financial sector is very important possession methodological tools of financial management, cash management, method of system analysis of financial statements, profit management, and capital investments, organization internal corporate forecasting and planning.

Areas of employment of graduates

Managers and assistants economic and financial departments of companies, associations, firms serving the field of agriculture different ownership and more.

Specialization "Financial Analyst in business"

Practice – oriented master's program in Financial Analysis is designed for young professionals wishing to gain new knowledge and skills in attracting investment and work in the financial markets, seeking to learn the techniques and financial analysts acquainted with advanced experience in implementing financial strategies of leading Ukrainian and foreign financial companies .

The purpose of the master program "Financial Analyst in business" is to train highly qualified professionals who possess the knowledge and skills of financial analysis that can work as financial analysts in commercial and investment banks, management companies, funds, and enterprises of the real sector of the economy, able predict processes in the financial system and the real economy enterprises, are able to participate in the formulation of recommendations to improve the management of different industries including agro.

Areas of employment of graduates

CFOs, managers and analysts for commercial and investment banks, management companies, and enterprises of the real sector of the economy.

Specialization "Exchange activity in the stock market"

The main objectives of which are to master the program "Exchange activity in the stock market" is to train professionals for financial profile of the stock market of Ukraine. Along with the functions of workers in financial services markets, graduates of the master's program must have the skills to conduct exchange trading financial instruments both in domestic markets and in global trade networks. Thus, conceptually this master program provides financial staffing segment commodity exchange market and stock market instruments.

As a result, training in this master's program students must know: the nature of the exchange, legal framework and regulatory system of trading, the principles of organization of exchanges and the mechanism of their functioning, implementation of technology exchange operations.

From a practical point of view, students should learn to: organize relations companies and various financial institutions exchanges and brokers, to stock transactions and to determine their effectiveness, stock information used successfully in its activities.

Areas of employment of graduates

Managers and assistants departments of the securities of banks, investment funds, brokerage firms and asset management companies.

Educational and scientific Master's program
Specialization “Scientific support financial management
and financial services to agribusiness”

In the process of transition to a market economy, the expansion of financial services in the agricultural sector increased demand for qualified finance professionals. As professionals of this sphere is very important possession of methodology, methods and techniques of financial and economic research. Despite notable advances in the field of finance, there is still a number of unresolved issues, particularly during the financial performance of agricultural enterprises. This causes an acute need for masters research direction for agricultural enterprises.

Training of highly qualified personnel for research in banking agricultural enterprises and agricultural mortgages, which have profound theoretical and methodological foundations of banking and skills to provide insurance services to entrepreneurs in the agricultural sector.

For the smooth functioning of the insurance system in general and including agriculture, there is an urgent need for a solid theoretical research and development based on these teaching materials that will enhance and improve insurance protection of property interests of policyholders in agriculture.

Areas of employment of graduates

Managers and assistants of economic and financial departments of companies, associations, firms serving agricultural sphere different forms of ownership etc. Experts of departments of regional and district offices of agriculture administrations.

Practical training

Educational and research farms of NULES of Ukraine, leading companies, associations, firms of Ukraine agribusiness, banking institutions Ukraine (CJSC “Private Bank”, JSCB “Pravex-Bank”, CB “Delta”, “Raiffeisen Bank Aval”, Bank “Nadra”) etc.

Proposed Topics for Master Thesis

1. Loans of agricultural enterprises banks.
2. Settlement services of agricultural enterprises banks.
3. Cash Management in the enterprise.
4. Management of financial stability of the enterprise.
5. Insurance in the risk management system of the enterprise.
6. Insurance of crops.
7. Mutual funds and their functioning in the international financial exchange market.
8. Features and prospects of development of on-line trading in global financial markets.
9. Development of long-term bank loans of agricultural enterprises.
10. Financial aspects of expert monetary value of agricultural land.

Academic rights of applicants entering Master course

Applicants with the Diploma of Bachelor can continue training in connected specialties including ones of the field of knowledge “Specific categories”, (table 2) and other specialties (table 3) in accordance with the Terms of enrolment to higher educational institutions of Ukraine in 2015 approved by the Order of the Ministry of education and science of Ukraine on October 15, 2014 № 1172 and the Regulations of enrolment to

National University of Life and Environmental Sciences of Ukraine (basic institution, Kyiv) for 2015.

**Curriculum of Master training
in specialty "Finance and Credit"
Educational and professional Master's program**

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	Tax Management	1	120	4
2	Financial management	1	120	4
3	Financial Services Market	1	120	4
4	Applied Econometrics (except exchange activity)	2	90	3
5	Management of financial sanitation enterprises (except exchange activity)	2	120	4
6	Exchange activity in the stock market (for exchange activities)	2	90	3
7	Financial risk management (for exchange activities)	2	120	4
8	Insurance Management	2	120	4
9	Budget management	3	90	3
10	Mortgages	3	90	3
11	Nature Finances	3	90	3
12	Global Economy	3	120	4
13	Social responsibility	3	90	3
14	Innovative development company	3	90	3
15	Investment management	3	120	4
16	International payments and foreign currency transactions	3	120	4
Total for standard part			1500	50
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by University				
1	Business Foreign Language	2	120	4
2	Methodology and organization of research	1	90	3
3	Intellectual Property	3	30	3
4	Agrarian policy	3	120	4
Total (Disciplines offered by University)			420	14
2.2.2. Disciplines offered by students				
2.2.1. Specialization "Banking agricultural enterprises"				
1	Banking Management	2, 3	330	11
2	Monetary policy and NBU	2	150	5
Total (Disciplines offered by students)			480	16
2.2.2. Specialization "Corporate Finance"				
1	Corporate governance	2, 3	330	11
2	Analysis of investment projects	2	150	5
Total (Disciplines offered by students)			480	16
2.2.3. Specialization "Financial Analyst in business"				
1	Business Intelligence	2, 3	330	11
2	Business Valuation	2	150	5
Total (Disciplines offered by students)			480	16
2.2.4. Specialization "Exchange activity in the stock market"				
1	Analysis and forecasting the stock market	2,3	330	11
2	Technology futures trading	2	180	6
Total (Disciplines offered by students)			480	16
2.2.5. Specialization "Insurance in the agricultural domain"				
1	Financial support insurance liabilities	2	150	5
2	Agricultural insurance	2	180	6

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
3	Management reinsurance operations	3	150	5
Total (Disciplines offered by students)			480	16
Total for elective part			900	30
3. OTHER TYPES OF TRAINING				
1	Production Practice	2	150	5
2	Preparation and defense of master's work	3	150	5
Total			300	10
Total for Specialty			2700	90

**Curriculum of Master training
in specialty "Finance and Credit"
Educational and scientific Master's program**

№	Name oa Academic Discipline	Semester	Number	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	Tax Management	1	120	4
2	Financial management	1	120	4
3	Financial Services Market	1	120	4
4	Applied Econometrics (except exchange activity)	2	90	3
5	Management of financial sanitation enterprises (except exchange activity)	2	120	4
6	Exchange activity in the stock market (for exchange activities)	2	90	3
7	Financial risk management (for exchange activities)	2	120	4
8	Insurance Management	2	120	4
9	Budget management	3	90	3
10	Mortgages	3	90	3
11	Nature Finances	3	90	3
12	Global Economy	3	120	4
13	Social responsibility	3	90	3
14	Innovative development company	3	90	3
15	Investment management	3	120	4
16	International payments and foreign currency transactions	3	120	4
Total for standard part			1500	50
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by University				
1	Business Foreign Language	2	120	4
2	Methodology and organization of research	1	90	3
3	Intellectual Property	3	30	3
4	Agrarian policy	3	120	4
Total (Disciplines offered by University)			420	14
2.2. Disciplines offered by students				
2.2.1. Specialization "Scientific support financial management and financial services to agribusiness"				
1	Banking Management	2	150	5
2	Analysis of investment projects	2	180	6
3	Management reinsurance operations	3	150	5
Total (Disciplines offered by students)			480	16
Total for elective part			900	30
3. OTHER TYPES OF TRAINING				
1	Production Practice	3	150	5
2	Educational practice	4	480	16

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
3	Preparation and defense of master's work	4	450	15
Total			300	36
Total for Specialty			3600	120

Annotations educational plan disciplines

1. STANDARD ACADEMIC DISCIPLINES

Social responsibility. Formation of basic knowledge of the theory and practice of social responsibility of professional competence, learning theoretical concepts and practice cooperation between the state, business, society and rights in the area of social responsibility.

Innovative development company. Forming students' knowledge and skills to ensure innovation development of economic systems, evaluation of innovative potential, justification and implementation of effective managerial decisions on the economy on innovative principles.

Tax management. The mastery of current knowledge on tax and skills required of future specialists to manage in the field of taxation. Analysis of the economic, organizational and legal issues that arise in the management of tax administration.

Financial management. Modern methods of financial management of business entities. System software financial management. Management Skills incoming and outgoing cash flows in the company, financial risk assessment and application of instruments of crisis management.

Describes the application of international accounting standards: IAS 1 "Presentation of Financial Statements" IAS 2 "Inventories" IAS 7 "Statement of Cash Flows", IAS 12 "Income Taxes", IAS 16 "Fixed deposits" IAS 18 "Revenue" IAS 27 "Consolidated and Separate Financial Statements", IAS 32 "Financial Instruments: Presentation", IAS 39 "Financial Instruments: Recognition and Measurement".

Market financial services. Theoretical basis of operation of the financial services market. Services at segments of the financial market. Organizational and legal bases of functioning of the financial services market in Ukraine.

Describes the application of international accounting standards: IAS 32 "Financial Instruments: Presentation".

Insurance Management. Study questions about the theoretical foundations and practical application of specific areas of insurance, risk management, reinsurance and financial activities of insurance companies.

Applied Econometrics. The study of economic processes (relationships) in Applied econometrics carries through mathematical (econometric) model. Construct and analyze these patterns using real numerical values. One of the main objectives of Applied Econometrics is the collection, processing and presentation of economic data in graphic form as tables, graphs, charts, analysis and forecasting of economic relationships.

Management of financial sanitation company. Socio-economic nature bankruptcy and the factors that cause it. Evaluate and determine the prospects of bankruptcy restore the solvency of the debtor. The grounds and procedure for bankruptcy proceedings. Remediation (financial recovery) business. The settlement agreement in the case of bankruptcy. The liquidation procedure. Features bankruptcy of certain categories of businesses.

Exchange activity in the stock market. Formation of students complex system of specialized knowledge and skills in the organization and functioning of the stock market

exchange. Acquiring theoretical and practical knowledge on the basics of trading securities. Providing knowledge on the functioning of depository securities market of Ukraine. Closing of knowledge in the organization and effective functioning of the stock brokerage intermediation stock market. Ensuring the effective application of acquired skills immediately in practice.

Financial Risk Management. The economic essence and types of risks, their importance for economic operators. Methods of measurement and control financial risks. The economic crisis as a form of financial risks. Forecasting as a mechanism to combat financial risks. Tools of risk management. Hedging stock tools of financial risks. Technical and fundamental analysis of stock quotes. World and domestic experience in financial risk management. The activities of hedge funds in financial risk management.

Budget management. Getting theoretical and practical knowledge for disclosing opportunities, skills for the organization of the budget process in Ukraine and its management and budget execution state of discipline is the state budget resources and relationships associated with their use.

Mortgage lending. The formation of future professionals specialized knowledge of the organization of the mortgage financial institutions and principles of the system of mortgage lending in general. Studying theory and practice of credit secured by real estate.

Finance Nature. Ecological and economic instruments: the principles of formation and mechanisms of action. Terms of ecological insurance. The system of environmental taxation. The principles of environmental legislation of Ukraine, financial and environmental responsibility.

Global economy. Forming students' understanding of the conditions and factors of development, mechanisms and tools of the global economy, study of market relations among the global economic system, awareness of its intellectual mission for balanced decision-making in the context of general civilized progress.

International payments and currency transactions. The formation of future professionals specialized knowledge of the organization of credit institutions and principles of functioning of the foreign exchange markets and international lending system as a whole. The study of the organization of international monetary and credit and payment relations between countries with developed market economies.

Investment management. The purpose of discipline is to develop in students the system of knowledge and skills associated with the investment activities of the company, acceptance of administrative decisions on grounding of investment projects, the choice of investment strategy, relevant competencies based on the assimilation of theoretical propositions.

2. ELECTIVE ACADEMIC DISCIPLINES

2.1. Disciplines offered by University

Business foreign language. The general aim of the program of teaching of foreign language for the professional purpose is formation students' professional linguistic competencies that will contribute to their efficient operating in cultural variety of training and professional environment. The methods of search of new information in another language sources, linguistic methods of analytical study of another language sources are learned. Students study published original literature in another language and increase their lexical and grammatical skills. Methods and linguistic peculiarities of annotation and synopsis of another language sources, the principles of translation of professional oriented another language sources are studied.

Methodology and organization of research. Science and research. The essence of the problem and the types of research. The structure of scientific research. General

scientific research methods. Special methods of financial research. The forms display the results of scientific research.

Intellectual Property. Learning the basics of intellectual property, registration of ownership, protection, commercialization, valuation and management, research foundations, legal and economic aspects of intellectual property.

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.

Educational and professional Master program

2.2. Disciplines offered by students

2.2.1. Specialization "Banking agricultural enterprises"

Bank management. Mastering modern methods of analysis and management of banking. Studying theory and practice analysis and management of banking.

The monetary policy of the NBU. The formation of future professionals specialized knowledge of the organization of the central bank implementing monetary policy, the ability to use their knowledge in the performance of operations, credit related calculations, financing of investments and the provision of other services. Study of the National Bank of Ukraine, especially its operation and the main directions of monetary policy.

2.2.2. Specialization "Corporate Finance"

Corporate governance. Mastering basic knowledge on the theory and practice of management system of elected and appointed bodies that manage activities of public companies, forming the ability to manage operating and investing activities of joint stock companies have skill of making optimal financial decisions.

Describes the application of international accounting standards: IAS 27 "Consolidated and Separate Financial Statements".

Analysis of investment projects. Form students about the importance of the concept of comprehensive project analysis of prospects for the development of business, about possible alternative approaches and implementing market study projects to meet social needs. The study of modern methods of management of investment projects economic entities.

Describes the application of international accounting standards: IAS 40 "Investment Property".

2.2.3. Specialization "Financial Analyst in business"

Business-analyst. The acquisition of theoretical knowledge in the field of business processes and the ability to apply them for effective management decisions in practice. Study of the problems and opportunities in the context of business requirements and recommendations solutions that enable organizations to achieve their goals. The study of methods for business intelligence needs of organizations to identify business problems and proposals for solving them, taught with the use of International Financial Reporting Standards.

Valuation of business. Focus on methodological issues of valuation and is based

on a combination of theoretical and practical material. In the course explores the classic approaches to assessment and cost management companies, as well as modern trends of development methodologies evaluation. Particular attention is paid to the application of valuation methods in emerging capital markets.

2.2.4. Specialization "Exchange activity in the stock market"

Analysis and forecasting the stock market. Formation of analytical thinking masters based on the study of methods and tools for analyzing stock market to predict the prospects for its development.

Technology futures trading. The formation of modern thinking in futures trading systems and specialized knowledge of the organization and operations in the futures market; mastering the practice of hedging and speculation; analyzing and predicting the futures market; use of financial instruments on the futures market leading global and domestic electronic exchange platforms.

2.2.5. Specialization "Insurance in the agricultural domain"

Agricultural insurance. The ability to combine theoretical knowledge with practical skills developed between economic operators on the formation of effective organizational-economic mechanism of insurance coverage economies the agricultural sector, understanding the conceptual bases of agricultural insurance.

Financial support insurance liabilities. The combination of theoretical knowledge and practical skills, providing financial resources for the insurers of obligations under contracts concluded with business entities, understanding the conceptual bases of calculation of insurance rates and the formation of insurance reserves.

Management reinsurance operations. The discipline of study which caused fundamental restructuring of the economic basis, the statement forms typical of a market economy and management. It has not only theoretical but also practical orientation. The goal of teaching "Managing reinsurance transactions" - the study of the theory and practice of reinsurance of property interests and risks of businesses and individuals; depth study of the mechanism of reinsurance services. This discipline refers to the increased complexity of disciplines, as based on special conceptual apparatus requires prior knowledge of methods of higher cost calculations, insurance theory of finance, insurance, marketing and management.

Educational and scientific Master's program

2.2. Disciplines offered by students

2.2.1. Specialization "Scientific support financial management and financial services to agribusiness"

Banking management. Providing knowledge on the theory and practice of bank management. The study of the nature, purposes and principles of bank management, organizational structure and bank management system, the methodology of strategic and operational planning in the bank.

Analysis of investment projects. To develop in students a comprehensive concept of value analysis project for the prospects of business development, the possible implementation of an alternative market approaches and study projects to meet social needs. Study of modern methods of investment project management businesses.

Management reinsurance operations. The discipline of study which caused fundamental restructuring of the economic basis, the statement forms typical of a market economy and management. It has not only theoretical but also practical orientation. The goal of teaching "Managing reinsurance transactions" - the study of the theory and practice

of reinsurance of property interests and risks of businesses and individuals; depth study of the mechanism of reinsurance services. This discipline refers to the increased complexity of disciplines, as based on special conceptual apparatus requires prior knowledge of methods of higher cost calculations, insurance theory of finance, insurance, marketing and management.

**Master's course
in specialty "TAXATION"
branch of knowledge "Economics and Entrepreneurship"**

Form of training, licensed number of persons	
– Full-time	30 persons
– Part-time	30 persons
Duration of Training:	
– Full-time educational and professional program	1,5 years
– Part-time	2 years
Credits:	
– educational and professional program	90 ECTS
Language of Teaching	Ukrainian
Qualification	Master of Taxation

The concept of training

Education Masters on specialty "Taxation" tentative in training of qualified personnel for the tax authorities and the preparation of corporate finance agricultural sector unions to control tax obligations.

In the course of vocational training students receive theoretical knowledge about the activities of tax authorities, their management functions, advanced methods, techniques and tools tax management. During practical training at university and state tax inspections masters acquire practical skills in tax administration from businesses and individuals, working with professional and computer programs for mutually beneficial relations with tax payers.

**Educational and professional Master's program
*Specialization "Taxation of agricultural entities"***

Getting basic theoretical and practical knowledge on: taxation of business entities, tax planning and forecasting, tax optimization, its methods and techniques in the management of the activities of agricultural entities, corporate tax management to reduce the negative impact of taxation on their business operations and financial condition; acquiring skills on the tax administration of businesses and individuals to prepare qualified specialists for the tax authorities and corporate associations and enterprises processing agricultural sectors.

Areas of employment of graduates

Head of financial or economic unit, the head of a small business in agriculture, manager of financial activity, Inspector Tax Service, Customs Inspector, state tax inspector, consultant taxes and fees.

Practical training

Practical Training is carried out on the basis of the following companies and organizations: Ministry of Finance of Ukraine; Ministry of Agrarian Policy of Ukraine; State tax authorities; advanced enterprises, associations and firms; research institutes of Ukraine and others.

Proposed Topics for Master Theses

1. Excise tax in the tax system of Ukraine.
2. The impact of tax policy on economic and social development in Ukraine.

3. Impact of taxation on investment.
4. The value of payments for the special use of natural resources in the tax system of Ukraine.
5. The mechanism of tax regulation of economy of Ukraine.
6. Indirect taxes and yix impact on public welfare.
7. Taxation of income of individuals - entrepreneurs.
8. Taxation of enterprises and its impact on the financial and economic decisions.
9. Impact assessment tax system on the state of the environment.

Academic rights of applicants entering Master course

Applicants with the Diploma of Bachelor can continue training in connected specialties including ones of the field of knowledge "Specific categories", (table 2) and other specialties (table 3) in accordance with the Terms of enrolment to higher educational institutions of Ukraine in 2015 approved by the Order of the Ministry of education and science of Ukraine on October 15, 2014 № 1172 and the Regulations of enrolment to National University of Life and Environmental Sciences of Ukraine (basic institution, Kyiv) for 2015.

Curriculum of Master training in specialty "Taxation" Educational and professional Master's program

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	Global Economy	2	120	4
2	Social responsibility	1	120	4
3	Innovative development company	3	120	4
4	Intellectual Property	1	30	1
5	Tax Policy	1	120	4
6	Taxation of undertakings	1	120	4
7	Tax administration	2	120	4
8	Tax control	3	120	4
9	Applied econometrics	2	90	3
Total for standard part			960	32
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by University				
1	Methodology and organization of financial and economic research	2	90	3
2	Business Foreign Language	4	150	5
3	Agrarian policy	1	90	3
Total (Disciplines offered by University)			330	11
2.2. Disciplines offered by students				
2.2.1. Specialization “Taxation of agricultural entities”				
1	Customs business	1	90	3
2	Organisation and management of tax in the supervisory bodies	1	90	3
3	Personal Income Tax	2	90	3
4	Tax Accounting	3	90	3
5	Tax Planning	3	90	3
6	Nature Finances	2	90	3
Total (Disciplines offered by students)			540	18
Total for elective part			870	29
3. OTHER TYPES OF TRAINING				

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
1	Internship	3	420	14
2	Preparation and defense of master's work	3	450	15
Total			870	29
Total for Specialty			2700	90

Annotations educational plan disciplines

1. STANDARD ACADEMIC DISCIPLINES

Global economy. Forming students' understanding of the conditions and factors of development, mechanisms and tools of the global economy, study of market relations among the global economic system, awareness of its intellectual mission for balanced decision-making in the context of general civilized progress.

Social responsibility. Formation of basic knowledge of the theory and practice of social responsibility of professional competence, learning theoretical concepts and practice cooperation between the state, business, society and rights in the area of social responsibility.

Innovative development company. Forming students' knowledge and skills to ensure innovation development of economic systems, evaluation of innovative potential, justification and implementation of effective managerial decisions on the economy on innovative principles.

Intellectual Property. Learning the basics of intellectual property, registration of ownership, protection, commercialization, valuation and management, research foundations, legal and economic aspects of intellectual property.

Tax policy. The theoretical basis of the tax policy. Forms and mechanisms of implementation of tax policy.

The taxation of business entities. The essence of the tax system. VAT. Income tax. Excise duty. Simplified tax system. Fixed tax.

Tax administration. Legal principles of tax administration. Organization of the State Tax Service. Administration of taxes and fees.

Tax control. Tax control in the system of state regulation of the economy. Tax audit.

Applied Econometrics. The study of economic processes (relationships) in Applied ekonometrytsi carry through mathematical (econometric) model. Construct and analyze these patterns using real numerical values. One of the main objectives of Applied Econometrics is the collection, processing and presentation of economic data in graphic form as tables, graphs, charts, analysis and forecasting of economic relationships.

2. ELECTIVE ACADEMIC DISCIPLINES

2.1. Disciplines offered by University

Methodology and organization of financial and economic research. Science and research. The essence of the problem and the types of research. The structure of scientific research. General scientific research methods. Special methods of financial research. The forms display the results of scientific research.

Business foreign language. The general aim of the program of teaching of foreign language for the professional purpose is formation students' professional linguistic competencies that will contribute to their efficient operating in cultural variety of training and professional environment. The methods of search of new information in another language sources, linguistic methods of analytical study of another language sources are

learned. Students study published original literature in another language and increase their lexical and grammatical skills. Methods and linguistic peculiarities of annotation and synopsis of another language sources, the principles of translation of professional oriented another language sources are studied.

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.

2.2. Disciplines offered by students

2.2.1. Specialization “Taxation of agricultural entities”

Customs business. Admission to customs. The procedure for movement of goods through the customs border of Ukraine. Customs control and responsibility for violation of customs rules.

Organisation and management of tax supervisory bodies. State Tax Service - element of the structure of public administration. Company management bodies State Tax Service. Organization of management in the state tax service. Maintenance Management State Tax Service. Organization of managerial work in the state tax service. Organizational and managerial problems of the State Tax Service. Work with taxpayers and public relations in the State Tax Service of Ukraine.

Taxation of personal income. Taxation of personal income tax system in Ukraine. Income tax. The traditional system of taxation of private enterprises. Simplified tax system. Taxation of personal income in developed countries.

Tax Accounting. Tax records, its content and organization of the enterprise. Tax Accounting and tax payments.

Tax planning. Tax planning at the macro and micro level: the nature, scope, role. Tax forecasting and planning - tax component of state management. Budgeting and tax planning in the enterprise. The organization and methods of tax planning at the micro level. Strategic and ongoing tax planning. The tax burden entity. Evaluating the effectiveness of tax planning. International corporate tax planning.

Finance Nature. Finance Nature as a special branch of science. Ecological and economic instruments: the principles of formation and mechanisms of action. Terms of ecological insurance. The system of environmental taxation. The principles of environmental legislation of Ukraine, financial and environmental responsibility.

**Master's course
in specialty "ACCOUNTING AND AUDIT"
branch of knowledge "Economics and Entrepreneurship"**

Form of training, licensed number of persons	
– Full-time	150 persons
– Part-time	150 persons
Duration of Training:	
– Full-time educational and professional program	1,5 years
– Full-time education and scientific program	2 years
– Part-time	2 years
Credits:	
– educational and professional program	90 ECTS
– education and scientific program	120 ECTS
Language of Teaching	Ukrainian, English
Qualification	Master's degree in accounting and audit

The concept of training

Modern development of market relations requires from experts in accounting and auditing validity of professional knowledge to the world standards, creative thinking, intellectual potential for a wide selection of specific areas of practical work. This need to improve current systems of training in accounting and auditing is urgent need for restructuring curricula, targeting them for deepening the content and improve the quality of professional education, research teaching methods of major disciplines in training.

Master stage of training in accounting and auditing distinguish qualitatively new curricula and programs, innovative forms of educational process, which focused on providing a high level of theoretical knowledge, directly involved in the research and testing of their results in practice, mastery of scientific and methodological foundations of educational activities.

Master of accounting and auditing must be an expert with the general level of education and culture to the world standards, which has sufficient intellectual capacity to a wide selection of specific areas of practice, to be able to use modern techniques to investigate the object highlight system elements, define their essential parameters and characteristics, form a model system, make it rational management influence, make proposals for improving the activity of enterprises.

The defining features of the master should research approach to the analysis of the research subject, the ability to quantitatively and qualitatively assess the impact of object classification approach to economic evaluation and control solutions results.

Master of accounting and auditing must possess not only new methods of work, but also new ideas about the management system in which they must apply.

Masters in the specialty "Accounting and Audit" aimed at training high-level professionals who can effectively analyze production and financial activities of business entities of different ownership, assess the internal potential of the company from a position of increasing the efficiency of its production and sales activities, and compliance capabilities and threats to the environment, to explore domestic and foreign markets, to determine an estimate of his situation, ensuring rational strategic development of the company.

Educational and professional master's program
Specialization "Methods and organization of accounting, control and analysis in the management of banks"

Provides research methods and peculiarities of accounting, control and analysis of banks' objects: securities transactions; bill transactions; non-cash payments; leasing operations; interbank payments; income and expenses of banks; formation and use of reserve funds of banks; deposit operations of banks; foreign exchange transactions; investment banking activities; financial analysis bank bankrupt; credit market conditions.

Areas of employment of graduates

Chief accountant, deputy chief accountant, accountant (specialist with a diploma) in banks.

Specialization "Methods and organization of accounting, control and analysis in the management of enterprises of agroindustrial production"

Provides research trends and patterns of development of accounting in Ukraine in terms of its principles for reforming the international standards and requirements of the institutions of the European integration; methods and accounting organization of objects: non-current and current assets, equity, long-term and current biological assets, long-term and current liabilities, payments to the tax system, expenses and income for the activities; Financial Statements; managerial cost accounting and calculation of cost of production in crop, livestock, auxiliary industries; control, audit and analysis of real assets, liabilities and activities of processes using computer technology.

Areas of employment of graduates

Chief accountant, deputy chief accountant, senior accountant, the first category accountant, the second category accountant, accountant (with specialist degree) in agricultural business.

Specialization "Economic control of entrepreneurs in agroindustrial production"

Provides research system of economic control and directions of its reform, the organization of economic control with the use of computer technology, the method of its implementation, organization and control of the method: fixed assets, stocks, funds and payments, equity, long-term and current obligations' liabilities, costs and revenues, financial results; organization and methodology of internal control, including inventory; documenting the results of audits and inspections; implementation of audit and inspection of materials and order pecuniary damage.

Areas of employment of graduates

The auditor, assistant of auditor, senior accountant-auditor, accountant-auditor of the first category, accountant-auditor of the second category, accountant-auditor in agricultural enterprises

Specialization "Methods and organization of accounting, control and analysis in the management of budgetary organizations"

Provides research budget organizations accounting policies; accounting and control of revenues, expenditures and cash general and special funds of budgetary organizations; features reporting of budget organizations; features accounting and control of property, stocks, funds and accounts; use of computer technology in the accounting and budgetary

control organizations.

Areas of employment of graduates

Chief accountant, deputy chief accountant, accountant (specialist with a diploma) in budgetary institutions.

Specialization "Strategic accounting and business and social analytics"

Provides research information and analytical system of socio-economic development of the financial sector and the financial corporations sector not as an indicator of adaptive ability of the enterprise to current economic conditions. The possibility to develop and implement a flexible development strategy of economic activities through the effective use of information in terms of post-industrial development becomes functional role of productive resources. The possibility of improving the accounting information using the possibilities of the theory of knowledge, based on analytical control functions.

Areas of employment of graduates

Chief accountant, deputy chief accountant, senior accountant, the first category accountant, the second category accountant, accountant (with specialist degree) of agricultural enterprise, researcher (information analyst), accounting analyst, analyst of consolidated information, analyst of lending.

Educational and scientific Master's program

Specialization "Accounting, control and analysis in the management of agricultural enterprises"

Provides research methodology of accounting, control and analysis to accounting and analytical information provision and wealth management, expenses, income, capital, financial capital and investments biological assets, production processes, human resources and organization and methods of control and revision work, audit, internal control and forensic accounting of agricultural enterprises; adaptation of international standards in accounting and auditing practices in the nation; Computer technologies in accounting, auditing and analysis.

Areas of employment of graduates

Researcher (accounting), researcher (audit), researcher (information analyst), accountant-analyst.

Practical training

Practical training is carried out on the basis of the following companies: NUBiP of Ukraine "Velykosnitynske educational and experimental farm named after O.V. MUZYCHENKO"; NUBiP of Ukraine "Agronomic Research Station"; NUBiP of Ukraine "Teaching and Research Farm "Vorzel"; NUBiP of Ukraine "Boyarka Forestry Experimental Station"; NUBiP of Ukraine Nemishaevo Agricultural College; Ltd Agroindustrial company "Mriya"; PJSC CB "PrivatBank"; other bases of practical training of university students from among leading institutions, enterprises, organizations of any ownership in Ukraine and abroad, with appropriate conditions for the practice of students in accordance with the requirements of education and professional training programs.

Proposed Topics for Master Theses

1. Accounting and analytical support in the management of fixed assets.
2. Accounting and analytical support in the management of current biological

assets.

3. Accounting and analytical support in the management costs of agricultural enterprises.

4. Accounting, control and analysis of production costs of crop production.

5. Accounting and internal business control production of finished products.

6. Balance sheet of the bank, its preparation method and analysis.

7. Reporting budgetary institutions, organization and methods of assembly.

8. Accounting and internal business control equity.

9. Method of accounting and control of formation and use of income.

10. Accounting and internal business control efficiency of bank loans.

Academic rights of applicants entering Master course

Applicants with the Diploma of Bachelor can continue training in connected specialties including ones of the field of knowledge "Specific categories", (table 2) and other specialties (table 3) in accordance with the Terms of enrolment to higher educational institutions of Ukraine in 2015 approved by the Order of the Ministry of education and science of Ukraine on October 15, 2014 № 1172 and the Regulations of enrolment to National University of Life and Environmental Sciences of Ukraine (basic institution, Kyiv) for 2015.

Curriculum of Master training in specialty "Accounting and Audit" Educational and professional Master's program

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	Global Economy	1	120	4
2	Social responsibility	1	120	4
3	Innovative development of company	3	120	4
4	Intellectual property	1	30	1
5	Accounting in business management	2	120	4
6	Financial analysis	1	120	4
7	Accounting organization	2	120	4
8	Organization and methods of audit	3	120	4
9	Strategic analysis in business management	2	90	3
10	Applied econometrics	2	90	3
Total for standard part			1050	35
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by University				
1	Business foreign language	1	150	5
2	Agrarian policy	3	90	3
Total (Disciplines offered by University)			240	8
2.2. Disciplines offered by students				
2.2.1. Specialization "Methods and organization of accounting, control and analysis in the management of banks"				
1	Control of banks	1	90	3
2	Analysis of banking activities	1	90	3
3	Management accounting in banks	2	90	3
4	Accounting forensic examination	3	90	3
5	Accounting for banks according to international standards	3	90	3
6	Reporting of banks	2	90	3
Total (Disciplines offered by students)			540	18

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
2.2.2. Specialization "Methods and organization of accounting, control and analysis in the management of enterprises of agroindustrial production"				
1	Control of agricultural units' activity	1	90	3
2	Accounting for small businesses	1	90	3
3	Accounting in industrial and agro service enterprises	2	90	3
4	Accounting forensic examination	3	90	3
5	Accounting and financial reporting under the international standards	3	90	3
6	Accounting FEA	2	90	3
Total (Disciplines offered by students)			540	18
2.2.3. Specialization "Economic control of entrepreneurs in agroindustrial production"				
1	Theory of financial and economic control	1	90	3
2	Information-analytical services	1	90	3
3	Control of agricultural units' activity	2	90	3
4	Accounting forensic examination	3	90	3
5	Computer technologies in accounting and auditing	3	90	3
6	Tax Management	2	90	3
Total (Disciplines offered by students)			540	18
2.2.4. Specialization "Methods and organization of accounting, control and analysis in the management of budgetary organizations"				
1	Control in the public sector	1	90	3
2	Analysis of public sector institutions	1	90	3
3	Economic control	2	90	3
4	Accounting Forensic examination	3	90	3
5	Computer technologies in accounting and audit	3	90	3
6	Reporting in public sector institutions	2	90	3
Total (Disciplines offered by students)			540	18
2.2.5. Specialization "Strategic accounting and business social analytics"				
1	Maintaining of balance sheet	1	90	3
2	Innovation and investment analysis	1	90	3
3	Information-analytical management	2	90	3
4	Macroeconomic analysis	3	90	3
5	Accounting and financial reporting under the international standards	3	90	3
6	Business social analysis	2	90	3
Total (Disciplines offered by students)			540	18
Total for elective part			780	26
3. OTHER TYPES OF TRAINING				
1	Production practice	3	420	14
2	Preparation and defense of master's work	3	450	15
Total			870	29
Total for Specialty			2700	90

**Curriculum of Master training
in specialty "Accounting and Audit"
Educational and scientific Master's program**

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	Global Economy	1	120	4
2	Social responsibility	1	120	4
3	Innovative development company	3	120	4

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
4	Intellectual property	1	30	1
5	Accounting in business management	2	120	4
6	Financial analysis	1	120	4
7	Accounting organization	2	120	4
8	Organization and methods of audit	3	120	4
9	Strategic analysis in business management	2	90	3
10	Applied econometrics	2	90	3
Total for standard part			1050	35
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by University				
1	Business Foreign Language	1	150	5
2	Agrarian policy	3	90	3
Total (Disciplines offered by University)			240	8
2.2. Disciplines offered by students				
2.1.1. Specialization "Accounting, control and analysis in the management of agricultural enterprises"				
1	Control of agricultural units' activity	1	90	3
2	Information-analytical services	1	90	3
3	Methodology and organization of research	2	90	3
4	Accounting forensic examination	3	90	3
5	Computer technologies in accounting and auditing	3	90	3
6	Accounting FEA	2	90	3
Total (Disciplines offered by students)			540	18
Total for elective part			780	26
3. OTHER TYPES OF TRAINING				
1	Production practice	3	420	14
2	Pedagogical practice	4	900	30
3	Preparation and defense of master's work	4	450	15
Total			870	29
Total for Specialty			3600	120

Annotations educational plan disciplines

1. STANDARD ACADEMIC DISCIPLINES

Global economy. Forming students' understanding of the conditions and factors of development, mechanisms and tools of the global economy, study of market relations among the global economic system, awareness of its intellectual mission for balanced decision-making in the general context of civilized progress.

Social responsibility. Formation of basic knowledge of the theory and practice of social responsibility of professional competence, learning theoretical concepts and practice cooperation between the state, business, society and rights in the area of social responsibility.

Innovative development of company. Forming students' knowledge and skills to ensure innovation development of economic systems, evaluation of innovative potential, justification and implementation of effective managerial decisions on the economy on innovative principles.

Intellectual property. Learning the basics of intellectual property, registration of ownership, protection, commercialization, valuation and management, research foundations, legal and economic aspects of intellectual property.

Accounting in business management. Study of the conceptual foundations use accounting as an information source for business management; acquiring skills building and transformation of the accounting system management.

Financial analysis. The study of organizational forms of financial analysis and its use in the management of information enterprises; methodology and organization of internal and external financial analysis solvency, liquidity, financial stability, cash and cash flow, capital efficiency of the company.

Accounting organization. Studying the principles and process accounting and establishing accounting and control and intelligence, targeted information support management decisions.

The organization and methodology of the audit. The study of the theoretical foundations of functioning as an independent audit of financial control in Ukraine; regulatory acts governing auditing and banking, practical skills in organization, planning and auditing procedures.

Strategic analysis in enterprise management. The study of the nature, trends and role of strategic analysis at the enterprise, methods of analysis at the company, production program analysis methods, capital structure, financial programs and investments. Acquiring the skills of analysis and evaluation capacity of the enterprise as a factor of development strategy.

Applied Econometrics. The development of mathematical - statistical tools of econometrics, consisting of sections: classical linear model multiple regression and classical least squares; generalized linear model multiple regression and generalized least squares; models and methods of statistical analysis; time series and forecasting; system of structural equations.

2. ELECTIVE ACADEMIC DISCIPLINES

2.1. Disciplines offered by University

Business foreign language. The general aim of the program of teaching of foreign language for the professional purpose is formation students' professional linguistic competencies that will contribute to their efficient operating in cultural variety of training and professional environment. The methods of search of new information in another language sources, linguistic methods of analytical study of another language sources are learned. Students study published original literature in another language and increase their lexical and grammatical skills. Methods and linguistic peculiarities of annotation and synopsis of another language sources, the principles of translation of professional oriented another language sources are studied.

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.

Educational and professional Master program

2.2. Disciplines offered by students

2.2.1. Specialization "Methods and organization of accounting, control and analysis in the management of banks"

Control of banks. The organization and methods of intra control, monitoring of cash transactions and foreign exchange operations. Organization intra control of internal bank transactions and control operations with securities. Check deposit and credit

transactions in banks and control of accounting and reporting.

Analysis of banking. The study of the nature, functions, concepts, methods, techniques and analysis of the role of banks and specific patterns of functioning of banks, the assessment of the current state, trends and prospects of banking.

Management accounts in banks. Features of construction accounting in banks. Correspondent relations between banks and the opening and operation of accounts in national and foreign currencies. Accounting implemented banks.

Accounting forensic examination. The main provisions SBUs, research methods, output SBUs, methods of research operations cash, material values, wages, production and marketing of agricultural products, as well as payments for taxes.

Accounting in banks by international standards. Conceptual framework of international financial reporting standards (IFRS). The main provisions of the IFRS. Features IFRS accounting in banks and special accounting rules for individual banking operations

Reporting in banks. The concept of the reporting. Types of reporting in banks. Structure and content of certain types of reporting. Tax reporting. Statistical and special reports.

2.2.3. Specialization "Methods and organization of accounting, control and analysis in the management of enterprises of agroindustrial production"

Control of agricultural units' activity. Control of financial and business control equity and liabilities, control of revenues, expenditures and financial results.

Accounting for small businesses. Forms of small business and job and organization of accounting in them. Accounting for a private entrepreneur. Chart of accounts and accounting in the form of small businesses. Accounting for funds and accounts. Accounting for inventory and fixed assets. Accounting for production, sales and financial results. Preparation and submission of financial and tax reporting.

Accounting in industrial and agro service enterprises. Cost accounting of auxiliary production. Accounting cost of the agricultural machinery. Accounting of costs and yields of industrial production. Accounting for the cost of services rendered and catering. Accounting trade.

Accounting forensic examination. The main provisions SBUs, research methods, output SBUs, methods of research operations cash, material values, wages, production and marketing of agricultural products, as well as payments for taxes.

Accounting and financial reporting by international standards. Conceptual framework of international financial reporting standards (IFRS). The main provisions of the IFRS. Sectoral features of IFRS accounting and special accounting rules for individual business transactions.

Accounting of FEA. Subject, tasks and content of the discipline. External contracts display information and features in the accounting system. Accounting for exports. Accounting for imports. Accounting barter and tolling operations. Accounting for investment transactions. Accounting for currency and financial transactions. Accounting transactions in enterprises with foreign investments.

2.2.4. Specialization "Economic control of entrepreneurs in agroindustrial production"

Theory of financial and economic control. The essence and role of financial and economic control in the current economic conditions. The system of financial and economic control and its legal basis. Lines, forms, methods and instructional techniques, organizational provision of financial and economic control. Bodies of the state financial

control in Ukraine, their characteristics and functions. Features of the organization and conduct of the audit of financial and business enterprises. The order of synthesis, review and implementation of audit results. Independent financial and economic control (audit) in Ukraine: the nature, methods and organization. Internal financial and economic control. The current state and prospects of development of financial and economic control in Ukraine and abroad.

Informational and analytical service. The study of the theoretical foundations of information-analytical system as a synthesis of philosophical theories - reflection, learning and development. Mastering the system of knowledge of economics to form economic thinking based on problematic notions about building information-analytical system.

Control of agricultural units' activity. Control of financial and business control equity and liabilities, control of revenues, expenditures and financial results.

Accounting forensic examination. The main provisions SBUs, research methods, output SBUs, methods of research operations cash, material values, wages, production and marketing of agricultural products, as well as payments for taxes.

Computer technologies in accounting and audit. The study computer technology in modern accounting, analysis and audit, formation of skills aimed at obtaining systematic knowledge about the information technology used in accounting, and use this knowledge to solve specific problems in the field of accounting and tax accounting and auditing.

Tax management. Theoretical and organizational principles of tax management. The accounting bodies in SOT work. Supervisory review work of the State Tax Service.

2.2.5. Specialization "Methods and organization of accounting, control and analysis in the management of budgetary organizations"

Control of public sector institutions. Organization of internal controls in budget institutions. Internal control performance of budgetary institutions.

Analysis of public sector institutions. Formation of knowledge on methods of studying and evaluating the performance of budgetary institutions. Study methods and analysis organization based on the financial statements of budgetary institutions. Methods for comprehensive evaluation of the financial condition of budgetary institutions for solving economic problems.

Economic control. Fundamentals of economic control, monitoring and settlement of credit operations, control of revenues and financial results.

Accounting Forensic examination. The main provisions SBUs, research methods, output SBUs, methods of research operations cash, material values, wages, production and marketing of agricultural products, as well as payments for taxes.

Computer technologies in accounting and audit. The study computer technology in modern accounting, analysis and audit, formation of skills aimed at obtaining systematic knowledge about the information technology used in accounting, and use this knowledge to solve specific problems in the field of accounting and tax accounting and auditing.

Reporting in public sector institutions. The concept of reporting of budget institutions. Lines of reporting of budget institutions. Structure and content of certain types of reporting. Tax reporting. Statistical and special reports.

2.2.5. Specialization "Strategic Accounting and business social analytics"

Maintaining of balance sheet. The evolution of the main directions of accounting theory, and the need to balance economic nature doing as a science. The principles and basic tenets of maintaining of balance and scope in modern conditions. Theoretical bases

of static and dynamic balance as methods of accounting. Features balances reflected in current tax liabilities.

Innovation and investment analysis. Learning concepts, approaches and criteria, and comparison study of alternative solutions and projects based on a systematic approach in conditions most efficient use of available resources.

Information-analytical management. The essence, principles and requirements management solutions. System analysis of management problems. Methodological basis of preparation of draft management decisions. Target-oriented management and management decisions. Models financial management. Methods and decision-making model in predicting the enterprise development.

Macroeconomic analysis. The term "System of National Accounts" (SNA). Research subject SNA. Basic principles of the SNA. The transition to international statistical methodology and its purpose, integrating SNA different countries, the goal of creating SNA Ukraine. SNA role in the social economic statistics. InfoBase SNA in Ukraine: the use of continuous, selective and special surveys. SNA role as the only international standard accounting and analytical systems. Types and structure of economic classifications in the SNA.

Accounting and financial reporting by international standards. Conceptual framework of international financial reporting standards (IFRS). The main provisions of the IFRS. Sectoral features of IFRS accounting and special accounting rules for certain business transactions.

Business social analysis. The problems of the level and quality of life, economic activity, accessibility and quality of social services and education. In the population targeted by socio-economic research is the work of enterprises, regional and municipal development, social activity of state and public organizations.

Educational and scientific Master's program

2.2. Disciplines offered by students

2.2.1. Specialization "Accounting, control and analysis in the management of agricultural enterprises"

Control of agricultural units' activity. Control of financial and business control equity and liabilities, control of revenues, expenditures and financial results.

Informational and analytical service. The study of the theoretical foundations of information-analytical system as a synthesis of philosophical theories - reflection, learning and development. Mastering the system of knowledge of economics to form economic thinking based on problematic notions about building information-analytical system.

Methodology and organization of research. Science and scientific research. Accounting as a science. Results of research: testing, implementation and evaluation. Preparation of speeches on the results of scientific research. The scientist and supervisor.

Accounting forensic examination. The main provisions SBUs, research methods, output SBUs, methods of research operations cash, material values, wages, production and marketing of agricultural products, as well as payments for taxes.

Computer technologies in accounting and audit. The study computer technology in modern accounting, analysis and audit, formation of skills aimed at obtaining systematic knowledge about the information technology used in accounting, and use this knowledge to solve specific problems in the field of accounting and tax accounting and auditing.

Accounting of FEA. Subject, tasks and content of the discipline. External contracts display information and features in the accounting system. Accounting for exports. Accounting for imports. Accounting barter and tolling operations. Accounting for investment transactions. Accounting for currency and financial transactions. Accounting transactions in enterprises with foreign investments.

Masters
In specialty "STOCKBROKING"
branch of knowledge "Specific categories"

Form of training, licensed number of persons	
– Full-time	30 persons
Duration of Training:	
– Full-time educational and professional program	1,5 years
Credits:	
– educational and professional program	90 ECTS
Language of Teaching	Ukrainian, English
Qualification	manager of the stockbroking

Concept of training

Fundamentality training in the specialty "Stockbroking" is manifested in their practice in different sectors of the economy, in particular, agriculture.

Currently, there is globalization in almost all sectors of the economy. In agriculture, Ukraine has successfully implemented new processes world-class, high-performance computer technology, more widespread and accessible information products and so on. As in industry and agriculture more attention is paid to the wide application of international projects that are not only able to selectively concentrate some advances in science and technology, but also affect the implementation of large scale agricultural production of both large and small producers, to ensure high efficiency sales activity.

Interdisciplinary knowledge of contemporary issues and trends in agricultural science, technology boom and its impact on the environment led to the need for highly qualified specialists in society not just on economics, marketing or finance, and professionals who have combined the qualifying these characteristics is required 'compulsory requirement for work in today's stock market.

All the above clearly points to the existing or potentially high demand for specialists in exchange activities for the agricultural sector. That is why to understand and solve the problems of relations between businesses and the market, both nationally and internationally, as well as compliance newest global trends in the distribution of resources and products through modern global technology organization is preparing the necessary relevant experts and, in particular, masters in the field of trading, which would possess knowledge about the implementation of modern technology in the exchange activities as well as knowledge of economics and finance, the legal regulation, management and marketing, security problems in agriculture and the national economy as a whole. That is urgent for the region and for the country is the organization of an integrated system of training in the field of exchange activities directly as a specific application of agricultural technologies to address problems of economic independence Ukraine.

The training of the exchange activity level "Master" area of expertise "Specific categories" does not carry any higher educational institution of Ukraine that, based on today's needs for specialists of this sphere is unacceptable and naturally leads to serious loss of profits. In part, this problem is solved by means of educational programs of educational institutions that train specialists with in-depth knowledge in exchange activities within other economic fields. However, their knowledge does not apply to the agricultural sector, limited usually the stock market, and therefore are not sufficient for working on the above areas, emphasizing the uniqueness of the profession.

Educational and professional Master's program
Specialization "Risk management in the stock market"

This program allows you to prepare professionals who through effective use of the exchange market will minimize both productive and financial risks virtually all spheres of economic activity.

Areas of employment of graduates

Employees of brokerage houses, dealing centers, investment companies and funds, asset management companies.

Specialization "Analysis of financial and commodity markets"

Graduates of this program will develop and implement a profession forecasts for the domestic and world markets as a whole and within specific product groups or financial instruments.

Areas of employment of graduates

Employees of brokerage houses, dealing centers, investment companies and funds, asset management companies, enterprises and organizations, in the structure of which is division on work with securities – stock market professionals and businesses and organizations that purchase or sale of goods in bulk – professionals commodity market.

Specialization "Professional activities in the securities market"

The scope of this study program includes activities such as trading securities depository activities, evaluation activities, asset management and private entities.

Areas of employment of graduates

Employees of stock exchanges, brokerage houses, dealing centers, investment companies and funds, asset management, clearing and depository institutions.

Practical training

All students of the department undergo practical training at the leading exchanges and well-known in Ukraine and abroad, companies operating in the stock markets. In particular, a "Ukrainian Exchange", "Ukrainian Agrarian Exchange", "Agrarian Exchange," company "Univer", "Art Capital" and others. Agreement on cooperation in practical training with such public organizations as the "National Association of Stock Exchange Ukraine" and "Union of Agrarian Exchanges of Ukraine".

Proposed Topics for Master Theses

1. International currency market FOREX: Status and Prospects.
2. Financial derivatives and diversification of their use stock market participants.
3. Methods of analysis and forecasting stock prices for financial markets.
4. Foreign currency exchange system in the world market.
5. Diversification of investments on the stock exchange financial market.
6. The development of electronic trading technology in global financial markets.
7. Exchange stock market in the financial system of the state.
8. Status and prospects of foreign exchange market
9. The development of the exchange market financial derivatives.
10. Day-Trading on stock exchanges.

Academic rights of applicants for a master program

In addition to the specialty "Stockbroking" applicants with bachelor's degree can continue their studies the field of knowledge 1801 "Specific categories":

- 8.18010004 "Extension service";
- 8.18010010 "Quality, Standardization and Certification";
- 8.18010012 "Management of Innovative activity";
- 8.18010018 "Administrative Management";
- 8.18010020 "Management of Educational Institution";
- 8.18010020 "Pedagogy of Higher School".

Curriculum of Master training in specialty "Stockbroking" Educational and professional Master's program

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	Intellectual Property	1	120	4
2	Methodology and organization of research	1	120	4
3	Exchange commodity market	1	150	5
4	Exchange stock market	1	150	5
5	Brokering	3	120	4
6	Analysis and forecasting the stock market	2	120	4
7	Financial derivatives	2	120	4
8	Exchange electronic trading	2	120	4
9	Adjusting the stock market	1	90	3
10	Pricing on the stock market	2	120	4
11	Foreign exchange market and stock transactions	2	90	3
12	Exchange risk management	3	90	3
13	International stock markets	1	90	3
14	Commodity exchange goods	3	90	3
15	Clearing and settlement activities	3	90	3
Total for standard part			1680	56
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by University				
2	Business Foreign Language	1	120	4
7	Agricultural policy	2	90	3
Total (Disciplines offered by University)			210	7
2.2. Disciplines offered by students				
2.2.1. Specialization "Risk management in the stock market"				
1	Economic and financial risks	3	90	3
2	Hedging futures and options	3	120	4
3	Trading Strategies	3	90	3
4	Exchange marketing	2	90	3
Total (Disciplines offered by students)			390	13
2.2.2. Specialization "Analysis of financial and commodity markets"				
1	Exchange statistics	2	90	3,0
2	Fundamental analysis	3	120	4,0
3	Technical analysis	3	90	3,0
4	Simulations on the market	3	90	3,0
Total (Disciplines offered by students)			390	13
2.2.3. Specialization "Professional activities in the securities market"				
1	Depository activity	3	90	3,0
2	Trading in securities	2-3	120	4,0

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
3	Evaluation activity	3	90	3,0
4	asset management	3	90	3,0
Total (Disciplines offered by students)			390	13
Total for elective part			600	20
3. OTHER TYPES OF TRAINING				
1	Production Practice	3	300	10,0
2	Preparation and defense of master's work	3	120	4
Total			420	14
Total for Specialty			2700	90

Annotations educational plan disciplines

1. STANDARD ACADEMIC DISCIPLINES

Intellectual Property. Learning the basics of intellectual property, registration of ownership, protection, commercialization, valuation and management, research foundations, legal and economic aspects of intellectual property.

Methodology and organization of scientific research. Science and scientific research. Results of research: testing, implementation and evaluation. Preparation of speeches on the results of scientific research. The scientist and supervisor. Writing articles, abstracts, reports.

Exchange commodity market. The course examines the basics of commodity exchange market, its infrastructure participants. We study the role and place of commodity exchange market in the national economy, its functions and tasks. Identify the features of commodity exchange market of Ukraine and prospects of its development.

Exchange stock market. The subject of the study discipline is a process of organization and functioning of the stock market exchange. The main objectives of discipline is learning the basics of organization and technology trade in the stock exchange markets; the acquisition of practical skills: conclusion and implementation of agreements on the exchange stock market; mastering the practice of speculative operations on the stock market exchange.

Brokerage activities. The subject of the study discipline is a mechanism of organization and technology brokerage activities. The purpose of teaching is to develop in-depth knowledge in the organization and efficient operation of brokerage mediation on the stock market. Ensuring the effective application of acquired skills immediately in practice.

Analysis and forecasting the stock market. The course "Analysis and forecasting the stock market" system examines methods of assessing the situation on the stock market, the current operation and its prediction for the future. The purpose of the study course - to the future economic direction of specialist theoretical foundations and practical skills in the analysis and implementation of forecasting stock market conditions and effectively use this knowledge in their future activities.

Financial derivatives. The purpose of the study course - formation of students' modern economic thinking and system of specialized knowledge in the organization and functioning of term futures market. Studying discipline involves the two interrelated objectives: development of theoretical aspects of organization and technology futures trading and the acquisition of practical skills strategy and tactics of trading on global futures exchanges, by methods of assessment and forecasting commodity prices, financial instruments and foreign currency.

Exchange electronic trading. Discipline provides for the formation of knowledge and skills of students on introduction of computer technology in the stock market, based on electronic technology exchange trading and use of participants in the exchange market. Objectives of the course: to master basic concepts stock ecommerce; read the new information technologies; acquire practical skills in the use of electronic technologies in the stock market.

Adjusting the stock market. The subject of discipline is urgent issues of the exchange process of law and the mechanism of exchange structures within the limits of the law. The purpose of discipline is to develop in students the complex knowledge systems and specialized in the organization and regulation of the stock market.

Pricing in the exchange market. The purpose of discipline - to provide students with theoretical knowledge and practical skills on the formation of prices for agricultural products. Tasks of the course is to disclose problems: the theoretical foundations of pricing; legislative and legal regulation of pricing; organizational and economic mechanism of pricing; description of methods of regulation of pricing in Ukraine.

Currency and stock market transactions. The purpose of discipline is to study the theory and practice of international payments and foreign exchange transactions. Summary course includes: the exchange rate in international settlement and foreign exchange transactions; convertibility of currencies; foreign exchange transactions "spot" and "swap"; nature and technology, international settlements; currency exchange settlements and insurance risk.

Exchange risk management. The subject of the study discipline is a mechanism of risk management in exchange activities. The purpose of teaching are: formation of students of modern economic thinking and systems expertise in the field of exchange activities, strategy and tactics of trading on the stock exchanges, methods of evaluation and forecasting commodity prices, financial instruments and foreign currency.

International stock markets. The purpose of teaching is to create a system of special knowledge of the problems and prospects of development of international relations in the field of trading. Of the course are: formation of a holistic understanding of the processes that characterize the international level of interoperability of national stock markets; mastery of new approaches to assess the evolutionary nature of international stock markets; mastering the culture of modern economic thinking in the field of trading with the position advanced world experience.

Commodity exchange of goods. The purpose - formation of students' special knowledge of the key aspects of commodity exchange goods as global and domestic commodity exchange market and their effective use in their future activities. Requirements to exchange products and their features. Classification exchange of goods. Characteristics of agricultural commodities exchange group.

Clearing and settlement activities. The course examines the activities of market participants to determine the mutual obligations under the contracts. The course involves the study of the clearing, its technological support, the rights and obligations of the participants. Students get practical skills calculations for a large number of agreements concluded, and with a significant number of contractors.

2. ELECTIVE ACADEMIC DISCIPLINES

2.1. Disciplines offered by University

Business foreign language. The general aim of the program of teaching of foreign language for the professional purpose is formation students' professional linguistic competencies that will contribute to their efficient operating in cultural variety of training and professional environment. The methods of search of new information in another

language sources, linguistic methods of analytical study of another language sources are learned. Students study published original literature in another language and increase their lexical and grammatical skills. Methods and linguistic peculiarities of annotation and synopsis of another language sources, the principles of translation of professional oriented another language sources are studied.

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.

2.2. Disciplines offered by students

2.2.1. Specialization "Risk management in the stock market"

Economic and financial risks. The main objective of the course - formation of knowledge and skills necessary for effective risk management and integrated risk analysis and forecasting. The main objectives of the course: Introduction to the basic concepts and terms of the course; study patterns of risk processes, factors affecting the increase of risk; development mechanism, principles and methods of risk analysis.

Hedging futures and options. Students learn that the derivatives used as hedging tools (insurance risks). If you change the unfavorable market situation in the direction of hedging helps minimize possible losses. Derivatives with proper use can be an effective tool for augmenting funds for the acquisition of which is quite small initial investment. But in order to get them to trade on the stock market, you should understand all the pros (benefits) and disadvantages (risks).

Trading Strategies. The aim of this course is to reveal elements of behavior on the market, its pricing strategy as the procurement of resources and the implementation of production. Attention is drawn to the fact that enterprises in developed countries in addition to its core activities, tend to get more and investment income, requiring the study of behavior on the stock market.

Exchange marketing. The subject of discipline is the category of economic, scientific-methodological and practical aspects of marketing activities exchange structures. Program courses include: fundamentals of marketing in exchange activities; methods of marketing analysis in exchange activities; foundations and commodity brokerage activities on the stock market.

2.2.2. Specialization "Analysis of financial and commodity markets"

Exchange statistics. Teaching discipline aims at the formation of future professionals theoretical knowledge and practical skills in statistical evaluation of economic phenomena and processes exchange market, mastering the methods of statistical analysis. The main tasks to be solved in the process of teaching are: the collection, verification and evaluation of statistical information in the stock markets; construction materials and grouping of statistical monitoring, identifying links between individual phenomena and processes, establishing its structure; calculating machines generalizing statistical indicators and their economic interpretation.

Fundamental analysis. It is an approach to the analysis of financial markets based on the study of financial and economic information that is likely to have an impact on the

dynamics of asset or financial instrument. Feature of fundamental analysis is that it is extremely difficult to formalize. Fundamental analysis is used by investors to assess the value of the company (or shares), which reflects the state of the companies, the profitability of its operations. This analysis exposed the financial performance of the company.

Technical analysis. Provides prediction of price changes in the future based on an analysis of price changes in the past. It is based on time series analysis of prices - "charts". In addition to the price series used in technical analysis of trading volumes of information and other statistics. The most common methods of technical analysis used to analyze prices changing freely. In technical analysis developed many different tools and methods, but they are all based on a common assumption - by time series analysis using allocation trends may predict the behavior of prices in the future.

Modeling of situations in the market. Discipline is merely applied aspect, which is the scenario conditions for the development of various situations that may arise in the market. Students learn to develop measures to address them, picking up a variety of economic instruments. Particular attention is paid to the possibility of reducing the negative effects of adverse situations with opportunities exchange market.

2.2.3. Specialization "Professional activities in the securities market"

Depository activity. The purpose of discipline - to provide students with theoretical knowledge and practical skills on depository activities. Tasks of the course is to disclose problems: joint-stock companies on the stock market of Ukraine, the depository system of Ukraine: the structure and scope of activity, types of depository participants depository system - general characteristics, regulation of depository system.

Trading securities. The subject of discipline is the organization and regulation of securities trading on the stock market. Program courses include: securities on the stock market of Ukraine; securities traders and other participants of exchange trade in the stock market; financial monitoring and financial calculations on the securities market. Aim of the course - study system of bidding process on the exchange stock market.

Evaluation activity. We study the activities of appraisers and valuation activities aimed at organizational, methodological and practical provision of assessment, review and preparation of conclusions about the value of the property. Evaluation activity seen in the following forms: physical implementation and evaluation of all property-related issues; provide advice on property valuation orally and in writing; critical review and give opinions regarding their completeness and accuracy.

Asset Management. Contents are subject composition and structure of assets, assessment of its assets; content and objectives of management of turnaround assets; of current financial needs of the company; strategy finance current assets; accounts receivable management; cash management; management of fixed assets. Students study the work of companies that have combined assets of clients investing in securities that meet their declared financial goal. This allows investors to have greater diversification and investment options than if they invested their own assets.

FACULTY OF AGRICULTURAL MANAGEMENT

Dean – Candidate of economic sciences, associate professor Anatolii Ostapchuk
Tel.: (044) 527-85-73
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Faculty organizes and coordinates the educational process of master training in specialties:

8.03050701 "Marketing"

The graduating department:

Marketing and International Trade

Tel.: (044) 527-89-78

E-mail: market_chair@nubip.edu.ua

Head – Doctor of Economics, professor Yaroslava Larina

8.03060101 "Management of organizations and administration"

The graduating department:

Management named after professor Yo.S. Zavadsky

Tel.: (044) 527-84-80

E-mail: manag@nubip.edu.ua

Head – Doctor of Economics, Professor Vasyl Horiovyi

8.03060104 "Management of foreign economic activities"

The graduating department:

Administrative Management and Foreign Economic Activity

Tel.: (044) 527-86-51

E-mail: worldagro_chair@nubip.edu.ua

Head – Doctor of Economics, professor Valerii Halushko

8.18010018 "Administrative Management"

The graduating department:

Administrative Management and Foreign Economic Activity

Tel.: (044) 527-86-51

E-mail: worldagro_chair@nubip.edu.ua

Head – Doctor of Economics, professor Valerii Halushko

**Master's course
in specialty "MARKETING"
Branch of knowledge "Economics and Entrepreneurship"**

Form of training, licensed number of persons	
– Full-time	60 persons
– Part-time	60 persons
Duration of Training:	
– Full-time educational and professional program	1,5 years
– Full-time education and scientific program	2 years
– Part-time	1,5 years
Credits:	
– educational and professional program	90 ECTS
– education and scientific program	120 ECTS
Language of Teaching	Ukrainian, English, German
Qualification	master degree in 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 Master's program
*Specialization "Logistics"***

The aim of the specialization 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

Logistics companies and logistics divisions of large enterprises.

Specialization "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.

Specialization "Commercial and intermediary activity"

The aim of the specialization 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.

Areas of employment for graduates

Businesses and organizations engaged in intermediary activity; marketing and sales departments of enterprises of different organizational and economic forms.

Specialization "International trade"

Specialists learn to analyze market conditions in a globalizing world economic environment, develop and evaluate the economic efficiency of international commercial transactions, apply marketing principles in international trade. The program aims to train specialists in international trade, able to perform the respective functions of trade on foreign markets, promote the effective promotion of products, introduce new organizational and economic technologies in the field of international trade.

Areas of employment for graduates

Marketing departments of international companies and joint ventures.

Educational and scientific Master's program

Specialization "Scientific and methodological principles of marketing activities and international trade "

Training of specialist able to apply the latest methodological approaches in carrying out marketing activities, to develop strategic plans and recommendations for creation and implementation of marketing programs, to improve the competitiveness of market entities in the increasingly competitive international environment.

Areas of employment for graduates

Postgraduate course, analytical departments of international companies.

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 for Master 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. Organization of marketing research on milk and dairy products market.

Academic rights of applicants entering Master course

Applicants with the Diploma of Bachelor can continue training in connected specialties including ones of the field of knowledge "Specific categories", (table 2) and other specialties (table 3) in accordance with the Terms of enrolment to higher educational institutions of Ukraine in 2015 approved by the Order of the Ministry of education and science of Ukraine on October 15, 2014 № 1172 and the Regulations of enrolment to National University of Life and Environmental Sciences of Ukraine (basic institution, Kyiv) for 2015.

Curriculum for Master training in specialty "Marketing" Educational and qualification Master program

№	Discipline	Semester	Number	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	Global economy	1	90	3
2	Social responsibility	1	90	3
3	Company innovation development	2	90	3
4	Financial management	2	90	3
5	Human resources management	1	90	3
6	Strategic Marketing	1	90	3
7	Logistics management	2	90	3
8	Advertising management	2	90	3
9	Marketing Management	2	90	3
10	Forecasting methods in marketing research	1	90	3
11	Commercial activity of intermediary enterprises	2	90	3
12	Marketing planning	2	90	3
13	Management of enterprise competitiveness	2	90	3
Total for standard part			1170	39
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by the university				
1	Agrarian policy	1	90	3
2	Methodology and organization of scientific research with the principles of intellectual property	1, 3	90	3
3	Business foreign language	1, 3	150	5
Total (Disciplines offered by University)			330	11
2.2. Discipline offered by student				
2.2.1. Specialization "Logistics"				
1	Project Management	3	90	3
2	Mathematical models in logistics	3	90	3
3	Logistics in FEA	3	120	4
4	Transport Logistics	3	120	4
5	International Management	3	120	4
6	Product Innovation Policy	3	120	4
Total (Disciplines offered by students)			660	22
2.2.2. Specialization "International trade"				

MASTER CURRICULA AND TRAINING PROGRAMS

№	Discipline	Semester	Number	
			hours	credits ECTS
1	Marketing research of foreign markets	3	90	3
2	International trade and world markets conjuncture	3	120	4
3	Logistics in FEA	3	90	3
4	International Business Transactions	3	120	4
5	International Management	3	120	4
6	Product Innovation Policy	3	120	4
Total (Disciplines offered by students)			660	22
2.2.3. Specialization "Commercial and intermediary activity"				
1	Electronic commerce	3	90	3
2	Merchandising	3	90	3
3	Direct sale technology	3	120	4
4	Retailing technology	3	120	4
5	International Management	3	120	4
6	Product Innovation Policy	3	120	4
Total (Disciplines offered by students)			660	22
2.2.4. Specialization "Advertising Management"				
1	Advertising projects management	3	120	4
2	Brand Management	3	120	4
3	Creativity in advertising	3	90	3
4	Psychology of Advertising	3	90	3
5	International Management	3	120	4
6	Product Innovation Policy	3	120	4
Total (Disciplines offered by students)			660	22
Total elective part			990	33
3. OTHER TYPES OF TRAINING				
1	Production and pre-diploma practice	2,3	240	8
2	Writing and defense of master thesis	3	300	10
Total			540	18
Total in specialty			2700	90

**Curriculum of Master training
in specialty "Marketing"
Educational and scientific Master's program**

№	Discipline	Semester	Number	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	Global economy	1	90	3
2	Social responsibility	1	90	3
3	Company innovation development	2	90	3
4	Financial management	2	90	3
5	Human resources management	1	90	3
6	Strategic Marketing	1	90	3
7	Logistics management	2	90	3
8	Advertising management	2	90	3
9	Marketing Management	2	90	3
10	Forecasting methods in marketing research	1	90	3
11	Commercial activity of intermediary enterprises	1	90	3
12	Marketing planning	2	90	3
13	Management of enterprise competitiveness	2	90	3
14	Stock market	4	90	3
Total for standard part			1260	42
2. ELECTIVE ACADEMIC DISCIPLINES				

№	Discipline	Semester	Number	
			hours	credits ECTS
2.1. Disciplines offered by University				
1	Agrarian policy	1	90	3
2	Methodology and organization of scientific research with the principles of intellectual property	1, 3	90	3
3	Business foreign language	1, 3	150	5
Total (Disciplines offered by University)			330	11
2.2. Disciplines offered by students				
2.2.1. Specialization "Scientific and methodological principles of marketing activities and international trade "				
1	Electronic commerce	3	90	3
2	Merchandising	3	90	3
3	Direct sale technology	3	120	4
4	Retailing technology	3	120	4
5	International Management	3	120	4
6	Product Innovation Policy	3	120	4
7	Mathematical models in management and marketing	4	120	4
8	Innovative marketing	4	120	4
9	Marketing research of foreign markets	4	120	4
10	Methodology and organization of scientific research	4	90	3
Total (Disciplines offered by students)			1110	37
Total for elective part			1440	48
3. OTHER TYPES OF TRAINING				
1	Production and pre-diploma practice	2,4	300	10
2	Pedagogical practice	3	150	5
3	Writing and defense of master thesis	3 ,4	450	15
Total			900	30
Total in specialty			3600	120

Annotations educational plan disciplines

1. STANDARD ACADEMIC DISCIPLINES

Global economy. The aim of the discipline: to form students' understanding of the conditions and factors of development, mechanisms and tools of the global economy, awareness of their intellectual mission for efficient decision-making in the context of civilization progress.

Social responsibility. The aim of the discipline: to form students' fundamental knowledge of the theory and practice of social responsibility and appropriate professional competences.

Company Innovation development. The aim of discipline: to form knowledge, abilities and skills in developing professional competence to ensure the innovative development of economic systems, assess their innovation potential, substantiate and implement effective managerial decisions on the grounds of innovative principles.

Financial management. The aim of the discipline is to develop student modern economic thinking and the system of expertise knowledge in the field of finance management, practical skills of their application in various areas of financial activity.

Human resources management. The aim of the discipline is to form complex theoretical knowledge and practical skills of developing and implementing HR policy in modern organizations, rational selection of employees for positions and efficient teambuilding, performance evaluation, development and use of employees' potential.

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.

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.

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.

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.

Stock market. The discipline gives students an idea of the basic tools of trade used in the global stock market. The marketing experts study the process of product pricing on the stock market and explore the factors affecting it.

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.

2. ELECTIVE ACADEMIC DISCIPLINES

2.1. Disciplines offered by University

Agrarian 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 principles of intellectual property. The aim of the discipline is to develop the system of knowledge of methodology, theory of method and research process, methodological support of research activities at the stages of writing master thesis, to form the ability to organize scientific research of problem using the whole complex of traditional methods of research, including general and special methods, laws and categories of dialectics, economic laws and categories of economic and statistical methods, economic-mathematical modeling etc. The main objective of the theoretical part of the course is to introduce students to modern concepts of research activities with the principles of scientific cognition and methods of scientific research. The main objectives of the practical part are to develop abilities of self-education, development of skills: formation and use of conscious methodological position of scientific research. The learning outcomes are: improvement of skills in searching, selecting and processing scientific information, exact formulation of the problem, purpose, objectives, object, subject and methods of research. Students are expected to learn the principles of intellectual property and master the knowledge and skills regarding registration of ownership, protection, commercialization, evaluation and management.

Business foreign language. The overall objective of the program of foreign language teaching for specific purposes is to develop students' professional language competences that will contribute to their effective functioning in diverse cultural, educational and professional environment.

Educational and professional Master program

2.2. Disciplines offered by students

2.2.1. Specialization “Logistics”

Projects Management provides knowledge of planning, organizing and managing resources for the successful completion of the objectives and tasks of a project. The main objective is: acquisition of skills to achieve the objectives and tasks of the project, adhering to the obligations of the predefined project constraints. Typical constraints are the scope and content of the project, the time, and budget. The minor though more ambitious objectives are: optimization, distribution and integration of tasks to achieve the predetermined goals.

Mathematical models in logistics. The aim of the discipline is to develop students' mathematical knowledge to solve problems in professional activities, analytical thinking skills and mathematical formulation of economic problems in management.

Logistics in FEA. The subject of the discipline is the general laws of development of logistics systems, characteristics and trends of management and optimization of material flows in foreign economic activity. The aim of the discipline is to form systemic knowledge of the conceptual bases of logistics, theory and practice of this direction and skills of independent work regarding up-to-date methods of managing material and other

flows in modern conditions. The task of discipline is to provide students with deep theoretical knowledge on concepts, strategies and tactics in logistics; master methodological tools of development and implementation of logistics tasks; master the skills of logistics thinking and develop proposals on improving logistical systems and mechanisms of their functioning; skills of economic performance evaluation and the effects of logistics solutions in foreign economic activity.

Transport logistics. The discipline deals with characteristics of the global market of transportation and logistics services, transport and logistics strategy of the European Union, the problems of transport logistics, the choice of vehicle, drawing up routes, transport tariffs and fines, cargo transport characteristics, scheduling transportation. The aim of the discipline is to provide students with knowledge and skills regarding the components of modern transport logistics systems. The task of the discipline is to form students' competence in developing transport logistics in Ukraine.

International Management. The discipline studies world practice in management trends. Students examine management systems in different countries, compare and evaluate them from the position of their application in Ukraine.

Product innovation policy. The aim of the discipline is to develop a system of knowledge about the main directions in the strategic planning of the innovation process to create commercially profitable products. The main objectives of the discipline are to introduce students to the principles of product innovation marketing; effective application of research results to create competitive products; skills of using modern methods and techniques to generate ideas; functional and economic substantiations of conformity of new products to market requirements.

2.2.2. Specialization “International trade”

Marketing research of foreign markets. The aim of the discipline is to develop students' knowledge and skills in the theory and methodology of marketing research of macro- and micro foreign market environment. The subject of the discipline is theoretical and practical basis of the organization of marketing research of foreign markets by business entities in order to assess changes in the conditions of world commodity markets and justification of effective management decisions. The program of the discipline includes two modules: the theoretical principles of marketing research of foreign markets; research of competitors and consumers in foreign markets.

International trade and world market conjuncture. The aim of the discipline is to develop students' knowledge and skills in the theory and methodology of conjuncture analysis and forecasting of marketing research of global commodity markets. The subject of discipline is theoretical and practical basis of organization of conjuncture research of changes in the conditions of world commodity markets by business entities. The program of the course includes two modules: the theoretical basis of conjuncture research in international trade; conjuncture research of world commodity markets.

Logistics in FEA. The subject of the discipline is the general laws of development of logistics systems, characteristics and trends of management and optimization of material flows in foreign economic activity. The aim of the discipline is to form systemic knowledge of the conceptual bases of logistics, theory and practice of this direction and skills of independent work regarding up-to-date methods of managing material and other flows in modern conditions. The task of discipline is to provide students with deep theoretical knowledge on concepts, strategies and tactics in logistics; master methodological tools of development and implementation of logistics tasks; master the skills of logistics thinking and develop proposals on improving logistical systems and

mechanisms of their functioning; skills of economic performance evaluation and the effects of logistics solutions in foreign economic activity.

International Business Transactions. The aim of the course is to provide students with knowledge about preparation, conclusion and implementation of international commercial transactions based on the most important sources of legal regulation of international business developed by UNECE, UNIDROIT, UNCITRAL, ICC and business associations, as well as forms and methods of international commercial payments. The objectives of the discipline is to introduce students to the essence of international commercial agreements, principles of international agreements taken into account when drawing up contracts and simplification of procedures in international business; the use of practical skills to draw up contracts for the international sale of raw materials and manufactured goods, contracts in countertrade transactions, brokering, licensing, franchising, engineering, leasing, factoring services and production maintenance service; provide students with practical knowledge about methods of payment, their strengths and weaknesses, as well as international payment systems.

International Management. The discipline studies world practice in management trends. Students examine management systems in different countries, compare and evaluate them from the position of their application in Ukraine.

Product innovation policy. The aim of the discipline is to develop a system of knowledge about the main directions in the strategic planning of the innovation process to create commercially profitable products. The main objectives of the discipline are to introduce students to the principles of product innovation marketing; effective application of research results to create competitive products; skills of using modern methods and techniques to generate ideas; functional and economic substantiations of conformity of new products to market requirements.

2.2.3. Specialization "Commercial and intermediary activity"

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.

Direct sale technology. 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.

Retailing technology. 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.

International Management. The discipline studies world practice in management trends. Students examine management systems in different countries, compare and evaluate them from the position of their application in Ukraine.

Product innovation policy. The aim of the discipline is to develop a system of knowledge about the main directions in the strategic planning of the innovation process to create commercially profitable products. The main objectives of the discipline are to introduce students to the principles of product innovation marketing; effective application of research results to create competitive products; skills of using modern methods and techniques to generate ideas; functional and economic substantiations of conformity of new products to market requirements.

2.2.4. Specialization “Advertising Management”

Advertising project management. The discipline provides training in planning and managing advertising projects, particularly in the following areas: project environment affecting the project (internal and external factors), project drafting – setting goals, objectives and strategies of the project, project planning – the system of measures for the project, technical performance – direct technical execution of project plan points, project management – monitoring of project implementation according to plan.

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.

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.

International Management. The discipline studies world practice in management trends. Students examine management systems in different countries, compare and evaluate them from the position of their application in Ukraine.

Product innovation policy. The aim of the discipline is to develop a system of knowledge about the main directions in the strategic planning of the innovation process to create commercially profitable products. The main objectives of the discipline are to introduce students to the principles of product innovation marketing; effective application of research results to create competitive products; skills of using modern methods and techniques to generate ideas; functional and economic substantiations of conformity of new products to market requirements.

Educational and scientific Master's program

2.2.1. Specialization *"Scientific and methodological principles of marketing activities and international trade"*

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.

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Mathematical models in management and marketing. The aim of discipline is to develop students' mathematical knowledge to solve problems in professional activities, analytical thinking skills and mathematical formulation of economic problems arising in the process of management.

Innovative Marketing. The discipline provides formation of new thinking of experts in the field of marketing, based on new knowledge and the latest achievements of science and experience and to facilitate their practical application in the activity of enterprises; development of new methods for making effective business decisions and fundamentally new ways of development; growth of scientific and professional levels of performing certain marketing functions and increase of their efficiency. The aim of the course is to form scientific outlook and expertise in the theory and methodology of modern marketing, develop abilities and skills in enterprise management based on innovative marketing to meet the needs of consumers and ensure efficient operation of an enterprise.

Marketing research of foreign markets. The aim of the discipline is to develop students' knowledge and skills in the theory and methodology of marketing research of macro- and micro foreign market environment. The subject of the discipline is theoretical and practical basis of the organization of marketing research of foreign markets by business entities in order to assess changes in the conditions of world commodity markets and justification of effective management decisions. The program of the discipline includes two modules: the theoretical principles of marketing research of foreign markets, research of competitors and consumers in foreign markets.

Methodology and organization of scientific research. The main objective of the theoretical part of the course is to introduce students to modern concepts of research activities with the principles of scientific cognition and methods of scientific research. The main objectives of the practical part are to develop abilities of self-education, development of skills: formation and use of conscious methodological position of scientific research.

Master's course
in specialty "MANAGEMENT OF ORGANIZATION AND ADMINISTRATION"
Branch of knowledge "Management and Administration"

Form of training, licensed number of persons	
– Full-time	60 persons
– Part-time	50 persons
Duration of Training:	
– Full-time educational and professional program	1,5 years
– Full-time education and scientific program	2 years
– Part-time	1,5 years
Credits:	
– educational and professional program	90 ECTS
– education and scientific program	120 ECTS
Language of Teaching	Ukrainian
Qualification of graduates	master degree in management of organization and administration, manager (administrator) of an organization

The concept of training

The main task of training in management of organizations and administration is to teach masters to make their own decisions, to carry out scientific research activities in the relevant areas and to give practical recommendations on the current problems in the agro-industrial sector: development and implementation of economic policy, planning, forecasting, economic-organizational and research functions necessary for organization and rational use of material and technical potential of AIC entities; improvement of the efficiency and reliability of management, introduction of new progressive organizational forms; improvement of methodology of economic analysis, investment forecasting, elaboration of business-plans and justification of managerial decisions; appropriate practical application of the provisions of the legislation of Ukraine on the issues of financing, crediting and taxation of enterprises, institutions and organizations of the agro industrial complex.

Educational and professional Master's program

Specialization "Management of enterprise strategic development"

Training of specialists for management and peopleware in large business groups and associations of integrated services of organizational and strategic development, the activity of which involves comprehensive diagnostics of the organizational systems, implementation of innovative approaches through proactive crisis management system by means of establishing effective institutional mechanism to ensure functioning of the subjects of corporate interaction.

Areas of employment for graduates

Managers of the structural divisions of enterprises in the agrarian sphere.

Specialization "Management on the market of goods and services"

Training of specialists for management of various organizations on the market, including the market infrastructure entities by creating competitive advantages of organizations and their products. Future masters obtain theoretical and practical skills in

enhancing competitiveness of a specific product or services through the system of organizational measures, including motivation.

Areas of employment for graduates

Managers of the structural divisions of enterprises in the agrarian sphere.

Specialization "Quality Management"

The program trains specialists for developing the quality management system considering the objectives and policies in the information management of product quality, methods and analysis of quality indicators, improvement of the processes of quality assurance system functioning. Graduates will be able to improve the efficiency of economic activities by using modern approaches to management based on the quality management criteria as well as quality of the products and services offered by an enterprise or organization.

Areas of employment for graduates

Managers of the structural divisions of enterprises in the agrarian sphere.

Specialization "Management in the sphere of economic competition"

The discipline focuses on the study of theoretical aspects of management in the sphere of economic competition. Training of expert managers in the sphere of economic competition is caused by increasing competitive pressure on businesses that require a systemic approach to formation of a complex of measures to ensure competitiveness of enterprises.

Areas of employment for graduates

Managers of the structural divisions of enterprises in the agrarian sphere.

Specialization "Management of cooperative groups"

The study of theoretical aspects of managing various activities of co-operative forms in accordance with the needs of the national economy. The programme provides students with knowledge, skills and competences in planning, motivation, control, organization and coordination of a cooperative enterprise; effective decision-making in accordance with cooperative principles; planning needs in different types of resources and coordination of their use by the members of the cooperative; drawing up business plans; organization of collective work; coordination of team work and conflict management; introducing transparent relations; regulation of service processes; understanding the basic needs of cooperative members, customers, introducing the strategy of promoting new products and services through cooperatives; formation and development of organizational culture and consulting activities.

Areas of employment for graduates

Managers of the structural divisions of enterprises of cooperative integrated type.

Educational and scientific Master's program

Specialization "Scientific approaches to efficient management in the market of goods and services"

The discipline studies the issues of formation and functioning of the system of management of the economic entities on the market of goods and services to provide effective responses to the needs of consumers using innovative approaches in

management. Graduates will be able to apply the appropriate scientific methods of analysis and choice of optimal managerial decisions, to develop their own proposals and improve the existing approaches to the management on the market of goods and services.

Areas of employment for graduates

Post-graduate courses, organization of consulting services in the sphere of management.

Practical training

The future masters in management will be able to apply modern methods of management, will acquire knowledge of technological issues of enterprise functioning and the ability of self-control; clear personal goal-setting, problem-solving skills; ability to innovate; to influence others; knowledge of modern management approaches; ability to manage; ability to train and develop subordinates, manage an enterprise, knowledge of practical aspects of decision-making.

Proposed Topics for Master Theses

1. Improvement of the system of labor potential management of an enterprise.
2. Improvement of the system of manager's performance and evaluation of personal managerial qualities.
3. Management of entrepreneurial activity and ways of its improvement.
4. Improvement of organization and motivation of labor at the enterprise.
5. Improvement of the management system in the sector of animal husbandry.
6. Development of communications system in enterprise management.
7. Improvement of the process of adoption and implementation of managerial decisions.
8. Formation of enterprise competitive strategies.
9. Formation of quality management system of enterprise in agro industrial complex.
10. Development of the strategy of HR management at an enterprise.

Academic rights of applicants entering Master course

Applicants with the Diploma of Bachelor can continue training in connected specialties including ones of the field of knowledge "Specific categories", (table 2) and other specialties (table 3) in accordance with the Terms of enrolment to higher educational institutions of Ukraine in 2015 approved by the Order of the Ministry of education and science of Ukraine on October 15, 2014 № 1172 and the Regulations of enrolment to National University of Life and Environmental Sciences of Ukraine (basic institution, Kyiv) for 2015.

Curriculum for Master training in specialty "Management of organization and administration" Educational and qualification Master program

№	Discipline	Semester	Number	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	Contract law	1	90	3
2	Public administration	1	120	4
3	Business administration: management of organization	1	120	4
4	Business administration: corporate management	2	90	3

№	Discipline	Semester	Number	
			hours	credits ECTS
5	Business administration: change management	2	90	3
6	Business administration: project management	2	120	4
7	Business administration: quality management	2	90	3
8	Financial management	2	90	3
9	Information systems and technologies in organization management	2	90	3
10	Investment management	2	90	3
11	Psychology of management and conflict management	1	90	4
12	Marketing management	1	90	3
Total standard part			1170	39
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by the university				
1	Agrarian policy	1	90	3
2	Methodology and organization of scientific research with the principles of intellectual property	1	90	3
3	Business foreign language	1, 3	150	5
Total (Disciplines offered by University)			330	11
2.2. Discipline offered by student				
2.2.1. Specialization "Management on the market of goods and services"				
1	Market infrastructure management	3	120	4
2	Management of marketing communications and competitiveness	3	120	4
3	Management of enterprise potential	3	120	4
4	Management of enterprise activity on the market of goods and services	3	120	4
5	Business protocol and negotiating	3	90	3
6	Business game (Business management)	2	90	3
Total (Disciplines offered by students)			660	22
2.2.2. Specialization "Quality Management"				
1	Complex system of quality management of products and services	3	120	4
2	Information management of labour and product quality	3	120	4
3	Quality potential management	3	120	4
4	Corporate quality management	3	120	4
5	Business protocol and negotiating	3	90	3
6	Business game (Business management)	2	90	3
Total (Disciplines offered by students)			660	22
2.2.3. Specialization "Management in the sphere of economic competition"				
1	Management of enterprise competitiveness	3	120	4
2	Management of enterprise potential	3	120	4
3	Risk and economic security management	3	120	4
4	Business ethics and corporate social responsibility	3	120	4
5	Business protocol and negotiating	3	90	3
6	Business game (Business management)	2	90	3
Total (Disciplines offered by students)			660	22
2.2.4. Specialization "Management of enterprise strategic development"				
1	Management of enterprise organizational development	3	120	4
2	Crisis management	3	120	4
3	Diagnostics in management system	3	120	4
4	Management of enterprise innovation activity	3	120	4
5	Business protocol and negotiating	3	90	3
6	Business game (Business management)	2	90	3
Total (Disciplines offered by students)			660	22
2.2.5. Specialization "Management of cooperative groups"				
1	Management of cooperative activity	3	120	4

№	Discipline	Semester	Number	
			hours	credits ECTS
2	Environment for cooperative business development	3	120	4
3	Management of cooperative members and customers interaction	3	120	4
4	Organizational support of cooperative activity	3	120	4
5	Business protocol and negotiating	3	90	3
6	Business game (Business management)	2	90	3
Total (Disciplines offered by students)			660	22
Total elective part			990	33
3. OTHER FORMS OF TRAINING				
1	Production and pre-diploma practice	2,3	240	8
2	Writing and defense of master thesis	3	300	10
Total			540	18
Total in specialty			2700	90

**Curriculum for Master training
in specialty “Management of organization and administration”
Educational and scientific Master's program**

№	Discipline	Semester	Number of	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	Contract law	2	90	3
2	Public administration	2	90	3
3	Business administration: management of organization	2	120	4
4	Business administration: corporate management	2	120	4
5	Business administration: change management	2	90	3
6	Business administration: project management	2	90	3
7	Business administration: quality management	2	90	3
8	Financial management	1	120	4
9	Information systems and technologies in organization management	1	90	3
10	Investment management	2	90	3
11	Psychology of management and conflict management	2	90	3
12	Marketing management	2	120	4
13	Methodology and organization of scientific research	4	90	3
Total standard part			1260	42
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by the university				
1	Agricultural policy	1	90	3
2	Methodology and organization of scientific research with the principles of intellectual property	1,3	90	3
3	Business foreign language	1,3	150	5
Total (Disciplines offered by University)			330	11
2.2. Disciplines offered by students				
2.2.1. Specialization “Scientific approaches to ensuring effective management on the market of goods and services”				
1	Market infrastructure management	3	120	4
2	Management of marketing communications and competitiveness	3	120	4
3	Management of enterprise potential	3	120	4
4	Management of enterprise activity on the market of goods and services	3	120	4
5	Business protocol and negotiating	3	90	3

№	Discipline	Semester	Number of	
			hours	credits ECTS
6	Business game (Business management)	2	90	3
7	Management of financial reorganization and bankruptcy	3	120	4
8	Mathematical models in management and marketing	3	120	4
9	Business planning of innovative projects	3	120	4
10	International standardization and certification of technologies, raw materials and finished products	3	120	4
Total (Disciplines offered by students)			1140	38
Total elective part			1470	49
3. OTHER FORMS OF TRAINING				
1	Production and pre-diploma practice	2,3	300	10
2	Pedagogical practice	3	150	5
3	Writing and defense of master thesis	4	420	14
Total			870	29
Total in specialty			3600	120

Annotations educational plan disciplines

1. STANDARD ACADEMIC DISCIPLINES

Contract law. The aim of the discipline is to give students a system of legal knowledge on drafting, execution and termination of various kinds of commercial contracts. The discipline studies: the main categories of contract law; order of drafting contracts, including commercial contracts; peculiarities of certain types of agreements in the sphere of economic activity; procedure of bringing contractual entities to responsibility for breach of contract.

Public administration. The aim of the discipline is to master the theoretical knowledge on public administration and acquisition of practical skills as to the application of the laws, principles, methods, technologies and procedures when managing public entities; acquisition of skills and competencies to perform the functions of a manager (expert) of public administration, including public authorities and local government.

Business Administration: Management of an organization. The aim of the discipline is to master the theory and practice of effective management of an organization in the changing socio-economic environment. The objectives of the discipline are: to form contemporary systemic thinking and a complex of special knowledge in management of subsystems of an organization at all stages of its life cycle in relationship with the environment.

Business Administration: corporate management. The aim of the discipline is to introduce students to the theoretical basics of corporate management, institutional and information instruments to ensure functioning of the system of corporate management at enterprises.

Business Administration: Change Management. The aim of the discipline is to give practical knowledge and obtain practical skills in management process organization. The objectives of the discipline: understanding the essence of changes and the nature of their origin; formation of scientific outlook and knowledge of technologies and methods of managing change in organizations; study of the peculiarities of organization functioning under continuous change.

Business Administration: Project Management. The main aim of the discipline is to form appropriate practical skills in application of universal instruments of project design and implementation in order to achieve effective functioning and development of an organization. The objective of the discipline is to provide students with scientific and methodological basis to master the main tools of project management in an organization.

Business Administration: quality management. The aim of the discipline is to develop the system of knowledge on the theory and methodology of quality management, principles of formation and operation of quality management systems, to master the legal, institutional and economic issues of quality management. The main objective of the course is theoretical and practical training of students in quality management organization and functioning.

Financial management. The aim of the discipline is to develop in students the modern economic thinking and the system of expertise in the field of business finance management, and practical skills in various areas of financial activity.

Information systems and technologies in organization management. The aim of the discipline is to develop in future managers the knowledge and skills in modern information systems and technologies, and practical skills of effective use of modern information technologies in the process of organization management.

Investment management. The aim of the discipline is to develop students' modern economic thinking and the system of expertise in the field of investment activity of enterprises, competences based on mastering the basic theoretical principles and practical skills to effectively manage an enterprise.

Psychology of management and conflict management. The aim of the discipline is to study the general laws, mechanisms of formation and development of cognitive mental processes, properties, states and formations in the process of management, under stress and conflict. The objective of the course is to form the system of theoretical and methodological knowledge on the problems of psychological science and practice, knowledge of the structural elements of the psyche - mental cognitive processes, properties, states and formations at the level of representation and interpretation for practical application and implementation in the professional activity of future managers.

Marketing Management. The discipline studies the system of administrative relations in marketing departments and their relationship with other business units. The aim of the discipline is to form modern understanding of marketing management opportunities to achieve transition to a new level and forms of consumption by means of situational market analysis, forecasting consumer needs evolution, strategic planning of goods and services movement stimulation, organization of sales, providing increased entrepreneurial resistance on domestic market. The main objectives of the discipline is to provide fundamental knowledge in marketing management to ensure and expand of entrepreneurial activity in specific organizations and environments.

2. ELECTIVE ACADEMIC DISCIPLINES

2.1. Disciplines offered by University

Agrarian 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 principles of intellectual property. The aim of the discipline is to develop the system of knowledge of methodology, theory of method and research process, methodological support of research activities at the stages of writing master thesis, to form the ability to organize scientific research of problem using the whole complex of traditional methods of research, including general and special methods, laws and categories of dialectics, economic laws and categories of economic and statistical methods, economic-mathematical modeling etc. The main objective of the theoretical part of the course is to introduce students to modern concepts of research activities with the principles of scientific cognition and methods of

scientific research. The main objectives of the practical part are to develop abilities of self-education, development of skills: formation and use of conscious methodological position of scientific research. The learning outcomes are: improvement of skills in searching, selecting and processing scientific information, exact formulation of the problem, purpose, objectives, object, subject and methods of research. Students are expected to learn the principles of intellectual property and master the knowledge and skills regarding registration of ownership, protection, commercialization, evaluation and management.

Business foreign language. The overall objective of the program of foreign language teaching for specific purposes is to develop students' professional language competences that will contribute to their effective functioning in diverse cultural, educational and professional environment.

Educational and professional Master program

2.2. Disciplines offered by students

2.2.1. Specialization “Management on the market of goods and services”

Market infrastructure management. The aim of the course is to master the theory of the commodity market infrastructure as a major part of the market economy, the practical skills in managing its activities to promote, store and sell goods and services to meet the needs of customers, the ability to find and implement decisions on intensification and efficiency in this sector. The objective of the course is to know the nature of commodity market infrastructure and its role in market economy, types and conditions of effective management by individual elements of commodity market infrastructure.

Management of marketing communications and competitiveness. The aim of the discipline is to form scientific understanding and expertise in theory and methodology of marketing, development of skills and abilities to perform management functions at an enterprise based on marketing to meet the requirement of customers and ensure the efficient operation of an enterprise.

Management of enterprise potential. The aim of the discipline is to increase the efficiency of organizational structures through the proper use of different levels of management principles and tools by managers, creation of an integrated system of administrative management of an organization.

Management of enterprise activity on the market of goods and services: The main aim of the discipline is to develop modern management thinking and the system of expertise in management, to form a conceptual understanding of the principles of the organization systemic management; to acquire skills of analyzing internal and external environment, make appropriate management decisions.

Business protocol and negotiating. The discipline studies modern management requirements, in particular, business protocol and ethics as its important component, enterprise responsibility as the first step towards ethical conduct, preparation for negotiations, negotiating (the main stages and their characteristics), methods of negotiating, negotiation styles, analysis of the results of negotiations and implementation of the agreements, rules and regulations of business meetings, highlights of meeting arrangements, preparation of venues and meeting of delegations.

Business game (Business Management). The main aim of the discipline is to develop students' knowledge of the basic principles, the main categories, modern concepts, theoretical principles and practical methods of managing the main enterprise activities and skills of developing operational strategy, creating and applying branch operational subsystems as a basis for achieving an organization's mission.

2.2.2. Specialization "Quality Management"

Complex system of quality management of products and services. The aim of the discipline is to form students' system of knowledge about theory and methodology of quality management, principles of formation and operation of quality management systems for different types of goods (products and services), study of legislative and regulatory, organizational and economic issues on quality management of goods (services). The main objectives of the course are to learn quality management terminology; to study the problem of quality at present and its impact on the national economy; to study the domestic and international experience in product quality management for its further development; to create and implement product quality systems; to use methodological principles of management: general approaches to product quality, principles and techniques.

Information management of labour and product quality. The aim of the discipline is to develop basic knowledge and skills to manage information resources in the field of quality. The objective of the discipline is to provide knowledge on theoretical and methodological principles of information quality management; the main provisions of information quality management; information as a resource of quality development; essence and basic principles of a systematic approach to information processing and use in quality management.

Quality potential management. The main task of the discipline is to form students' sustainable theoretical knowledge of quality management potential, to be able to develop measures to improve the system of quality potential management. The main task is to give an idea about the nature of the main categories of quality potential management; to explain the process of quality potential formation; to study the system of quality potential management, its regulatory basis; to consider formation of a comprehensive and qualification level of quality potential.

Corporate quality management. The aim of the discipline is to develop the system of knowledge about basic principles, categories, methods and tools of quality management in modern companies, summarizing the main achievements of theory and practice in the field of quality management; to show the need to apply these achievements in all areas of corporation activity; to form an idea of the systemic organization of quality management processes in a corporation that meets international standards. The objective: to cover the major theoretical principles of a modern concept of quality management in a corporation; to explain the purpose and the mechanism of classical and modern methods and tools of quality management in the current activities of corporations.

Business protocol and negotiating. The discipline studies modern management requirements, in particular, business protocol and ethics as its important component, enterprise responsibility as the first step towards ethical conduct, preparation for negotiations, negotiating (the main stages and their characteristics), methods of negotiating, negotiation styles, analysis of the results of negotiations and implementation of the agreements, rules and regulations of business meetings, highlights of meeting arrangements, preparation of venues and meeting of delegations.

Business game (Business Management). The main aim of the discipline is to develop students' knowledge of the basic principles, the main categories, modern concepts, theoretical principles and practical methods of managing the main enterprise activities and skills of developing operational strategy, creating and applying branch operational subsystems as a basis for achieving an organization's mission.

2.2.3. Specialization “Management in the sphere of economic competition”

Management of enterprise competitiveness. The discipline aims to teach students to assess the competitiveness of enterprises, to identify factors of its formation. Future specialists will be able to determine the competitiveness of any company, as well as obtain the knowledge to develop a system of improvement measures.

Management of enterprise potential. The aim of the discipline is to increase the efficiency of organizational structures through the proper use of different levels of management principles and tools by managers, creation of an integrated system of administrative management of an organization.

Risk and economic security management The discipline studies theory, ontology and epistemology of risk and economic security; the essence, perception and systemic risk analysis in the economy and business; a system of objective and subjective quantitative estimates of risk and economic security, methods of risk management and modeling of economic risk and economic security; the concept of game theory; multi-game and multi-criteria game models of economic problems, game hierarchical models of justification of making multi-purpose and multi-criteria decisions.

Business ethics and corporate social responsibility. The object of the disciplines is business communication, the subject is its moral and psychological aspects, ethical and psychological mechanisms. This new discipline includes various branches of sciences (ethics, psychology, philosophy, sociology) and practices (administration, management, etc.). The most significant components are ethics, psychology and management of science which deal with human nature and human behavior (from different viewpoints) and factors affecting the vital activities of people and their interaction.

Business protocol and negotiating. The discipline studies modern management requirements, in particular, business protocol and ethics as its important component, enterprise responsibility as the first step towards ethical conduct, preparation for negotiations, negotiating (the main stages and their characteristics), methods of negotiating, negotiation styles, analysis of the results of negotiations and implementation of the agreements, rules and regulations of business meetings, highlights of meeting arrangements, preparation of venues and meeting of delegations.

Business game (Business Management). The main aim of the discipline is to develop students' knowledge of the basic principles, the main categories, modern concepts, theoretical principles and practical methods of managing the main enterprise activities and skills of developing operational strategy, creating and applying branch operational subsystems as a basis for achieving an organization's mission.

2.2.4. Specialization “Management of enterprise strategic development”

Management of enterprise organizational development. The course aims to help students master a wide range of issues related to organizational peculiarities of functioning and development of modern enterprises (restructuring, business process reengineering, virtual business and other new organizational types) and their specific integration activities.

Crisis management. The course aims to form the system of knowledge and skills of crisis management – crisis recognition and diagnostics, forecasting the aftereffects of crises and their impact on enterprise functioning, identify opportunities for prevention and provision of company operation in crisis, elimination of crisis, adoption and implementation of crisis management decisions.

Diagnostics in management system. The course aims to provide knowledge about the use of methods and tools of economic diagnostics in enterprise management. The main objectives of the course are: to study the peculiarities of industrial and economic

activity of domestic enterprises and justification of preconditions and factors that significantly impact the internal economic mechanism of every enterprise; generalization and systematization of knowledge in mastering the skills of economic diagnostics in different directions to ensure effective management.

Management of enterprise innovation activity. The aim of the course is to give students the latest knowledge in strategic management of enterprise innovative development and acquisition of practical skills in development of risk management system in order to optimize the level of risk in the enterprise innovation activity.

Business protocol and negotiating. The discipline studies modern management requirements, in particular, business protocol and ethics as its important component, enterprise responsibility as the first step towards ethical conduct, preparation for negotiations, negotiating (the main stages and their characteristics), methods of negotiating, negotiation styles, analysis of the results of negotiations and implementation of the agreements, rules and regulations of business meetings, highlights of meeting arrangements, preparation of venues and meeting of delegations.

Business game (Business Management). The main aim of the discipline is to develop students' knowledge of the basic principles, the main categories, modern concepts, theoretical principles and practical methods of managing the main enterprise activities and skills of developing operational strategy, creating and applying branch operational subsystems as a basis for achieving an organization's mission.

2.2.5. Specialization "Management of cooperative groups"

Management of cooperative activity. The course aims to help students master a wide range of issues related to the peculiarities of management of cooperative enterprises: to perform basic and special functions of management, adherence to the principles and the use of management methods, formation of communication systems, establishing leadership relations, decision-making, formation of favorable conditions for cooperative development.

Environment for cooperative business development. The aim of the discipline is to provide knowledge to identify, analyze and regulate environmental factors that affect the development of cooperatives. The discipline studies the issues of legal, social and economic support of coordinated teamwork in the units of cooperative type at international, national, regional and local levels.

Management of cooperative members and customers interaction. The aim of the discipline is to develop theoretical knowledge and practical skills of organization and support of successful relationship between the members of a cooperative; facilitate organizational culture, resolve the consequences of conflicts between the parties. The students do detailed analysis of the conditions and effects of cooperative marketing concept of targeting on the consumer, study peculiarities of the application of marketing mix in cooperative organizations.

Organizational support of cooperative activity. The main aim of the discipline is to provide students with the knowledge for creating cooperatives and organization of their activity at various stages of development. The discipline covers the peculiarities of the legal regulations of the cooperative and organization of accounting, financial, production and other subsystems of this type of organization, sharing the authorities and responsibilities in the team, organizational and management structure.

Business protocol and negotiating. The discipline studies modern management requirements, in particular, business protocol and ethics as its important component, enterprise responsibility as the first step towards ethical conduct, preparation for negotiations, negotiating (the main stages and their characteristics), methods of

negotiating, negotiation styles, analysis of the results of negotiations and implementation of the agreements, rules and regulations of business meetings, highlights of meeting arrangements, preparation of venues and meeting of delegations.

Business game (Business Management). The main aim of the discipline is to develop students' knowledge of the basic principles, the main categories, modern concepts, theoretical principles and practical methods of managing the main enterprise activities and skills of developing operational strategy, creating and applying branch operational subsystems as a basis for achieving an organization's mission.

Educational and scientific Master's program

2.2.1. Specialization "Scientific approaches to ensuring effective management on the market of goods and services"

Market infrastructure management. The aim of the course is to master the theory of the commodity market infrastructure as a major part of the market economy, the practical skills in managing its activities to promote, store and sell goods and services to meet the needs of customers, the ability to find and implement decisions on intensification and efficiency in this sector. The objective of the course is to know the nature of commodity market infrastructure and its role in market economy, types and conditions of effective management by individual elements of commodity market infrastructure.

Management of marketing communications and competitiveness. The aim of the discipline is to form scientific understanding and expertise in theory and methodology of marketing, development of skills and abilities to perform management functions at an enterprise based on marketing to meet the requirement of customers and ensure the efficient operation of an enterprise.

Management of enterprise potential. The aim of the discipline is to increase the efficiency of organizational structures through the proper use of different levels of management principles and tools by managers, creation of an integrated system of administrative management of an organization.

Management of enterprise activity on the market of goods and services: The main aim of the discipline is to develop modern management thinking and the system of expertise in management, to form a conceptual understanding of the principles of the organization systemic management; to acquire skills of analyzing internal and external environment, make appropriate management decisions.

Business protocol and negotiating. The discipline studies modern management requirements, in particular, business protocol and ethics as its important component, enterprise responsibility as the first step towards ethical conduct, preparation for negotiations, negotiating (the main stages and their characteristics), methods of negotiating, negotiation styles, analysis of the results of negotiations and implementation of the agreements, rules and regulations of business meetings, highlights of meeting arrangements, preparation of venues and meeting of delegations.

Business game (Business Management). The main aim of the discipline is to develop students' knowledge of the basic principles, the main categories, modern concepts, theoretical principles and practical methods of managing the main enterprise activities and skills of developing operational strategy, creating and applying branch operational subsystems as a basis for achieving an organization's mission.

Management of financial reorganization and bankruptcy. The aim of the discipline is to teach students to determine the nature of the financial reorganization and bankruptcy, prepare and implement the mechanism of reorganization plan of the debtor, to operate such categories as pre-trial reorganization, in-court reorganization, bankruptcy; formation of students' theoretical and methodological principles to apply the knowledge

and skills of reorganization and bankruptcy, determination of the curative ability of an enterprise and evaluation of procedures of reorganization and liquidation of the debtor.

Mathematical models in management and marketing. The aim of the discipline is to provide students with mathematical knowledge to solve problems in professional activity, analytical thinking skills and mathematical formulation of the economic problems arising in the process of management.

Business planning of innovative projects. The main aim of the discipline is to provide students with modern theoretical principles and practical skills of innovation management of an organization. The main tasks are theoretical training of students and formation of skills in innovation management of an organization.

International standardization and certification of technologies, raw materials and finished products. The aim of the discipline is to provide students with the scientific and theoretical principles, methodological and organizational issues of standardization and certification of technologies, raw materials and finished products. The objectives of the discipline: to learn the basics of standardization and certification of product quality indexes, evaluation methods and prospects of international standardization and certification, to develop abilities to use normative and technical documents to solve practical problems of certification of technologies, raw materials and finished products.

Methodology and organization of scientific research. The main objective of the theoretical part of the course is to introduce students to modern concepts of research activities with the principles of scientific cognition and methods of scientific research. The main objectives of the practical part are to develop abilities of self-education, development of skills: formation and use of conscious methodological position of scientific research.

**Master's course
in specialty "MANAGEMENT OF FOREIGN ECONOMIC ACTIVITIES"
Branch of knowledge "Management and Administration"**

Form of training, licensed number of persons	
– Full-time	125 persons
– Part-time	60 persons
Duration of Training:	
– Full-time educational and professional program	1,5 years
– Full-time education and scientific program	2 years
– Part-time	1,5 years
Credits:	
– educational and professional program	90 ECTS
– education and scientific program	120 ECTS
Language of Teaching	Ukrainian, English
Qualification of graduates	master degree in management of foreign economic activity, manager (administrator) of foreign economic activity

The concept of training

The main task of training masters in foreign economic activity is to provide international and joint enterprises and organizations in the field of agribusiness with specialists able to perform the planning and forecasting the activity of foreign economic entities (subdivision); forecasting the dynamics of demand for export and import products; development and justification of the areas and means of expanding markets economic entities; make effective management decisions in the process of foreign economic activity; organize foreign economic activity of the entity to achieve its mission; manage the quality and competitiveness of domestic products on the world market; organize business on international markets; monetary and financial management of foreign economic activity; organization of promotional activities of foreign economic activity; form the company image on the international market; monitor implementation of foreign operations; report on foreign economic activity.

**Educational and professional Master's program
*Specialization "International business management"***

Combines the study of business disciplines in the global context with understanding of cultural and social processes in different countries. Graduates will be able to perform managerial work, considering the economic and cultural diversity of the real market entities. In addition to basic knowledge in the field of foreign economic activity graduates will obtain skills in market analysis, decision making, project management; understand the specific features and other cultures, which will enable them to work in different countries in a multinational, multicultural environment.

Areas of employment for graduates

Managers of structural units at the international enterprises and departments of foreign economic activity of domestic enterprises of agrarian sector.

Specialization “International commercial activity”

Provides training of specialists, able to understand the constantly changing situation on the international market and skillfully apply the benefits of the world market; organize and carry out international transactions; assess the economic efficiency of foreign economic operations; independently develop foreign trade contracts and conduct negotiations with foreign companies; carry out foreign economic activities using the basic forms and methods of foreign economic activity.

Areas of employment for graduates

Managers of structural units at the international enterprises and departments of foreign economic activity of domestic enterprises of agrarian sector.

Educational and scientific Master's program

Specialization “Research of the world conjuncture of agricultural market”

The training program for researchers to develop techniques of short- and long-term forecasting of foreign economic activity indexes and the strategy for entering foreign market, considering the factors influencing the development of foreign trade, tariff and non-tariff instruments of regulating export-import operations. The program provides knowledge on the analysis of the factors which form market conjuncture and examine its agricultural segment.

Areas of employment for graduates

Postgraduate course, analytical subdivisions of international enterprises and organizations on the agricultural market.

Practical training

Master students get skills in modern management methods applied in international trade, primarily, by joint ventures and international corporations. Much attention is paid to the activity of domestic enterprises and organizations operating on the world market. Considering the peculiarities of commercial operations in the partner countries, students learn to apply the knowledge obtained during the course in various situations that may arise when concluding international agreements.

Proposed theme for Master thesis

1. Trade and economic cooperation between Ukraine and the countries – EU members.
2. Foreign economic security of the state in conditions of European integration of Ukraine.
3. Organizational and economic mechanism of creation and operation of joint ventures in Ukraine.
4. International leasing in the conditions of market transformation of Ukraine.
5. Marketing strategies of European companies and the experience of their implementation in Ukraine.
6. Risk Management in the process of an enterprise entering foreign markets.
7. World trade of agricultural products and prospects of Ukrainian export development.
8. The export potential of grain sector of Ukraine.
9. Ukrainian Foreign Trade of agro-food production in globalizing world economy.
10. Competition on agricultural global markets.

Academic rights of applicants entering Master course

Applicants with the Diploma of Bachelor can continue training in connected specialties including ones of the field of knowledge "Specific categories", (table 2) and other specialties (table 3) in accordance with the Terms of enrolment to higher educational institutions of Ukraine in 2015 approved by the Order of the Ministry of education and science of Ukraine on October 15, 2014 № 1172 and the Regulations of enrolment to National University of Life and Environmental Sciences of Ukraine (basic institution, Kyiv) for 2015.

Curriculum for Master training in specialty "Management of foreign economic activities" Educational and qualification Master program

№	Discipline	Semester	Number	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	International private law	2	90	3
2	Management of FEA	1, 2	210	7
3	International marketing	1	150	5
4	Investment management	1	120	4
5	Information systems and technologies in FEA management	2	120	4
6	International credit-settlement and currency transactions	2	120	4
7	Organization and techniques of FEO	1	120	4
8	International economic activity	2	120	4
9	Assets management	1	90	3
Total standard part			1140	38
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by the university				
1	Methodology and organization of scientific research with the principles of intellectual property	1	90	3
2	Business foreign language	1, 2	150	5
3	Agrarian policy	2	90	3
Total (Disciplines offered by University)			330	11
2.2. Discipline offered by student				
2.2.1. Specialization "International business management"				
1	International business	3	120	4
2	Strategies in international business	3	120	4
3	International customs regulations	3	120	4
4	Business game (Business management)	3	120	4
5	Business protocol and negotiating	2	120	4
6	World agriculture and food resources	3	90	3
Total (Disciplines offered by students)			690	23
2.2.2. Specialization "International commercial activity"				
1	International commercial activity	3	120	4
2	Business game (Business management)	3	120	4
3	Logistics in FEA	3	120	4
4	Risk management in international commercial activity	3	120	4
5	Business protocol and negotiating	2	120	4
6	World agriculture and food resources	3	90	3
Total (Disciplines offered by students)			690	23
Total elective part			1020	34
3. OTHER FORMS OF TRAINING				
1	Production and pre-diploma practice	2,3	240	8
2	Writing and defense of master thesis	3	300	10

№	Discipline	Semester	Number	
			hours	credits ECTS
Total			540	19
Total in specialty			2700	90

**Curriculum for Master training
in specialty “Management of foreign economic activities”
Educational and scientific Master's program**

№	Discipline	Semester	Number	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	International private law	2	90	3
2	Management of FEA	1, 2	210	7
3	International marketing	1	150	5
4	Investment management	1	120	4
5	Information systems and technologies in FEA management	2	120	4
6	International credit-settlement and currency operations	2	120	4
7	Organization and techniques of FEO	1	120	4
8	International economic activity	2	120	4
9	Assets management	1	90	3
10	Methodology and organization of scientific research	4	90	3
Total standard part			1230	41
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by the university				
1	Methodology and organization of scientific research with the principles of intellectual property	1	90	3
2	Business foreign language	1,2	150	5
3	Agrarian policy	2	90	3
Total (Disciplines offered by University)			330	11
2.2. Disciplines offered by students				
2.2.1. Specialization “Research on the world conjuncture of agricultural market”				
1	International commercial activity	3	120	4
2	Business game (Business management)	3	120	4
3	Logistics in FEA	3	120	4
4	Risk management in international commercial activity	3	120	4
5	Business protocol and negotiating	2	120	4
6	World agriculture and food resources	3	90	3
7	Mathematical models in management and marketing	4	120	4
8	Organization and regulation of foreign economic activity	4	150	5
9	Models in planning and forecasting FEA	4	120	4
10	International business	4	90	3
11	Stock market	4	90	3
Total (Disciplines offered by students)			1170	39
Total elective part			1500	50
3. OTHER FORMS OF TRAINING				
1	Production and pre-diploma practice	2,4	300	10
2	Pedagogical practice	3	150	5
3	Writing and defense of master thesis	4	420	14
Total			870	29
Total in specialty			3600	120

Annotations educational plan disciplines

1. STANDARD ACADEMIC DISCIPLINES

International private law. The aim of the discipline is to provide students with the system of legal knowledge on drafting, execution and termination of various kinds international. The discipline studies: basic categories of international private law; order contract drafting, in particular international contracts; peculiarities of certain types of agreements in international activities; procedure of bringing contractual entities to responsibility for breach of contract.

Management of foreign economic activity. The aim of the discipline is to develop students' managerial thinking, system of knowledge and practical skills to manage foreign economic activity (FEA). The student will master practical skills of international management process, application of various tools and technology of management when considering specific situations in foreign economic activity.

International Marketing. The aim of the discipline is to provide students with theoretical and practical knowledge in the field of international marketing activities to achieve commercial goals in international business. The subject of the discipline is a set of principles integrated systemic management of international marketing activities at an enterprise and realization of the basic functions of marketing in international business.

Investment management. The aim of the discipline is to develop students' modern economic thinking and the system of expertise in the field of investment activity of enterprises, competences based on mastering the basic theoretical principles and practical skills to effectively manage an enterprise.

Information systems and technologies in management of FEA. The aim of this course is to develop a system of specialized knowledge and obtain practical skills using information systems and technologies in foreign economic activity of enterprises, introduction to techniques and methods of the manager's activity and the means of processing foreign economic information and up-to-date software.

International credit-settlement and currency transactions. The aim of the discipline is to form students' ability to carry out credit-settlement and currency transactions. The task of the course is to master theoretical knowledge and practical skills of carrying out credit - settlement and currency transactions when dealing with foreign economic activities of exporters and importers.

Organization and techniques of FEO. The aim of the discipline is to provide students with a system of knowledge of objective laws, conditions, processes and specific peculiarities of foreign economic activities, and practical skills of their application. The course focuses on development of students' holistic understanding of processes in foreign economic activity and formation of students' practical skills to apply data base to analyze the global economic environment in order to choose the strategy of entering foreign markets.

International economic activity. The aim of the discipline is to provide future managers with basic and special knowledge of the problems and prospects of international economic relations for professional use. The course focuses on development of students' holistic understanding of processes that characterize international level of interaction of national economies and formation of students practical skills to carry out independent analysis of global economic processes.

2. ELECTIVE ACADEMIC DISCIPLINES

2.1. Disciplines offered by University

Methodology and organization of scientific research with the principles of intellectual property. The aim of the discipline is to develop the system of knowledge of methodology, theory of method and research process, psychology, methodological support of research activities at the stages of writing graduate and postgraduate thesis. The discipline also involves formation of culture and skills of doing research, practical implementation of the results. The discipline is important in conditions of intensive market development of objects of intellectual property, making them an essential factor of enterprise competitiveness and the economy on the whole. The objective of the discipline is to form a complex of theoretical knowledge on intellectual property as a significant economic-legal category of information society.

Business foreign language. The overall objective of the program of foreign language for specific purposes is to develop students' professional language competences that will contribute to their effective functioning in diverse cultural, educational and professional environment.

Agrarian 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.

Educational and professional Master program

2.2. Disciplines offered by students

2.2.1. Specialization *"International business management"*

International business. Objective: to provide students with knowledge about the specifics of functioning of modern international business and peculiarities of analytical approaches to studying foreign economic environment and formation of strategies of enterprise behavior on foreign markets. The students learn the theoretical categories and principles of international business as well as drafting and conclusion of international agreements (contracts).

Strategies in international business. The main aim of the discipline is to provide students with the theoretical basis of modern strategic management and practical skills for making strategic decisions in management and development activities of an enterprise on the international market. The main tasks are: theoretical training of students and formation of skills in strategic management of an enterprise.

International customs regulations. The aim of the course is to make students aware of the place of the law regulating international customs relations in the system of international law, norms and values of their relationship with their practical application by the relevant authorities. The objective of the course are: to introduce students to the major sources of international customs regulation; to master the most important regulations, ability to apply them; knowledge of the principles of regulation and the ability to use the content when solving specific problems and issues.

Business game (Business Management). The main aim of the discipline is to develop students' knowledge of the basic principles, the main categories, modern concepts, theoretical principles and practical methods of managing the main enterprise activities and skills of developing operational strategy, creating and applying branch operational subsystems as a basis for achieving an organization's mission.

Business protocol and negotiating. The discipline studies modern management requirements, in particular, business protocol and ethics as its important component, enterprise responsibility as the first step towards ethical conduct, preparation for

negotiations, negotiating (the main stages and their characteristics), methods of negotiating, negotiation styles, analysis of the results of negotiations and implementation of the agreements, rules and regulations of business meetings, highlights of meeting arrangements, preparation of venues and meeting of delegations.

World agriculture and food resources. The main aim of the course is to provide the deep study of laws of development of world agriculture, systematized and generalized knowledge of agricultural economy of individual countries and regions in the context of global trends of development of agricultural production and international relations.

2.2.2. Specialization "International commercial activity"

International commercial activity. The aim of the course is to provide the formation of the system of knowledge and skills of prospective traders in establishing effective business in the international market of goods and services. The objective of the course is to teach future professionals to form optimal proportions between production and related business areas, to ensure effective circulation of goods and services, establish a dynamic balance of the market. The challenge of course is to study scientific and theoretical principles of international commercial activity in the global market of goods and services in the field of commercial services, management of commercial activities.

Business game (Business Management). The main aim of the discipline is to develop students' knowledge of the basic principles, the main categories, modern concepts, theoretical principles and practical methods of managing the main enterprise activities and skills of developing operational strategy, creating and applying branch operational subsystems as a basis for achieving an organization's mission.

Logistics in FEA. The aim of the discipline is to form systemic knowledge of the conceptual bases of logistics in FEA, theory and practice of this direction and skills of independent work regarding up-to-date methods of managing material and other flows in modern conditions.

Risk management in international commercial activity. The aim of the discipline is to provide students with knowledge of terminology of risk theory in international business, means of risk assessment, methods of risk measuring under uncertainty and protection against them. Objective: to extend and deepen the knowledge of qualitative and quantitative characteristics of economic processes taking risk into account; to master methods and techniques of construction, analysis and application of mathematical economic models that take risk into account; to study the basic methods and ways for assessing and optimizing risk; to learn the strategies of international risk management.

Business protocol and negotiating. The discipline studies modern management requirements, in particular, business protocol and ethics as its important component, enterprise responsibility as the first step towards ethical conduct, preparation for negotiations, negotiating (the main stages and their characteristics), methods of negotiating, negotiation styles, analysis of the results of negotiations and implementation of the agreements, rules and regulations of business meetings, highlights of meeting arrangements, preparation of venues and meeting of delegations.

World agriculture and food resources. The main aim of the course is to provide the deep study of laws of development of world agriculture, systematized and generalized knowledge of agricultural economy of individual countries and regions in the context of global trends of development of agricultural production and international relations.

Educational and scientific Master's program**2.2.1. Specialization “Research of the world conjuncture of agricultural market”**

International commercial activity. The aim of the course is to provide the formation of the system of knowledge and skills of prospective traders in establishing effective business in the international market of goods and services. The objective of the course is to teach future professionals to form optimal proportions between production and related business areas, to ensure effective circulation of goods and services, establish a dynamic balance of the market. The challenge of course is to study scientific and theoretical principles of international commercial activity in the global market of goods and services in the field of commercial services, management of commercial activities.

Business game (Business Management). The main aim of the discipline is to develop students' knowledge of the basic principles, the main categories, modern concepts, theoretical principles and practical methods of managing the main enterprise activities and skills of developing operational strategy, creating and applying branch operational subsystems as a basis for achieving an organization's mission.

Logistics in FEA. The aim of the discipline is to form systemic knowledge of the conceptual bases of logistics in FEA, theory and practice of this direction and skills of independent work regarding up-to-date methods of managing material and other flows in modern conditions.

Risk management in international commercial activity. The aim of the discipline is to provide students with knowledge of terminology of risk theory in international business, means of risk assessment, methods of risk measuring under uncertainty and protection against them. Objective: to extend and deepen the knowledge of qualitative and quantitative characteristics of economic processes taking risk into account; to master methods and techniques of construction, analysis and application of mathematical economic models that take risk into account; to study the basic methods and ways for assessing and optimizing risk; to learn the strategies of international risk management.

Business protocol and negotiating. The discipline studies modern management requirements, in particular, business protocol and ethics as its important component, enterprise responsibility as the first step towards ethical conduct, preparation for negotiations, negotiating (the main stages and their characteristics), methods of negotiating, negotiation styles, analysis of the results of negotiations and implementation of the agreements, rules and regulations of business meetings, highlights of meeting arrangements, preparation of venues and meeting of delegations.

World agriculture and food resources. The main aim of the course is to provide the deep study of laws of development of world agriculture, systematized and generalized knowledge of agricultural economy of individual countries and regions in the context of global trends of development of agricultural production and international relations.

Mathematical models in management and marketing. The aim of the discipline is to provide students with mathematical knowledge to solve problems in professional activity, analytical thinking skills and mathematical formulation of the economic problems arising in the process of management.

International customs regulations. The aim of the course is to make students aware of the place of the law regulating international customs relations in the system of international law, norms and values of their relationship with their practical application by the relevant authorities. The objective of the course are: to introduce students to the major sources of international customs regulation; to master the most important regulations, ability to apply them; knowledge of the principles of regulation and the ability to use the content when solving specific problems and issues.

Organization and regulation of foreign economic activity. The discipline studies the essence of regulating this activity by public authorities and non-governmental bodies of economic management in compliance with the Constitution and laws of Ukraine. The description of principles and functions of national and international organizations involved in the process of regulation of foreign economic activity is given. The discipline focuses on the use of management techniques, in particular, the essence of tariff (economic) and non-tariff (organizational and administrative) methods of regulation, the scope and peculiarities of their application.

Models in planning and forecasting of FEA. The discipline teaches that in order to make the right decision, one needs more than just experience, qualification and intuition. It is important to be able to apply them effectively and correctly, to choose the best method. The knowledge of statistics, mathematics and computer technology are of great help. Modeling in FEA enables managers to receive a process model, the decision on the development and management of which he is to take. Exploring this model and experimenting with it by trying various combinations of influence factors the manager is able to choose the optimal solution from a set of all possible ones.

International business. Objective: to provide students with knowledge about the specifics of functioning of modern international business and peculiarities of analytical approaches to studying foreign economic environment and formation of strategies of enterprise behavior on foreign markets. The students learn the theoretical categories and principles of international business as well as drafting and conclusion of international agreements (contracts).

Methodology and organization of scientific research. The main objective of the theoretical part of the course is to introduce students to modern concepts of research activities with the principles of scientific cognition and methods of scientific research. The main objectives of the practical part are to develop abilities of self-education, development of skills: formation and use of conscious methodological position of scientific research.

Stock market. The discipline provides students with knowledge of the basic tools of trade used in the global stock market. Future experts use the case study of stock market to explore product pricing process and the factors affecting it.

**Master's course
in specialty "ADMINISTRATIVE MANAGEMENT"
Branch of knowledge "Specific categories"**

Form of training, licensed number of persons	
– Full-time	50 persons
– Part-time	50 persons
Duration of Training:	
– Full-time educational and professional program	1,5 years
– Part-time	2 years
Credits:	
– educational and professional program	90 ECTS
Language of Teaching	Ukrainian, English, German
Qualification	manager (administrator) in administrative management

The concept of training

The specialty focuses on training highly qualified managers able to manage agricultural business applying deep professional knowledge and skills, modern computer technologies, innovation methods and foreign languages. Experts may occupy executive positions in companies and organizations of agro-industrial production as well as in central and local government bodies.

Specialty "Administrative Management" is the highest level of business qualification of a manager and most prestigious education program in the world of business. The specialty provides training of senior managers of new generation, competitive in the labor market and capable of creative professional and innovative management in global competitive environment. The specialty provides students with integrated knowledge system, combining fundamental economic education with practical skills of management decision-making, teamwork, conducting negotiations and presentations in professional activity in the field of business management.

Educational and professional Master's program

Specialization "Management of agrarian enterprises development"

Training of top managers and systems analysts able to make strategic decisions in terms of risk, continuous development and improvement of business in a competitive environment.

Areas of employment for graduates

Managers of enterprises and structural divisions in the agrarian sphere.

***Specialization "Administrative management and marketing
agrobusiness system"***

Training of specialists for management of the effective production process in agricultural business entities by implementing intensive production technologies, cost reduction, increase of economic efficiency and enhancement of international cooperation in technology exchange and export-import operations.

Areas of employment for graduates

Managers of enterprises and structural divisions in the agrarian sphere including enterprises with foreign investments.

Practical training

The future graduates in specialty "Administrative management" acquire business knowledge of technological issues at specific enterprises and ability to choose methods and tools of market environment evaluation and develop options for strategic behavior of enterprises. Considering the branch characteristics of master programs, students learn to apply their knowledge in any situations that may arise in agricultural production. All production problems are solved from the standpoint of organizational and HR aspects.

Proposed Topics for Master Thesis

1. Outsourcing of human resources in the system of enterprise management.
2. Social aspects of management in agricultural enterprises.
3. Forming strategies of advertising management of an enterprise.
4. Management of crop production at an enterprise.
5. Management of organic production in Ukraine.
6. Management of personnel business career.
7. Enterprise innovation management.
8. Conflict in the context of enterprise management.
9. Product quality management.
10. The system of enterprise labor potential management.

Academic rights of applicants entering Master course

In addition to the specialty "Administrative Management" bachelors from different areas of training can continue teaching the field of knowledge 1801 "Specific categories":

- 8.18010004 "Extension service";
- 8.18010009 "Stockbroking";
- 8.18010010 "Quality, Standardization and Certification";
- 8.18010012 "Management of innovative activity";
- 8.18010020 "Management of Educational Institution";
- 8.18010021 "Pedagogy of Higher School".

Curriculum for Master training in specialty "Administrative management" Educational and professional Master's program

№	Discipline	Semester	Number	
			hours	credits ECTS
1. STANDARTD ACADEMIC DISCIPLINES				
1	Business-management	1	150	5
2	Economics of production	1	150	5
3	Analysis and control of an enterprise	1	150	5
4	Economic information science	1	90	3
5	Methodology of social empirical research	1	120	4
6	Planning and organization of an enterprise	2	150	5
7	Strategies of international agricultural marketing	2	150	5
8	Business game	2	150	5
9	Project management and evaluation	3	150	5
Total standard part			1260	42
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by the university				
1	Agrarian policy	2	150	5
2	Methodology and organization of scientific research with the	3	90	3

№	Discipline	Semester	Number	
			hours	credits ECTS
	principles of intellectual property			
3	Business foreign language	1, 2	150	5
Total (Disciplines offered by University)			390	13
2.2. Discipline offered by student				
2.2.1. Specialization "Management of agrarian enterprises development"				
1	Chief administrative officer	1	90	3
2	Organization of business activities	1	90	3
3	Management consulting	2	150	5
4	Legal principles of administrative activity	2	90	3
5	Human resources management	3	90	3
6	Quantitative methods of decision making	3	90	3
7	Automated accounting system	3	90	3
Total (Disciplines offered by students)			690	23
2.2.2. Specialization "Administrative management and marketing in agrobusiness system"				
1	Methods of administrative activity	1	90	3
2	Management of enterprise activities	1	90	3
3	International agribusiness	2	150	5
4	Management of FEA	2	90	3
5	Biosocial economy	3	90	3
6	Strategic management	3	90	3
7	International economic activity of Ukraine	3	90	3
Total (Disciplines offered by students)			690	23
Total elective part			1080	36
3. OTHER TYPES OF TRAINING				
1	Production and pre-diploma practice	1,2	180	6
2	Writing and defense of master thesis	3	180	6
Total			360	12
Total in specialty			2700	90

Annotations educational plan disciplines

1. STANDARD ACADEMIC DISCIPLINES

Business management. The objective of the discipline is to provide students with knowledge of objective laws, conditions, processes and specific features of economic activity and agricultural development, agricultural trade, and skills of their practical application to determine the optimal organization of an enterprise. Students learn about important for business enterprise management techniques and personnel work, and determine their impact on entrepreneurial success through applied programs and business games.

Economics of production. The course provides students with knowledge and skills in practical economics. Students will be able to describe the production and technical alternatives in livestock and crop production, critically analyze and evaluate the results in the context of overall economic and social development. The main aim of the course is to give students knowledge of objective laws, conditions, processes and specific features of economic activity and agricultural development, agricultural trade, and skills of their practical application.

Analysis and control of an enterprise. The main aim of the course is to provide students with systemic knowledge about the use of analytical tools and instruments of accounting, economic analysis and controlling in enterprise management.

Economic Information science. The objectives of the course are to master basic concepts of computer science, to study computer hardware and software, to acquire

practical skills of working on the up-to-date computers, to master modern software packages for solving economic problems, acquire practical skills in computer networks.

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

Planning and organization of an enterprise. The discipline provides students with knowledge of basic economic relationships at the level of an enterprise and general production. The main objective of the course, which logically extends the courses in economics of production and business management, is to provide students with knowledge of objective laws, conditions, processes and specific features of economic activity and agricultural development, and acquisition of skills for their practical application in order to determine the optimal organization of an enterprise.

Strategies of international agricultural marketing. The main aim of the discipline is to give the theoretical principles of modern strategic marketing management and practical skills to making strategic decisions in the management of marketing activities and development on the foreign and domestic market. The main objectives in the process of teaching are: theoretical training of students and mastering skills in strategic marketing management.

Business game. The students master the technique of decision-making in designing programs of agricultural enterprise development considering the achieved level of management and performance in the future to sell products and maximize profits in market economy conditions.

Project management and evaluation. The students master the basic concepts and categories, methods and techniques to evaluate selection of decision projects; study the instructional materials in economic planning, the main sources of information in the discipline.

2. ELECTIVE ACADEMIC DISCIPLINES

2.1. Disciplines offered by the University

Agrarian 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 principles of intellectual property. The discipline introduces students to the basic methods and techniques of scientific research. Students learn to use scientific approaches in their future activities, exploring important processes and phenomena.

Business foreign language. The overall objective of the program of foreign language teaching for specific purposes is to develop students' professional language competences that will contribute to their effective functioning in diverse cultural, educational and professional environment.

Educational and professional Master program

2.2. Disciplines offered by students

2.2.1. Specialization "Management of agrarian enterprises development"

Chief administrative officer. The purpose of the discipline is to introduce students to the peculiarities of future profession, its content and objectives of managerial activities, the role of managers of various levels in management of modern enterprises, peculiarities of organization of training specialists for management.

Organization of business activities. The main aim of the discipline is to develop students' knowledge and skills in organization and operation of enterprises in Ukraine's agricultural production and related areas of business activity. The students study the problems of socio-economic foundations of entrepreneurship and agribusiness, organization and operation of SMEs in rural areas, determining the economic efficiency of agricultural businesses, preparation of business plans for agrarian enterprises.

Management consulting. The system of professional training aims to provide students with knowledge and skills in organization of management consulting and advisory services, and organization of consulting activities of administrators and managers in agricultural service. Future specialist learn the basic principles and functions of consulting; communication processes in information and advisory service; the effective methods of information sharing; modern information technologies.

Legal principles of administrative activity. The aim of the discipline is to train specialists in management, working under the rule of law and market economy; The student will explore the totality of legal norms that regulate social relations and are formed when the executive authorities ensure the implementation and protection of rights, freedoms and lawful interests of individuals and legal entities, as well as in the process of public governance of economic, socio-cultural, administrative and political development of the state.

Human resources management. The aim of the discipline is to form complex theoretical knowledge and practical skills in developing and implementing personnel policies in modern organizations, rational selection of employees for positions and forming effective teams, evaluation and development of workers and purposeful use of their potential.

Quantitative methods of decision making. The aim of the discipline is to form the system of theoretical knowledge and practical skills to using mathematical tools in economic studies in modern information environment that enables increase of research effectiveness and reliability of the results, to apply an integrated approach to the analysis of economic processes and management decisions.

Automated accounting system. The aim of the discipline is to form complex knowledge and practical skills in the proper theoretical application of accounting using computer technology, to master modern methods of rational use of technical equipment in the workplace of an accountant, explore the prospects of information technologies in agricultural production and the use of new forms and methods of accounting.

2.2.2. Specialization "Agricultural business and international activity"

Methods of administrative activity. The aim of the discipline is to increase the efficiency of organizational structures through the proper use of different levels of management principles and tools by managers, creation of an integrated system of administrative management organization.

Management of enterprise activities. The main aim of the discipline is to develop students' knowledge of the basic principles, main categories, advanced concepts, theoretical principles and practical management of the main business activity, and skills in developing operational strategies, creation and use of branch operational subsystems as the basis for achieving the organization's mission.

International agribusiness. The aim of the discipline is to provide students with systemic knowledge of objective laws, conditions, processes and specific features of external economic activities, and skills of their practical use. The objective of the course is to develop students' holistic conception of processes in foreign economic activity and formation of practical skills to use the acquired knowledge about the application of data

base for the analysis of the global economic environment in order to choose the strategy of entering foreign markets.

Management of foreign economic activity. The aim of the discipline is to develop students' managerial thinking, system of knowledge and practical skills to manage foreign economic activity (FEA). The student will master practical skills of international management process, application of various tools and technology of management when considering specific situations in foreign economic activity.

Biosocial economy. Actual problems of forming biosocial economy in the system of priorities of sustainable development are studied. Students learn to analyze the essence of sustainable economic development, the role of bio-economy in sustainable development, measures to promote the transition to a biosocial economy, including creation of agrobioclusters.

Strategic management. The students master the basic concepts, categories and methodological tools of development and implementation of the strategy of the organization. The main aim of the discipline is to develop modern management thinking and the system of expertise knowledge in management, form a conceptual understanding of the basics of systemic organization management; acquire skills of analyzing internal and external environment, make appropriate management decisions.

International economic activity of Ukraine. The aim of the discipline is to develop the system of special knowledge of the problems and prospects of international economic relations for basic and special education and practice in the specialty. The objective of the course is to develop a holistic understanding of the processes that characterize international level of interaction of national economies and formation of students' skills to use the acquired knowledge for independent analysis of global economic processes.

FACULTY OF INFORMATION TECHNOLOGY

Dean – Dr.Sc. in Pedagogics, associate professor Olena Glazunova

Tel.: (044) 527-83-51

E-mail: o-glazunova@nubip.edu.ua

Location: Building 15, room 212

The Faculty organizes and coordinates Masters training in the following courses

8.03050201 “Economic Cybernetics”

Graduating department:

Economic Cybernetics

Tel.: (044) 527-85-67

E-mail: ciber_chair@nubip.edu.ua

Head of department – Ds.Sc. in Economics, professor, Andrii Skrypnyk

8.05010101 “Information Managing Systems and Technologies”

Graduating department:

Computer Sciences

Tel.: (044) 527-87-23

E-mail: iusprog@nubip.edu.ua

Head of department – Ds.Sc. in information technologies, professor, Andrii Shelestov

8.05010105 “Computer Ecological and Economic Monitoring”

Graduating department:

Computer Sciences

Tel.: (044) 527-87-23

E-mail: iusprog@nubip.edu.ua

Head of department – Ds.Sc. in information technologies, professor, Andrii Shelestov

**Master course
in specialty “ECONOMIC CYBERNETICS”
Branch of knowledge “Economics and Entrepreneurship”**

Form of training, licensed number of students:	
– full-time	25 persons
Duration of Training:	
– full-time educational and professional program	1,5 years
– full-time educational and scientific program	2 years
Credits:	
– educational and professional program	90 ECTS
– educational and scientific program	120 ECTS
Language of teaching	Ukrainian
Qualification of graduates	Master in economic cybernetics

The concept of training

Master in economic cybernetics should have knowledge in economics, analysis and economic systems behaviour research, the theory and practice of decision-making, market development modelling, management, marketing, economic and legal relations. The course is based on a knowledge from the special mathematical disciplines, theoretical and professional knowledge of modern information technologies and use of computer technology in the economy. The knowledge learned on the course make possible to develop systems of models for socio-economic studying phenomena on practice and for research purposes, to create and use static and dynamic expert systems for business processes in agriculture.

**Educational and professional Master’s program
*Specialization “Economic and Mathematical Modeling”***

Specialist of the Master's program in “Economic and mathematical modelling” should have a high level of basic knowledge in economics and scientific research, know and understand the basic principles of agricultural policy. Based on the transformation processes taking place in modern society and the concept of agriculture economic development in the world of information, it is highly important to train analytical and algorithmic thinking, to be able to build mathematical models and apply optimization techniques in the study of real problems in Ukrainian Agricultural Economy. The fundamental in preparation of master student in this program is to accumulate knowledge and skills in mathematical modelling of industrial and management strategies of consumers’ behaviour in a competitive economy and learning areas of modelling coordination processes in investing activities of economic systems.

Areas of employment for graduates

Masters in “Economic and mathematical modelling” can work on the positions: head of small enterprise, head of analytic centre which processes economic, financial and accounting information, head of departments of information technologies, administrators of computer networks, administrator of tasks systems and databases, analysis of computer system, etc.

Educational and scientific Masters programme

Specialization “Forecasting of social and economic processes”

This master program provides knowledge and methodological principals of social and economic processes modelling and forecasting, different variation of dynamics, structure and relation models and conditions of their adaptation to the specific modelling objects. It helps to learn advanced methods of analysis patterns, of massive socio-economic phenomena formation analysis and prediction of their development in the face of uncertainty.

The knowledge received during study on this master program will allow Masters in Economic Cybernetics successfully conduct research on theoretical and applied problems of economy forecasting.

Areas of employment for graduates

Masters in “Forecasting of social and economic processes” are detected in the world as analysts of different fields of activity, experts in the field of prediction and simulation of economic processes. Therefore, they can be employed as: head of research center of economic, financial and accounting information processing, head of information technology department, administrator of tasks and systems, database administrator, computer systems analyst etc.

Practical training

Aimed at the mastering of basic methods of: scientific problem formation, evaluation of necessary information data sets, conducting of analytical, optimization and forecasting developments based on information technology and estimation of economic effects of their implementation in practice and research.

Proposed Topics for Master Theses

1. Ecological and economic component of the innovative agrochemical components using in this southern Ukraine.
2. Credit risk modelling in agricultural sector.
3. Analysis and forecast of grain production by using control systems, databases and regression models.
4. Modelling of economic processes through synergistic approaches.
5. Investment portfolio of the consumer structure simulation and optimization.
6. Banking simulation and optimization in terms of inflation.
7. Financial condition of the company economic modelling.
8. Key indicators of socio-economic development: methodology and methods of forecasting.

Academic rights of applicants for a master program

Applicants with a bachelor's degree can continue their studies on specialties, that are related, including field of knowledge "Specific categories" (Table. 2) and other (Table. 3). Under the terms of admission to the higher educational institutions of Ukraine in 2015, approved by the Ministry of Education and Science of Ukraine of 15 October 2014 № 1172, and Rules Admission to the National Agricultural University of Ukraine (basic institution, m. Kyiv) in 2015.

Curriculum of Master training in specialty "Economic cybernetics"
Educational and qualification Master program

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	The Global Economy	2	120	4
2	Social Responsibility	2	120	4
3	Innovative development	1	120	4
4	Safety at work in the sphere	1	90	3
5	Mathematical methods and models of market economy	1	120	4
6	Corporate Information Systems	2	120	4
7	Information Management	1	120	4
Total for standard part			810	27
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by University				
1	Business Foreign Language	1	90	3
2	Agrarian Policy	1	90	3
3	Methodology and organization of research on the basics of intellectual property	2	90	3
4	Standardization and certification of information technology	2	90	3
Total (Disciplines offered by University)			360	12
2.2. Disciplines offered by students				
2.2.1. Specialization “Economic and Mathematical Modeling”				
1	Modeling in the management of socio-economic systems	3	120	4
2	Stochastic models in management	3	90	3
3	Modeling and management of innovation and investment processes	3	90	3
4	Development of Web Applications	1	90	3
5	Electronic commerce	1	90	3
6	Data mining	1	90	3
7	Global Information Resources	2	90	3
8	Geoinformation systems and technologies in environmental management	1	90	3
9	Risks and insurance in the agricultural business	1	90	3
10	Models of environmental management	1	90	3
11	Agricultural consulting	2	90	3
Total (Disciplines offered by students)			660	22
Total for elective part			1020	34
3. OTHER TYPES OF TRAINING				
1	Practical training	1	150	5
2	Pregraduation practice	2	270	9
3	Preparation and defense of Master's work	3	390	13
4	State attestation	3	60	2
Total			870	29
Total for specialty			2700	90

Curriculum of Master training in specialty “Economic cybernetics” Educational and scientific program

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	The Global Economy	2	120	4
2	Social Responsibility	2	120	4
3	Innovative development	1	120	4
4	Safety at work in the sphere	1	90	3
5	Mathematical methods and models of market economy	1	120	4
6	Corporate Information Systems	2	120	4
7	Information Management	1	120	4
Total for standard part			810	27
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by University				
1	Business Foreign Language	1	90	3
2	Agrarian Policy	1	90	3
3	Methodology and organization of research on the basics of intellectual property	2	90	3
4	Standardization and certification of information technology	2	90	3
Total (Disciplines offered by University			360	12
2.2. Disciplines offered by students				
2.2.1. Specialization “Forecasting of social and economic processes”				
1	Risk Management	3	90	3
2	Theory of forecasting and modeling	3	150	5
3	Adaptive models in economics	3	150	5
4	Stochastic models in economics	1	150	5
5	Development of Web Applications	1	90	3
6	Electronic commerce	1	90	3
7	Data mining	1	90	3
8	Global Information Resources	2	90	3
9	Geoinformation systems and technologies in environmental management	1	90	3
10	Risks and insurance in the agricultural business	1	90	3
11	Models of environmental management	2	90	3
Total (Disciplines offered by students)			1560	52
Total for elective part			1920	64
3. OTHER TYPES OF TRAINING				
1	Practical training	1	150	5
2	Pregraduation practice	2	270	9
3	Preparation and defense of Master's work	3	390	13
4	State attestation	3	60	2
Total			870	29
Total for specialty			3600	120

Annotations educational plan disciplines

1. STANDARD ACADEMIC DISCIPLINES

The Global Economy. The economic nature of global transformations. Of the global economy. Regulatory institutions of the global economy. Political economy of the global economic cycle. Mechanisms of functioning of global markets. Competitive leadership of global corporations. The process of the global economy. Technological resources of global economic development. The human resources of the global economy.

Civilization dimensions of global economic processes. Global context of Ukrainian economy.

Social Responsibility. Social responsibility as a factor of sustainable development. Social responsibility of man, the state and society. Organizational and Economic Management Software Corporate Social Responsibility. Forming relationships employers with employees based on social responsibility. The environmental component of social responsibility. Social partnership as a tool for social responsibility. Monitoring of corporate social responsibility. Evaluation of the effectiveness of social responsibility. Strategic directions of development of social responsibility in Ukraine.

Innovative development. Innovation and the cyclical nature of economic development. Key concepts of innovation development. Measurement of innovation development. Modern organizational forms of innovation development. Global science and technology and information communication in innovation. Infrastructure market innovation. State support innovative entrepreneurship. National innovation system. Marketing innovation. Strategy and business model innovation of enterprises. Innovative potential of enterprises. Investment provision of innovative enterprise development. Risks in innovation and management. Protection of intellectual property and the economy as a component of economic security innovation.

Safety at work in the sphere. International safety standards. Key legislation and regulations on health and safety in the industry. Safety management in the organization. Injuries and occupational diseases in the field, investigating accidents. Special safety requirements in the field of professional activity. Actual problems of health and safety in research. Basic fire prevention measures on industry sites. State supervision and monitoring of public health and safety. Social insurance against accidents and occupational diseases in the workplace.

Mathematical methods and models of market economy. Basic methods and techniques of crisis management, in a crisis situation, evolutionary and revolutionary theories of economic change and modeling of global economic transformation and crisis management. Types of economic and mathematical models of company' and industry' response on the changing of market conditions.

Corporate Informational Systems. Information Systems of business management. Architecture of IS. HR management and customer relationship. Materials flow management of corporation. Accounting and reporting in the EIS. Information support of EIS. Telecommunication technologies in the EIS. Implementation of EIS.

Information Management. Entry into the project management. Management of the project. Organization of project-oriented activities. Control in project management. Management of the project. Management of the projects subject area. Time management in the project. Cost Management Project. Quality management in the project. Integrated project management functions. Automation functions of project management.

1. ELECTIVE ACADEMIC DISCIPLINES

2.1. Disciplines offered by University

Business Foreign Language. Vocabulary and grammar of a foreign language necessary for working with foreign literature in order to be able to obtain professional information from foreign sources, and to conduct interviews dialogue. Phonetic rules of a foreign language: 2000 lexical items. Grammatical material.

Agrarian policy. The economic essence, nature and main components of agricultural policy, certain measures of financial and credit, tax and price policies in the agricultural sector. Theoretical foundations of agricultural policy and agricultural policy of

foreign countries and their blocs. Features of formation and main directions of Agrarian Policy of Ukraine.

Methodology and organization of research on the basics of intellectual property The organizational structure of the scientific team. Planning of research. Conducting research and experimental design in the research work. Intellectual Property Law as the results of human creativity. Intellectual property. State System of Intellectual Property. The international intellectual property system. Protection of intellectual property. The right to intellectual property as an investment and goods. Valuation of intellectual property. Protection of intellectual property rights.

Standardization and Certification of Information Technology. Theoretical and methodological issues of standardization and certification of information technology. General definitions and legal documents that govern this area. Basic concepts and definitions in the field of standardization. Certification in Ukraine. International standards. Standard ISO.

Educational and professional Master's program

2.2. Disciplines offered by student

2.2.1. Specialization “Economic and mathematical modeling”

Modeling in the management of socio-economic systems. Simulation of system characteristics in the economy. Simulation of planning decisions. Functional characteristics of planning decisions. Modeling of the reliability and strength decisions planning. Simulation and research of inertia planning decisions. Modeling of system performance. Modeling adaptivity development and operations of complex systems. Analysis of the structural properties of the plan. A comprehensive study of elasticity, reliability, maneuverability and flexibility levels of planning decisions

Stochastic models in management. Theoretical knowledge and tools of modeling of dynamic economic processes. Principles of modeling of economic processes, linear dynamic processes, equilibrium and disequilibrium, nonlinear dynamic models of economic systems, qualitative methods of analysis of socio-economic processes, stochastic models of economic dynamics, models of economic change, synergistic approach to modeling dynamic systems.

Modeling and management of innovation and investment processes. Methodology for investments optimization in agricultural production. Economic and mathematic foundations of the investment policy in Ukraine. Simulation and optimization of investment in agricultural production.

Development of Web Applications. The concepts complete application creation in the web-environment. Languages HTML, JAVASCRIPT, PHP. Creation of dynamic web-sites. Basic concepts of information and its presentation in a web-environment. The principles of the databases using in a web-environment, the possibility of web-sites creation by using a variety of software tools and their combinations.

Electronic Commerce. Introduction to e-business. Place of electronic commerce in the information sector. Information Security in e-business. Payment systems in the Internet. Financial systems in the Internet. Marketing in Electronic Commerce. Advertising in the Internet. Submitting of the web-site to directories and Web-site indexing by search engines. Affiliate programs.

Global Information Resources. Information and copyright. Intellectual property. Internet as a source of scientific information. Finding information on the Internet. Search engines: universal and specialized. Internet space scientific information. Agricultural resources in the web. Resources FAO, network AgroWeb. Finding and presenting data. Presentation of research data.

Geographical Informational Systems and Technology in Environmental Management. Geographic information systems and their use. The spatial and attributive information. Introduction mapping and attribute information. The quality of the data. Vector data model. Raster data model. Principles of spatial analysis. Global and local interpolation methods. Analysis of the environment. Analysis of spatial change.

Risks and insurance in the agricultural business. Theoretical and methodological basis of risk management in modern agribusiness; analysis tools, methods and quantitative assessment of risk modeling agricultural sector; conceptual approaches to risk management and minimization – diversification, insurance, hedging, obtain additional information; rules for assessing the risk insured and the insurer, actuarial methods in the agricultural business; features of the property and agricultural insurance.

Models of environmental management. Displaying general laws of nature, society and simulation in environmental condition and theoretical knowledge of it; Analysis tools, the methods of quantitative assessment and modeling of environmental management; methodological approaches to research in environmental economics..

Agricultural consulting. Condition innovation in the agricultural sector of Ukraine; Consulting opportunities as an effective means of innovation; features advising consumers methodology consulting services in agricultural production (Figure distribution of innovative product); conceptual approaches to minimize the risks of innovation, diversification, insurance, hedging, obtain additional risk of agricultural production, performance consulting services market in Ukraine.

Educational and scientific Master's program

2.2. Disciplines offered by student

2.2.1. Specialization “Forecasting of social and economic processes”

The theory of forecasting and modeling. Case modeling and forecasting. Methodological foundations of modeling and prediction. Theoretical framework of situational opportunistic analysis. Logic of applied modeling. Nature and types of forecasts. Computer technology of modeling and forecasting. Modeling and forecasting. Studies of equilibrium in the economy.

Adaptive Models in Economics. Categories of the theory of adaptive management. Characteristics of adaptive control transformations. Characteristics of adaptive control transformations. Models of structural adjustment control system. Models crisis indicative planning. Adaptive Models in Investment Management. Adaptive model to manage securities.

Management of risk. The concept of risk and environmental risks. The danger and risk. Types of risk, and risk of danger. Features of environmental risk and environmental management. Risk management of natural resources. The main environmental risks in agriculture on the global level. Risks of land use at the national level. Legislation and practice of rational environmental management: international experience. Environmental Risk Management at the macro level

Development of Web Applications. The concepts complete application creation in the web-environment. Languages HTML, JAVASCRIPT, PHP. Creation of dynamic web-sites. Basic concepts of information and its presentation in a web-environment. The principles of the databases using in a web-environment, the possibility of web-sites creation by using a variety of software tools and their combinations.

Electronic Commerce. Introduction to e-business. Place of electronic commerce in the information sector. Information Security in e-business. Payment systems in the Internet. Financial systems in the Internet. Marketing in Electronic Commerce. Advertising

in the Internet. Submitting of the web-site to directories and Web-site indexing by search engines. Affiliate programs.

Global Information Resources. Information and copyright. Intellectual property. Internet as a source of scientific information. Finding information on the Internet. Search engines: universal and specialized. Internet space scientific information. Agricultural resources in the web. Resources FAO, network AgroWeb. Finding and presenting data. Presentation of research data.

Geographical Informational Systems and Technology in Environmental Management. Geographic information systems and their use. The spatial and attributive information. Introduction mapping and attribute information. The quality of the data. Vector data model. Raster data model. Principles of spatial analysis. Global and local interpolation methods. Analysis of the environment. Analysis of spatial change.

Risks and insurance in the agricultural business. Theoretical and methodological basis of risk management in modern agribusiness; analysis tools, methods and quantitative assessment of risk modeling agricultural sector; conceptual approaches to risk management and minimization - diversification, insurance, hedging, obtain additional information; rules for assessing the risk insured and the insurer, actuarial methods in the agricultural business; features of the property and agricultural insurance.

Models of environmental management. Displaying general laws of nature, society and simulation in environmental condition and theoretical knowledge of it; Analysis tools, the methods of quantitative assessment and modeling of environmental management; methodological approaches to research in environmental economics..

Forecasting trends in the global food market. Basic theory of international division of labor; the main characteristics of the global food market (sources of information, sales and price trends for the main heading) quantitative methods for time series analysis, schedule on trend, cyclical and random components; options represent the trend component using modern software; analysis and forecast of the world market price indicators heading along the main crop and livestock sectors; price ratio analysis of world and domestic food market along the main heading consumption in Ukraine

Stochastic models in management. Theoretical knowledge and tools of modeling of dynamic economic processes. Principles of modeling of economic processes, linear dynamic processes, equilibrium and disequilibrium, nonlinear dynamic models of economic systems, qualitative methods of analysis of socio-economic processes, stochastic models of economic dynamics, models of economic change, synergistic approach to modeling dynamic systems.

Agricultural consulting. Condition innovation in the agricultural sector of Ukraine; Consulting opportunities as an effective means of innovation; features advising consumers methodology consulting services in agricultural production (Figure distribution of innovative product); conceptual approaches to minimize the risks of innovation, diversification, insurance, hedging, obtain additional risk of agricultural production, performance consulting services market in Ukraine.

Master course
in specialty “INFORMATION MANAGING SYSTEMS AND TECHNOLOGIES”
Branch of knowledge “Informatics and Computation Technics”

Form of training, licensed number of students:	
– full-time	25 persons
Duration of Training:	
– full-time educational and professional program	1,5 years
– full-time educational and scientific program	2 years
Credits:	
– educational and professional program	90 ECTS
– educational and scientific program	120 ECTS
Language of teaching	Ukrainian
Qualification of graduates	Analyst of computer systems, researcher (computing systems)

The concept of training

The specialists on this specialty gain knowledge and skills for the development of software; system design and data management, using network solutions, hardware platforms and software products of leading world manufacturers; ability to select programming technology, the relevant needs of specific systems and develop applications in various subject areas; the ability to build efficient computational algorithms; ability to develop integrated information solutions for enterprises and companies, including the design of computer networks, computer systems alternative to the assessment of resources required for their implementation; possession of modern methods of designing programs and software systems, development of optimal solutions for the software, algorithms, procedures and operations.

Educational and professional Master’s program
Specialization “Telecommunication support of information
management systems”

The concept of this master program is in need of training specialists who have system knowledge of methodologies, techniques and tools for creation of modern telecommunication systems and networks – part of information management systems of agricultural and environmental sectors. The knowledge of scenario development, architecture and models of system and circuit design of telecommunication systems, their technical operation and maintenance, the use of computer technologies and software, will allow to future professionals to choose the best technology and tools for the implementation of schemes for monitoring and control, to organize effective process agricultural and environmental sectors control.

Areas of employment for graduates

Future professionals will be able to work in the IT industry, performing development and maintenance of software, on the positions (in accordance with “State Classifier of Professions”) of: computer systems analyst, computer systems engineer, computer systems designer, software engineer, applied programmer, system programmer, database administrator, system administrator, network administrator and others.

***Specialization “Information Managing Systems and Technologies
in agro-industrial and environmental field”***

The concept of this master programs direction is in need of training of specialist with skills of designing, building and managing of information systems by using modern technologies of collaborative development, programming, testing, protection and exploitation of managing information systems. Also, master program aimed to train students to use technologies and methods of system analysis and decision-making during creation of large and complex systems using of artificial intelligence systems and software, and computer automated systems.

Areas of employment for graduates

On their workplaces graduates can address issues related to the management and maintenance of complex information systems. In addition, they can analyse the problem domain at the system level, design and create database and data warehouses, develop applications and software for the implementation of control systems, computer systems, service applications etc. Graduates of this master's program can work at the positions of: computer systems analyst, computer systems engineer, designer of computer systems, software engineers, databases programmer, applications programmer, systems programmer, database administrator etc.

**Educational and scientific Master's program
*Specialization “Distributed Information Systems”***

The new principles of complex software systems creation have been using in recent years, the main role of it is in support of decision making process through the using of mathematical models, processing large amounts of data, providing support for high-performance computing. Concept and overall purpose of this master programme research is in need of professionals with the skills of design, development and implementation of complex information systems using modern technologies, collaborative development, programming, testing, protection and exploitation of managing information systems.

Areas of employment for graduates

The master in “Information managing systems and technologies” will be able to work in the IT industry, performing development and maintenance of software, on the positions (in accordance with “State Classifier of Professions”) of: computer systems analyst, computer systems engineer, computer systems designer, software engineer, applied programmer, system programmer, database administrator, system administrator, network administrator, researcher (computer systems), scientist (programming), researcher (field calculations), assistant professor of higher education.

Practical training

Practical training of masters in “Information managing systems and technologies” aims to capture general methodological issues of construction and operation of automated data processing, their development and effectiveness, methods and techniques of construction and maintenance of information management systems in application areas and research.

Proposed Topics for Master Theses

1. Corporate knowledge database processing on the example of land cadastre: methods and approaches.
2. Geospatial biodiversity assessment system based on fuzzy model.

3. Intelligent classification of crops using satellite data of medium distinction.
4. Farmer's distributed information system.
5. Regression approach in the evaluation of crop acreage.
6. Agricultural monitoring system based on Google Earth technology.
7. The monitoring of crops system using the mobile devices.
8. Information and software decision support system administration in the poultry house.
9. Information and analysis service of decision support in HR management department on the example of universities and its subdivisions.
10. Management Information System of agricultural enterprises with artificial intelligence core.

Academic rights of applicants for a master program

Applicants with a bachelor's degree can continue their studies on specialties, related, including field of knowledge "Specific categories" (Table. 2) and other (Table. 3) Under the terms of admission to the higher educational institutions of Ukraine in 2015 approved by the Ministry of Education and Science of Ukraine of 15 October 2014 number 1172 and Rules Admission to the National Agricultural University of Ukraine (basic institution, m. Kyiv) in 2015.

Curriculum Master's training in specialty "Information Managing Systems and Technologies" Educational and professional Master's program

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	Project management	1	150	5
2	Reliability of Computer Systems Functioning	1	150	5
3	Projecting of Informational-management and intelligence systems	2	150	5
4	Modelling and forecast in environmental sphere	1	150	5
5	World information Recourses	2	150	5
6	Object modelling and designing of complex systems	2	150	5
7	Datacentres Organization	1	150	5
8	Mathematical models in the systems of artificial intelligent	2	150	5
Total for standard part			1200	40
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by University				
1	Business Foreign Language	1	90	3
2	Agrarian policy	1	90	3
3	Methodology and organization of research on the basics of intellectual property	1	90	3
4	Standardization and Certification of Information Technologies	1	90	3
Total (Disciplines offered by University)			360	12
2.2. Disciplines offered by students				
2.2.1. Specialization "Telecommunication support of information management systems"				
1	Global informational infrastructure	2	150	5
2	Telecommunication technology and networks	2	150	5
3	Mobile computer-integrated systems	1	120	4
4	Robot-technic Systems of Management	1	120	4
5	Geographical Informational Svstems and Technology in	1	120	4

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
	Environmental Management			
6	Intellectual Data Analysis	1	120	4
7	Security of Information and communication systems	1	120	4
8	WEB-applets Development	1	120	4
Total (Disciplines offered by students)			660	22
2.2.2. Specialization "Information Managing Systems and Technologies in agro-industrial and environmental field"				
1	Technology of Data Mining	2	150	5
2	Information systems management	2	150	5
3	Frameworks of object-oriented modelling	1	120	4
4	Robot-technic Systems of Management	1	120	4
5	Geographical Informational Systems and Technology in Environmental Management	1	120	4
6	Intellectual Data Analysis	1	120	4
7	Security of Information and communication systems	1	120	4
8	WEB-applets Development	1	120	4
Total (Disciplines offered by students)			660	22
Total for elective part			1020	34
3. OTHER TYPES OF TRAINING				
1	Practical training	1	120	4
2	Pregraduation practice	2	180	6
3	Preparation and defense of Master's work	3	120	4
4	State attestation	3	60	2
Total			480	16
Total for specialty			2700	90

**Curriculum Master's training
in specialty "Information Managing Systems and Technologies"
Educational and scientific Master's program**

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	Project management	1	150	5
2	Reliability of Computer Systems Functioning	1	150	5
3	Projecting of Informational-management and intelligence systems	2	150	5
4	Modelling and forecast in environmental sphere	1	150	5
5	World information Recourses	2	150	5
6	Object modelling and designing of complex systems	2	150	5
7	Datacentres Organization	1	150	5
8	Mathematical models in the systems of artificial intelligent	2	150	5
Total for standard part			1200	40
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by University				
1	Business Foreign Language	1	90	3
2	Agrarian policy	1	90	3
3	Methodology and organization of research on the basics of intellectual property	1	90	3
4	Standardization and Certification of Information Technologies	1	90	3
Total (Disciplines offered by University)			360	12
2.2. Disciplines offered by students				

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
2.2.1. Spesialization “Distributed Information Systems”				
1	Methods and information technologies of risks evaluation	4	150	5
2	The principles of distributed network programming	2	150	5
3	Distributed geospatial remote monitoring	4	120	5
4	Robot-technic Systems of Management	3	120	5
5	Geographical Informational Systems and Technology in Environmental Management	3	120	5
6	Intellectual Data Analysis	2	120	5
7	Security of Information and communication systems	4	120	5
8	WEB-applets Development	3	120	5
Total (Disciplines offered by students)			1200	40
Total for elective part			1560	52
3. OTHER TYPES OF TRAINING				
1	Practical training	1	120	4
2	Pregraduation practice	2	180	6
3	Preparation and defense of Master's work	3	120	16
4	State attestation	3	60	2
Total			840	28
Total for specialty			3600	120

Annotations educational plan disciplines

1. STANDARD ACADEMIC DISCIPLINES

Project management. Project Management System: Objectives, functions, structure of elements. Organization of project management. External organizational structure of the project. Planning the content of the project. Structuring the project. Planning the project in time. Scheduling project. Manage project costs. Control of the project. Methods of control of the project. Risk management project. Management quality of the project. Formation and development of the project team.

Reliability of Computer Systems Functioning. Elements of the theory of reliability. Basic definitions and reliability of their content. Methods of reliability. Reliability and control devices of computer systems. Information redundancy as a universal means of control. Reliability of computational processes.

Projecting of Informational-management and intelligence systems. Analysis of data and information flows. Development of computational algorithms. Methodology and technology for development of software for information control and intelligent systems.

Modelling and forecast in environmental sphere. The use of simulation in the study and design of complex systems. Classification of mathematical models according to the properties of the processes modelled. The order of development of mathematical models in the field of environmental management. The principle of material balance. Probabilistic models of the application. Linear regression models. Models Monte Carlo. Types and methods of forecasting. Tools for simulation and prediction.

Global Information Resources. Information and copyright. Intellectual property. Internet as a source of scientific information. Finding information on the Internet. Search engines: universal and specialized. Internet space scientific information. Agricultural resources in the web. Resources FAO, network AgroWeb. Finding and presenting data. Presentation of research data.

Object modelling and designing of complex systems. Object-oriented analysis and design. Presentation of subject areas. Iterative software development technology of

complex systems. Fundamentals of object-oriented programming. Domain model. Object Model.

Datacentres Organization. Models database. Query language. Physical storage, access methods and query processing. Transaction management, concurrency control and crash recovery. Security database. Parallel and distributed databases. Data warehousing and data mining. Concepts and Data Model OLAP. The structure of OLAP-cube. Deployment Services Analysis Services. Determination submission of data sources in the project services Analysis Services.

Mathematical models in the systems of artificial intelligent. Trends in the development of artificial intelligence and mathematical methods for problems solving of artificial intelligence. Methods of solutions finding for problems of artificial intelligence. Models of knowledge representation. Expert systems in artificial intelligence systems. Tools for creation of artificial intelligence systems. General concepts of integrated programming environment.

2. ELECTIVE ACADEMIC DISCIPLINES

2.1. Disciplines offered by University

Business Foreign Language. Orientation in modern information flow to improve foreign language skills. Communication skills and knowledge of English during communicating on professional subjects. Various life situations of business communication in foreign languages, training of future specialists in scientific research, continuing education.

Agrarian policy. The economic essencecharacter and main components of agricultural policy, specific measures of financial and credit, tax, pricing in the agricultural sector. Theoretical principles of agrarian policy and agrarian policy of some foreign countries and blocs. Features of formation and main directions of Agrarian Policy of Ukraine.

Methodology and organization of research on the basics of intellectual property. The organizational structure of the scientific team. Planning of research. Conducting research and experimental design in the research work. Intellectual Property Law as the results of human creativity. Intellectual property. State System of Intellectual Property. The international intellectual property system. Protection of intellectual property. The right to intellectual property as an investment and goods. Valuation of intellectual property. Protection of intellectual property rights.

Standardization and Certification of Information Technology. Theoretical and methodological issues of standardization and certification of information technology. General definitions and legal documents that govern this area. Basic concepts and definitions in the field of standardization. Certification in Ukraine. International standards. Standard ISO.

Educational and professional Master's program

2.2. Disciplines offered by students

2.2.1. *Spesialization "Telecommunication support of information management systems"*

Global Information Resources. Information and copyright. Intellectual property. Internet as a source of scientific information. Finding information on the Internet. Search engines: universal and specialized. Internet space scientific information. Agricultural resources in the web. Resources FAO, network AgroWeb. Finding and presenting data. Presentation of research data.

Telecommunication technology and networks. Standardization of telecommunications. General concepts of information transfer. Signals Digital information

management systems. Modulation and Coding Techniques in telecommunications. Technology multiplexing and synchronization in digital information systems. Digital transmission systems. Synchronous digital hierarchy. Network architecture STSI. Classification of networks and their topology. Network architecture. The concept of network protocol. Synthesis and analysis of telecommunication networks. Optimization of telecommunication networks. New trends in information systems.

Mobile computer-integrated systems. Basic principles of zone communication and cellular networks, information systems packet WiFi, WiMax, satellite GPS/D10HACC. Question precision GPS-navigation traffic and other moving objects, automation coordinate binding of these facilities in agricultural areas. Modern principles of system and circuit design of mobile systems technical operation and maintenance of computer technologies and software

Robot-technic Systems of Management. Purpose, classification and problems of robot control systems. Structure, the basic components of robotic control systems. Intelligent robotic systems. The system of perception and recognition of information. Knowledge management system, problem solving and formation control actions. The system of environmental impact. Principles of robots and robotic systems. System design, manufacturing, robotics control systems. Applications robots and robotic systems in the agro-industrial complex.

Intellectual Data Analysis. Basic concepts. Model complexity. Linear classifier. The problem of linear resolution. The method of support vectors. Gradient methods of teaching the first and the second grade. Gradient methods of teaching first and second grade. Stochastic learning methods. Matrix algorithms for classification. General principles of self-organization of systems. Reducing dimension models. Dynamic classifiers. Optimization models. Fuzzy classifiers. Bayesian solution. Algorithmic composition.

Security of Information and communication systems. Problems of corporate information systems security. Key software and hardware for measuring security. Identification and authentication access control in enterprise networks. Screening, security analysis. Logging and auditing. Encryption. Digital certificates. Monitoring integrity. Ensuring availability. Tunnelling and management.

WEB-applets Development. Characteristics of Internet services. Roles and responsibilities of clients and servers for various applications in the WWW. Basic protocols necessary for creating and web-work programs, Hypertext Markup Language version 4.01, Cascading Style Sheets version 2.1, the application of internal and external CSS, and browser document model as an example MS IE8, language Java Script: syntactic foundation interaction volume, scripts in external files, the technology of AJAX. Extension Hypertext Markup Language – micro formats. Introduction to language PHP, the skills of designing and programming web applications in PHP.

2.2.6. Specialization “Information Managing Systems and Technologies in agro-industrial and environmental field”

Technology of Data Mining. Data Mining Methods for solving classification, regression search associative rules clustering. Use Data Mining the construction of analytical systems.

Information systems management in APK. Using of the Library ITIL, which is developed under a model of quality management information services (Information Technology Service Management – ITSM, IT Service Management). Decisions on management of ICS HP, IBM, Microsoft.

Frameworks of object-oriented modeling. Design patterns that can be implemented in standard object-oriented languages.

Robot-technic Systems of Management. Purpose, classification and problems of robot control systems. Structure, the basic components of robotic control systems. Intelligent robotic systems. The system of perception and recognition of information. Knowledge management system, problem solving and formation control actions. The system of environmental impact. Principles of robots and robotic systems. System design, manufacturing, robotics control systems. Applications robots and robotic systems in the agro-industrial complex

Geographical Informational Systems and Technology in Environmental Management. Geographic information systems and their use. The spatial and attributive information. Introduction mapping and attribute information. The quality of the data. Vector data model. Raster data model. Principles of spatial analysis. Global and local interpolation methods. Analysis of the environment. Analysis of spatial change.

Intellectual Data Analysis. Basic concepts. Model complexity. Linear classifier. The problem of linear resolution. The method of support vectors. Gradient methods of teaching the first and the second grade. Gradient methods of teaching first and second grade. Stochastic learning methods. Matrix algorithms for classification. General principles of self-organization of systems. Reducing dimension models. Dynamic classifiers. Optimization models. Fuzzy classifiers. Bayesian solution. Algorithmic composition.

Security of Information and communication systems. Problems of corporate information systems security. Key software and hardware for measuring security. Identification and authentication access control in enterprise networks. Screening, security analysis. Logging and auditing. Encryption. Digital certificates. Monitoring integrity. Ensuring availability. Tunnelling and management

WEB-applets Development. Characteristics of Internet services. Roles and responsibilities of clients and servers for various applications in the WWW. Basic protocols necessary for creating and web-work programs, Hypertext Markup Language version 4.01, Cascading Style Sheets version 2.1, the application of internal and external CSS, and browser document model as an example MS IE8, language Java Script: syntactic foundation interaction volume, scripts in external files, the technology of AJAX. Extension Hypertext Markup Language – micro formats. Introduction to language PHP, the skills of designing and programming web applications in PHP.

Educational and scientific Master's program

2.2. Disciplines offered by students

2.2.1. Specialization “*Distributed Information Systems*”

The principles of distributed network programming. Layered architecture of software systems. Building a modern multicriteria network information systems. Standards and interfaces. Standards OGS. AJAX, language extensions JavaScript, template congestion. Markup WWW-pages. Model DOM. Handling events JavaScript. Structure and properties of CGI-programs. Value Unix-platforms in the creation of modern networked information systems. Language IDL. Model OSI. Component development. Plug-ins.

Methods and information technologies of risks evaluation. Definition and classification of risks. Identification and analysis of risks. Methods of risk management. Operational risks. The concept of enterprise risk management.

Distributed geospatial remote monitoring. The concept of geospatial data geospatial data types, methods and tehnoloiyi processing and presentation; classes of problems geospatial remote monitoring; methods and means of satellite Agromonitoring; methods and means of satellite environmental monitoring; basic existing distributed systems implemented to meet the challenges of remote geospatial monitoring; preliminary processing and preparation of geospatial information by the programming language Python, and using libraries GDAL and OGR; algorithms for processing geospatial

information by the software environment Matlab; functional components of distributed geographic information systems and technologies; heoportalnyh analysis and development of solutions for solving problems geospatial remote monitoring.

Robot-technic Systems of Management. Purpose, classification and problems of robot control systems. Structure, the basic components of robotic control systems. Intelligent robotic systems. The system of perception and recognition of information. Knowledge management system, problem solving and formation control actions. The system of environmental impact. Principles of robots and robotic systems. System design, manufacturing, robotics control systems. Applications robots and robotic systems in the agro-industrial complex.

Geographical Informational Systems and Technology in Environmental Management. Geographic information systems and their use. The spatial and attributive information. Introduction mapping and attribute information. The quality of the data. Vector data model. Raster data model. Principles of spatial analysis. Global and local interpolation methods. Analysis of the environment. Analysis of spatial change.

Intellectual Data Analysis. Basic concepts. Model complexity. Linear classifier. The problem of linear resolution. The method of support vectors. Gradient methods of teaching the first and the second grade. Gradient methods of teaching first and second grade. Stochastic learning methods. Matrix algorithms for classification. General principles of self-organization of systems. Reducing dimension models. Dynamic classifiers. Optimization models. Fuzzy classifiers. Bayesian solution. Algorithmic composition.

Security of Information and communication systems. Problems of corporate information systems security. Key software and hardware for measuring security. Identification and authentication access control in enterprise networks. Screening, security analysis. Logging and auditing. Encryption. Digital certificates. Monitoring integrity. Ensuring availability. Tunnelling and management.

WEB-applets Development. Characteristics of Internet services. Roles and responsibilities of clients and servers for various applications in the WWW. Basic protocols necessary for creating and web-work programs, Hypertext Markup Language version 4.01, Cascading Style Sheets version 2.1, the application of internal and external CSS, and browser document model as an example MS IE8, language Java Script: syntactic foundation interaction volume, scripts in external files, the technology of AJAX. Extension Hypertext Markup Language – micro formats. Introduction to language PHP, the skills of designing and programming web applications in PHP.

Master course
in specialty “COMPUTER ECOLOGICAL AND ECONOMIC MONITORING”
Branch of knowledge “Informatics and Computation Technics”

Form of training, licensed number of students:	
– full-time	15 persons
Duration of Training:	
– full-time educational and professional program	1,5 years
Credits:	
– educational and professional program	90 ECTS
Language of teaching	Ukrainian
Qualification of graduates	Analyst of computer systems, researcher (computing systems)

The concept of training

Specialists in computer ecological and economic monitoring are professionals in information systems. They can assess the environmental effects of large-scale research, development and technology programs; perform an economic assessment of investment in environmental security projects using computer technology; create and exploit geographic information systems using modern software and hardware; accumulate and process interacting flows of GIS data from various monitoring models.

Educational and professional Master's program

Specialization “Computer Monitoring of Environmental Economics”

The concept of the master's program consists of trained professionals with the skills of design, development and implementation of information systems for environmental monitoring with the help of modern technology of collaborative development; programming, testing, protection and operation of information systems; use technologies and methods of system analysis and decision-making in the creation of large and complex systems; operation of artificial intelligence and automated software. Graduates of this master's program will be knowledgeable in the methods of previous research of subject area for the construction of ecological-economic models of objects and systems; in the representation and processing of information in the form of environmental and economic systems; in solving environmental and economic problems with the help of special algorithms for the effective decision of problems; in the development and implementation of mechanisms for efficient processing of very large scale databases of the environmental and economic purposes.

Areas of employment for graduates

Graduates of a specialty “Computer monitoring of ecological and economic” can work managers in the field of ecological and economic monitoring; developers of software and hardware for creating ecological and economic models at different levels; database administrators; experts on environmental impact assessment and certification of enterprises of all activities (energy, petroleum, chemical, metallurgy, agriculture, food, etc.).

Specialization “Ecological monitoring of the environment”

The concept of the master's program consists in the necessity of training specialists who have knowledge of methodologies, techniques and tools for building modern monitoring systems in the field of environmental economics. Specialists use technology

and equipment for the implementation of monitoring and control system in the field of environmental economics. They organize effective control agricultural and environmental sectors of the economy due to the knowledge of the development of economic and mathematical models, the processing of large data sets, possession tools for processing data streams of GIS analysis, modeling, evaluation of environmental effects of agricultural production projects with the use of computer technology and software.

Areas of employment for graduates

Future specialists can work in the IT industry performing development and maintenance of software and they can get such positions (according to “State classifier of professions”): computer systems analyst, engineer in computer systems, designer of computer systems, software engineer, programmer (database), applied programmer, system programmer, DBA, system administrator, network administrator and others.

Practical training

Practical training for masters aimed at learning the basic methods techniques of research production problems according to the specialty “Computer Ecological and Economic Monitoring”, to the general issues of construction and operation of monitoring systems according to environmental parameter, to the assess the necessary information systems, to the analytical, optimization and forecasting developments based on information system for monitoring and calculation of the expected economic effects of external factors on the environmental consequences.

Proposed Topics for Master Theses

1. Evaluation of agricultural crops based on ground measurements and statistical approach.
2. Predictive models yield of spring crops based on data fusion techniques.
3. Ensemble approach to classification of land cover.
4. Evaluation acreage of winter wheat based on ground and remote measurements.
5. Evaluation of agricultural risks based on a statistical approach.
6. Drought risk assessment by the largest likelihood.
7. Simulation of humus content in the soil by ground and remote sensing.
8. Evaluation of forest areas based on geospatial intelligence.
9. Models cascade for estimating moisture content in vegetation.
10. The methods of data fusion to assess biodiversity.

Academic rights of applicants for a master program

Applicants with a bachelor's degree can continue their studies on specialties, related, including field of knowledge "Specific categories" (Table. 2) and other (Table. 3) Under the terms of admission to the higher educational institutions of Ukraine in 2015 approved by the Ministry of Education and Science of Ukraine of 15 October 2014 number 1172 and Rules Admission to the National Agricultural University of Ukraine (basic institution, m. Kyiv) in 2015.

**Curriculum of Master training
in specialty “Computer ecological and economic monitoring”
Educational and professional Master’s program**

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	Modeling ecological and economic systems	1	120	4
2	Methods and systems for decision support in the management of ecological and economic processes	3	120	4
3	Aerospace monitoring of geosystems	1	120	4
4	Intelligent computer monitoring system	2	120	4
5	Hardware and software for collecting and processing environmental information	1	120	4
6	Object-oriented analysis and design of complex systems	2	120	4
7	Organization and management of data warehouse	1	120	4
8	Environmental control and security	2	120	4
9	Simulation modeling of environmental processes	2	120	4
Total for standard part			1080	36
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by University				
1	Business Foreign Language	1	90	3
2	Agrarian policy	1	90	3
3	Methodology and organization of research on the basics of intellectual property	2	90	3
4	Standardization and Certification of Information Technologies	3	90	3
Total (Disciplines offered by University)			360	12
2.2. Disciplines offered by students				
2.2.1. Specialization “Computer Monitoring of Environmental Economics”				
1	Environmental and economic optimization of production	3	150	5
2	Methods of economic and statistical researches	3	150	5
3	IT monitoring of environmental and socio-economic processes	2	120	4
4	Managing of IT infrastructure monitoring systems	3	120	4
5	Global information resources	3	120	4
6	Environmental monitoring and technical safety	3	150	5
7	Content management and integration of information in the agro-eco-systems	2	120	4
8	Mobile Computer Integrated Systems	3	120	4
9	Global information infrastructure	3	150	5
10	Development of web applications	2	120	4
Total (Disciplines offered by students)			660	22
2.2.2. Specialization “Ecological monitoring of the environment”				
1	Geographic information systems and technologies in ecology and environmental	2	120	4
2	Environmental monitoring and technical safety	3	150	5
3	Environmental management and auditing	3	150	5
4	Content management and integration of information in the agro-eco-systems	3	120	4
5	Managing of IT infrastructure monitoring systems	3	120	4
6	Global information resources	2	120	4

№	Name of Academic Discipline	Semester	Number	
			hours	credits ECTS
7	Environmental standards and certification	3	150	5
8	IT monitoring of environmental and socio-economic processes	2	120	4
9	Mobile Computer Integrated Systems	3	120	4
10	Global information infrastructure	3	150	5
11	Development of web applications	2	120	4
Total (Disciplines offered by students)			660	22
Total for elective part			1020	34
3. OTHER TYPES OF TRAINING				
1	Practical training	1	120	4
2	Pregraduation practice	2	180	6
3	Preparation and defense of Master's work	3	240	8
4	State attestation	3	60	2
Total			600	20
Total for specialty			2700	90

Annotations educational plan disciplines

1. STANDARD ACADEMIC DISCIPLINES

Modeling ecological and economic systems. Systems analysis of natural and socio-economic systems. Development of mathematical models of natural and socio-economic systems. Statistical modeling and prediction in environmental management. Optimization and mathematical modeling. Evaluation of the accuracy and adequacy of mathematical models.

Methods and systems for decision support in the management of ecological and economic processes. Cognitive maps of environmental and economic systems (definitions, methods of construction and analysis of cognitive maps). Methods of generating possible scenarios of decision making with the help of cognitive maps and formal grammars. Language modeling tasks of decision support in environmental and economic systems. Computer support of decision making in uncertain environments. Representation and use of knowledge in DSS. Systems and algorithms for inference to support decision-making in ecological and economic systems. Prognostics. Objects of forecasting ecological and economic systems. Technology foresight as a tool for strategic decision making.

Aerospace monitoring of geosystems. Introduction to remote sensing (RS). Basic definitions. The history of development. The goals, objectives and functions of aerospace monitoring. Physical principles of remote sensing. Structure of aerospace monitoring. Aerospace and ground segments. Characteristics of aircraft and satellite images. Active and passive recording. Types of corrections data (atmospheric, radiometric, geometric, etc.). Mathematical methods of remote sensing data. Geoinformation space mapping (2D and 3D models, dynamic maps, etc.). Systems for processing and interpretation of remote sensing data. Internet technology and geoportal. Control of the environment. Research of forest resources and vegetation. Monitoring of water resources. Agriculture. Monitoring of natural hazards and emergencies. Monitoring of geology and mineral resources.

Intelligent computer monitoring system. Multivariate exploratory analysis of EE-indicators. Visualization tools in SCM. Intelligent analysis of space distributed data monitoring. Cognitive and image mining procedures in GIS. Recognition, classification, clustering, and prediction problems in of EE monitoring. Architecture and stages of

development tools to develop expert SCM. Presentation of knowledge repository models, solver of problems in SCM. Systems for mining of space-temporal data. Research reciprocal links of EE metrics based on multivariate regression analysis and consideration of the arguments of the method group (GMDH). Methods of space-time statistics and geostatistics. Statistical analysis of temporal rows of the indicators of EE monitoring and forecasting. Procedures for extraction of new knowledge in SCM. Support to managers decisions in SCM. Intelligent processing and information integration in distributed Web systems.

Hardware and software for collecting and processing environmental information. Architecture of modern distributed systems for collecting and processing information. Classification of sensors for automatic collection of environmental data. Algorithms for automatic data collection and initial data processing. Real time operating system. Research and programming languages. Network local area. Algorithms for analytical data processing in the upper level subsystem. Project development of collecting and processing environmental information.

Object-oriented analysis and design of complex systems. Object-oriented design of complex systems. Methods for object-oriented analysis of complex systems. Technology of object analysis and design of complex systems. Presentation of subject areas. Iterative software development technology of complex systems. Fundamentals of object-oriented programming. Domain model. Object model.

Organization and management of data warehouse. Models of database. Query language. Physical storage and access methods and query processing. Transaction management and concurrency. Security database. Parallel and distributed databases and specialized databases. Data warehousing and intelligent data analysis. Concepts and Data Model of OLAP. The structure of OLAP-cube. Determination submission of data sources in the project service "Analysis Services".

Environmental control and security. Environmental performance. The types of environmental situations. Assessment of environmental situations. Scheme of formation of ecological situations. Dangerous environmental situation of natural origin: lithosphere, hydrospheric, atmospheric. Anthropogenic factors of dangerous environmental situations. Characteristics of ecological danger and the hierarchical structure; role of man-made component. Environmental danger is a major problem of the XXI century. The environmental situation, their classification, analysis. Natural and man-made dangerous phenomena and environmentally dangerous processes. Theoretical aspects of the analyzes of environmental hazards. The main provisions of management strategies, regional patterns of management, especially the man-management component of environmental safety. Practical implementation of the regional ecological safety management. Principles of management. Hierarchical system of technical and technological management of environmental safety.

Simulation modeling of environmental processes. IT simulation. Discrete and continuous random variables in models of ecological processes. Imitation modeling of man-made and natural disasters. The assessment of the genetic inheritance of dominant and recessive traits for future generations of organisms. Modeling language (GPSS, SIMULA).

2. ELECTIVE ACADEMIC DISCIPLINES

2.1. Disciplines offered by University

Business foreign language. Orientation in today's information flow serves as improving foreign language skills; improving communication skills and foreign language skills to communicate on professional topics; forming ideas about the realities of life in the

foreign-language countries; developing the ability to behave appropriately in different situations of life in the business communication.

Agrarian policy. The economic essence character and main components of agricultural policy, specific measures of financial and credit, tax, pricing in the agricultural sector. Theoretical principles of agrarian policy and agrarian policy of some foreign countries and blocs. Features of formation and main directions of Agrarian Policy of Ukraine.

Methodology and organization of research on the basics of intellectual property. The organizational structure of the scientific team. Planning of research. Conducting research and experimental design in the research work. Intellectual Property Law as the results of human creativity. Intellectual property. State System of Intellectual Property. The international intellectual property system. Protection of intellectual property. The right to intellectual property as an investment and goods. Valuation of intellectual property. Protection of intellectual property rights.

Standardization and Certification of Information Technology. Theoretical and methodological issues of standardization and certification of information technology. General definitions and legal documents that govern this area. Basic concepts and definitions in the field of standardization. Certification in Ukraine. International standards. Standard ISO.

2.2. Disciplines offered by students

2.2.1. Specialization “Computer Monitoring of Environmental Economics”

Environmental and economic optimization of production. Economic security is a major prerequisite for achieving sustainable development. Economic sustainability is an important factor in the proper level of economic security of the territory and state. Measurement of the impact of economic activity on the environment by calculation of ecological and economic losses. Methods and models of technical and economic optimization of ecologically-oriented investment projects.

Methods of economic and statistical researches. Specific methods and techniques of research of economy farms. Economics and Statistics, monographic, settlement and constructive, balance, regulatory, economic-mathematical, experimental, abstract and logical methods. Identification and analysis of the economic performance of agriculture as a sector of the economy and the industrial and financial-economic activity of individual farms. Method for determining economic performance and discovering their economic content.

IT monitoring of environmental and socio-economic processes. Objectives, targets, legal and regulatory framework of EE monitoring. Compilation of information model observation. Analysis IT network monitoring. Equipment and operation of information systems for monitoring applications. Software and network tools and platform information technology infrastructure businesses. Geographic information systems and technology monitoring of space distributed objects and processes. Management of monitoring data. IT and GIS of spatial analysis and modeling of performance monitoring of ESEP. Models of the structure and relationship of events and dynamics of ESEP. Bold space-time anomalies of ESEP. Assessment of the object of observation and identification of its information model. Forecasting changes in the state of the object. Standards information interaction systems. Integration of IT monitoring of ESEP.

Managing of IT infrastructure monitoring systems. Information systems remotely control computers on the network and monitor the intensity of staff. Testing and monitoring the “Health” of switches, routers, communication channels, servers, etc.

Services for reports on the state of the network and identifying defects and the “narrow places” of the network.

Global information resources. Basic concepts of information resources. Information systems and technology. Basic Internet resources. Digital libraries and databases. The world market for information services. Trends in the world of information technology. Review and comparative characteristics of existing web browsers. Characteristics of existing search engines to use online resources.

Environmental monitoring and technical safety. Health and hygiene monitoring. Monitoring of water resources of the state. Problems of air. Monitoring of the geological environment and the state of the soil. Generalized scheme of the State Environmental Monitoring. Pollution and contaminants, their classification and the phase and particulate pollutants condition. Assessing and predicting the possible effects of pollution. Methods of pollution control: contact and distance. The original air pollution, hydrosphere and soil. The secondary contamination. Mechanisms for redistribution of pollutants and the calculation of flows. Sources and accumulation of pollutants. Thermal pollution. The reaction of the environment to human impact. The biological richness areas. Ecosystem approach to the characterization of the biotic component of the biosphere. Exchange matter and energy between different systems. International law in the field of environmental safety. Foreign policy in the field of environmental safety. Environmental legislation and implementation of national environmental policy in Ukraine.

Content management and integration of information in the agro-eco-systems. Organization of developing web content: CMS/CMF of the system. Integration and interaction with the Web. Web Services. Specifications (WSDL). Protocol (SOAP). Standard (DISCO). Specifications (UDD). Web Development content for eco-agro-systems.

Mobile computer integrated systems. Main principles of construction zone and cellular networks, information systems and packet WiFi, WiMax, satellite systems GPS/D10HACC. Accurate GPS-navigation transport and other moving objects to automate the coordinate binding of these facilities in agricultural areas. Modern principles of the system and circuit design of mobile systems and their technical operation and maintenance of computer technologies and software. Types of architecture and frequency plans of subscriber devices according to the GSM, DECT, ST-2 and trunking systems. The project of mobile computer-integrated system of agricultural sector according to the GSM.

Global information Infrastructure. The global information society. Fundamentals of global information infrastructure. Characterization and global information technology infrastructure. The fundamental blocks of the global information infrastructure services. Models and scenarios of the global information infrastructure. The principles of global Infocommunication.

Development of web applications. Characteristics of internet services. Roles and responsibilities of clients and servers for various applications in the system of WWW. Basic protocols are necessary to create web applications; hypertext markup language is version 4.01, Cascading Style Sheets is version 2.1, the use of internal and external CSS, the language is Java Script: syntax basics, interaction with the object model built-in functions, scripts in external files, the technology of AJAX. Extension Hypertext Markup Language is a micro formats that allow objects to provide certain sense webpage. Familiarity with the language PHP, developing skills in designing and programming web applications in PHP.

2.2.2. Specialization “Ecological monitoring of the environment”

Geographic information systems and technologies in ecology and environmental. Introduction. Geographic Information Systems. GIS database of structures. The technology of writing and spatial data editing. Analytical capabilities of modern GIS tool. The essence of spatial analysis and uses in environmental management. Queries. Reclassification. Classification. Spatial analysis.

Environmental monitoring and technical safety. Health and hygiene monitoring. Monitoring of water resources of the state. Problems of air. Monitoring of the geological environment and the state of the soil. Generalized scheme of the State Environmental Monitoring. Pollution and contaminants, their classification and the phase and particulate pollutants condition. Assessing and predicting the possible effects of pollution. Methods of pollution control: contact and distance. The original air pollution, hydrosphere and soil. The secondary contamination. Mechanisms for redistribution of pollutants and the calculation of flows. Sources and accumulation of pollutants. Thermal pollution. The reaction of the environment to human impact. The biological richness areas. Ecosystem approach to the characterization of the biotic component of the biosphere. Exchange matter and energy between different systems. International law in the field of environmental safety. Foreign policy in the field of environmental safety. Environmental legislation and implementation of national environmental policy in Ukraine.

Environmental management and auditing. The essence and function of modern environmental management. Ecological management tools. The organizational structure of the state environmental management. State ecological management in the sphere of public health. Ecological Audit of environmental management systems. Specifics of environmental audit. Organizational and legal aspects of the audit.

Content management and integration of information in the agro-eco-systems. Organization of developing web content: CMS/CMF of the system. Integration and interaction with the Web. Web Services. Specifications (WSDL). Protocol (SOAP). Standard (DISCO). Specifications (UDD). Web Development content for eco-agro-systems.

Managing of IT infrastructure monitoring systems. Information systems remotely control computers on the network and monitor the intensity of staff. Testing and monitoring the “Health” of switches, routers, communication channels, servers, etc. Services for reports on the state of the network and identifying defects and the “narrow places” of the network.

Global information resources. Basic concepts of information resources. Information systems and technology. Basic Internet resources. Digital libraries and databases. The world market for information services. Trends in the world of information technology. Review and comparative characteristics of existing web browsers. Characteristics of existing search engines to use online resources.

Environmental standards and certification Basic principles of standardization. Categories and types of standards. The organization works according to standardization. Methods of standardization. Standardization of parameters. System of numbers that are preferred. Normal linear dimensions. Summary of YESKD, ESTD. System standards of environment. International Electrotechnical Commission. International Organization for Standardization. Development of international standards. Systematic approach to managing product quality and environmental protection. The essence and principles of certification. The state system of certification in Ukraine. International certification. International norms and rules of certification. Signs of Products, which were adopted in international and national certification schemes.

IT monitoring of environmental and socio-economic processes. Objectives, targets, legal and regulatory framework of EE monitoring. Compilation of information model observation. Analysis IT network monitoring. Equipment and operation of information systems for monitoring applications. Software and network tools and platform information technology infrastructure businesses. Geographic information systems and technology monitoring of space distributed objects and processes. Management of monitoring data. IT and GIS of spatial analysis and modeling of performance monitoring of ESEP. Models of the structure and relationship of events and dynamics of ESEP. Bold space-time anomalies of ESEP. Assessment of the object of observation and identification of its information model. Forecasting changes in the state of the object. Standards information interaction systems. Integration of IT monitoring of ESEP.

Mobile computer integrated systems. Main principles of construction zone and cellular networks, information systems and packet WiFi, WiMax, satellite systems GPS/D10HACC. Accurate GPS-navigation transport and other moving objects to automate the coordinate binding of these facilities in agricultural areas. Modern principles of the system and circuit design of mobile systems and their technical operation and maintenance of computer technologies and software. Types of architecture and frequency plans of subscriber devices according to the GSM, DECT, ST-2 and trunking systems. The project of mobile computer-integrated system of agricultural sector according to the GSM.

Global information Infrastructure. The global information society. Fundamentals of global information infrastructure. Characterization and global information technology infrastructure. The fundamental blocks of the global information infrastructure services. Models and scenarios of the global information infrastructure. The principles of global Infocommunication.

Development of web applications. Characteristics of internet services. Roles and responsibilities of clients and servers for various applications in the system of WWW. Basic protocols are necessary to create web applications; hypertext markup language is version 4.01, Cascading Style Sheets is version 2.1, the use of internal and external CSS, the language is Java Script: syntax basics, interaction with the object model built-in functions, scripts in external files, the technology of AJAX. Extension Hypertext Markup Language is a micro formats that allow objects to provide certain sense webpage. Familiarity with the language PHP, developing skills in designing and programming web applications in PHP.

FACULTY OF HUMANITIES AND PEDAGOGY

Dean – Professor Vasyli' Shynkaruk, Doctor of Philological Sciences

Tel.: (044) 527-80-83

E-mail: pedagogy_dean@twin.nubip.edu.ua

Location: Academic Building 15-a, Room 237

The faculty organizes and coordinates the educational and training process for Master of Science students of the following specialties:

8.01010601 “Social Pedagogy”

Graduate department of:

Social Pedagogy and Information Technologies in Education

Tel.: (044) 527-80-73

E-mail: socpedagogy@ukr.net

Head of Department – Professor Petro Luzan, Doctor of Pedagogical Sciences

8.02030304 “Translation”

Graduate Department of:

Foreign Philology and Translation

Tel.: (044) 527-88-46

E-mail: kifip@ukr.net

Head of Department – Professor Svitlana Amelina, Doctor of Pedagogical Sciences

8.18010020 “Management of Educational Institution”

Graduate Department of:

Teaching Methods and Management of Educational Institution

Tel.: (044) 527-83-56

E-mail: methods_chair@twin.nauu.kiev.ua

Head of Department – Associate professor Mykola Pryhodiuk, Doctor of Pedagogical Sciences

8.18010021 “Pedagogy of Higher School”

Graduate Department of:

Pedagogy

Tel: (044) 527-83-55

E-mail: pedagogic@ukr.net

Head of Department – Associate professor Ruslan Sopivnyk, Doctor of Pedagogical sciences

**Master's course
in specialty "SOCIAL PEDAGOGY"
branch of knowledge "Pedagogical Education"**

Form of training, licensed number of students:

- | | |
|-------------|------------|
| – Full-time | 50 persons |
| – Part-time | 50 persons |

Duration of Training:

- | | |
|--|----------|
| – Full-time educational and professional program | 1,5 year |
| – Part-time | 2 years |

Credits:

- | | |
|--|---------|
| – educational and professional program | 90 ECTS |
|--|---------|

Language of teaching

Ukrainian

Qualification of graduates

Social educator

The Concept of Training

The training of social educators is determined by the state's demand for specialists engaged in social and educational assistance, support, protection and rehabilitation of all categories of children and youth. Professional activity of specialists in Social Pedagogy includes finding solutions for social and educational problems connected with the process of socialization of children and young people; organizing their social protection; consulting on social and educational issues; organizing their leisure activities; assisting in education to those whom it may concern.

Educational and Professional Master's program

Specialization "Social and Pedagogical Activity in Rural Areas"

The need for training social educators for rural areas is determined by a low level of social development of rural children. It requires strengthening an impact of psychological specific technology for educational work with rural children and youth, as well as introducing modern research outcomes in the existing rural community. These approaches are implemented in Master's degree programme Social and Educational Activity in Rural Areas.

The mentioned programme involves the study of a complex of subjects aiming to organize the professional social and educational work that focuses on social and educational assistance, support, protection and rehabilitation of rural children and youth. The obtained qualification provides graduates with employment in preschool and secondary schools, centers of children education, cultural centers and art schools, social services and educational clubs, children and community organizations; children custody and services for minors; special closed-type institutions for children; governmental centers and social work services, centers of social protection and assistance, employment centers, institutions of preventive education and penitentiary system etc.

Areas of employment for graduates

Alumni can work for different functional social organizations of all ownership types, as well as for educational, cultural, scientific, consulting organizations and institutions, at subdivisions of the state and municipal departments on family and youth issues: as pension inspectors; researchers (social protection, social sphere); teachers-methodologists; university academic staff; researchers (in other fields of study); lecturers; teachers of professional educational institutions; methodologists; state inspectors,

supervisors of centers, associations, clubs; directors of social services and centers; consultants of specialized services centers; analysts.

Specialization “Social and Pedagogical Monitoring of Rural Areas and Social Network Diagnostics”

The need for training social educators for social and pedagogical monitoring of rural areas and social network diagnostics is determined by the peculiarities of rural community, its dynamism, certain ambivalence of actions and activities allowing to explore a wide range of issues – both “internal” (of purely age and psychological character) and “external”(social context of existence of different social groups).

The content of this Master’s degree programme combines the study, grounds, development, implementation and expertise estimation of relevant tools for social and pedagogical monitoring of social groups. Monitoring provides all participants of the educational process with accurate information required - on the one hand, to assess the performance and, on the other hand, both to make management decisions and to have research process adjusted. Social diagnostics allows defining a level of social welfare and social health of rural social environment (microcommunity). High-quality support for social groups in rural areas provides constant and unbiased monitoring, tracking, identifying and finding solutions to their needs and functioning peculiarities, which is necessary for research project to be scientifically organized.

Areas of employment for graduates

Alumni can work for different functional social organizations of all ownership types, as well as for educational, cultural, scientific, consulting organizations and institutions, at subdivisions of the state and municipal departments on family and youth issues: as pension inspectors; researchers (social protection, social sphere); teachers-methodologists; university academic staff; researchers (in other fields of study); lecturers; teachers of professional educational institutions; methodologists; state inspectors, supervisors of centers, associations, clubs; directors of social services and centers; consultants of specialized services centers; analysts.

Practical Training

Practical training is carried out according to the educational process schedule directly on authorized practice bases, including: district centers of social services for families, children and youth; departments on work with street children; education and health centers; local centers of social services; preschool educational institutions; schools of I-III levels; social and psychological rehabilitation centers.

Topics Proposed for Master’s Theses

1. Peculiar Features of Social and Educational Work with Children with Special Needs in Rural Areas.
2. Peculiar Features of Leisure Activity Organization for Adolescents in Rural Areas.
3. Preparation of Rural Youth for Family Life.
4. Training Social Educators for Work with Rural Youth at Social Services Centers for Children, Family and Youth.
5. Social and Pedagogical Conditions of Resocialization of Juvenile Offenders from Rural Areas in Penitentiary System Centers.
6. Peculiar Features of Social and Educational Work for Child Rights Protection in Rural Areas.

7. Peculiar Features of Social and Educational Activity of Social Services Centers for Children, Family and Youth with Orphans and Children Deprived of Parental Care in Rural Areas.

8. Forms of Organization of Social and Educational Work with Risk Group Children in Rural Areas.

9. Organization of Leisure Activities for Teens in Recreation Zones in Rural Areas.

10. Peculiar Features of Communicative Activities of Social Educators Working with Rural Youth.

Academic rights of applicants entering Master course

Applicants with Bachelor of Science degree may continue their education in relative specialties, including the branch of knowledge Specific Categories, (Table 2) or other specialties (Table 3) in accordance with The Terms of Admission to the Higher Educational Institutions of Ukraine in 2015, adopted by Order 1172 of the Ministry of Education and Science of Ukraine, 15 October 2014, and The Rules of Admission to National University of Life and Environmental Sciences of Ukraine (basic university institution, Kyiv) in 2015.

Curriculum of Master training in Specialty “Social Pedagogy” Educational and professional training programme

№	Discipline	Semester	Number	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	Organization of Social Services Activity	1	90	3
2	Social Youth Policy of Ukraine and Sociology of Rural Youth	1	90	3
3	Urgent Issues of Social Pedagogy	1	90	3
4	Social Work in Ukraine	1	90	3
5	Legislative Framework for Socio-Pedagogical Activity and Fundamentals of Intellectual Property	1	90	3
6	Family Social Support	2	90	3
7	Psychological and Pedagogical Therapy	2	90	3
8	Methods of Teaching Social and Pedagogical Disciplines	2	150	5
9	Demography	3	90	3
10	Pedagogy and Psychology of Higher School	1	90	3
11	Management of Social and Pedagogical Systems and Management of Social and Pedagogical Work	2	90	3
12	Information Technologies in Social and Pedagogical Activity	2	90	3
Total for standard part			1260	42
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by University				
1	Methods of Social and Pedagogical Workshop	3	90	3
2	Methodology and Organization of Scientific Research	1	90	3
3	Business Foreign Language	1	150	5
Total (Disciplines offered by University)			330	11
2.2. Disciplines offered by students				
2.2.1. Specialization "Social and Pedagogical Activity in Rural Areas"				
1	Organization of Work with Different Social Groups	3	90	3
2	Social Work with Children at Risk	2	90	3
3	Culture of Speech and Business Communication	2	90	3
4	Information Technologies in Education	3	90	3

№	Discipline	Semester	Number	
			hours	credits ECTS
5	Advertising and Information Technologies in the Social Sphere	3	90	3
6	Professiology	3	90	3
Total (Disciplines offered by students)			540	18
2.2.2. Specialization "Social and Pedagogical Monitoring of Rural Areas and Social Network Diagnostics"				
1	Organization of Work with Different Social Groups	3	90	3
2	Social Work with Children at Risk	2	90	3
3	Expertise of Psychological and Sociological Tools	2	90	3
4	Information Technologies for Social and Pedagogical Research	3	90	3
5	Social Network Diagnostics	3	90	3
6	Human Resources and Labour Market	2	90	3
Total (Disciplines offered by students)			540	18
Total elective part			870	29
3. OTHER TYPES OF TRAINING				
1	Practical training	2	210	7
2	State examination	3	30	1
3	Master's thesis preparation and defense	3	330	11
Total			570	19
Total for the specialty			2700	90

Annotations educational plan disciplines

1. STANDARD ACADEMIC DISCIPLINES

Organization of Social Services Activity. The issues of social protection of youth, support, educational theory of principles, contents, methods, ways and means for social work and social services.

Social Youth Policy of Ukraine and Sociology of Rural Youth. Actual problems of the theory and practice of the social youth policy in Ukraine, the structure of social policy, social security, social protection in the social policy, the system of humanitarian policy.

Urgent Issues of Social Pedagogy. Basic social technologies and technologies of social and pedagogical work, implementation of pedagogical and psychological methods in social and educational work.

Social Work in Ukraine. Theoretical principles, content and organization of social work, forms and methods of social work with different categories of clients, ethical principles of activity and ethical code of practice of a social worker.

Legislative Framework for Socio-Pedagogical Activity and Fundamentals of Intellectual Property. Characteristics of main legislative documents for implementation of social and pedagogical work, theoretical and practical problems of the legislative framework for social and educational activities.

Family Social Support. The technology of family social support, its objectives and tasks, organization of social support for families of different types.

Psychological and Pedagogical Therapy. Psychological diagnostics, psychological correction, psychological advice and psychotherapy, psychological culture of thinking.

Methods of Teaching Social and Pedagogical Disciplines. Peculiar features of the training process organization in teaching social and educational disciplines, training and educational sessions.

Demography. Theory and history of demography, methods of analysis of demographic processes and structures, quantitative analysis and measurement of demographic processes and structures, population reproduction, natality and reproductive behavior, population migration.

Pedagogy and Psychology of Higher School. The main problems of pedagogy and psychology of higher education: characteristics of the educational process, fundamentals of didactics, training process technology, development and socialization, personality psychology of the student and the teacher, student groups, psychological and educational patterns of the educational process.

Management of Social and Pedagogical Systems and Management of Social and Pedagogical Work. Social and pedagogical features of the management process in education, styles of administration and communication, management optimization program.

Information Technologies in Social and Pedagogical Activity. The place and role of information technologies in education, organizational principles of using information technologies in education, the structure of information systems and scientific research planning.

2. ELECTIVE ACADEMIC DISCIPLINES

2.1. Disciplines offered by University

Methods of Social and Pedagogical Workshop. The essence of social and pedagogical workshops, their types and structural elements, preparation and organization of social and pedagogical workshops.

Methodology and Organization of Scientific Research. Social and pedagogical research, research methods, organization of scientific research, scientific data processing.

Business Foreign Language. Development of knowledge and skills in reading professional and scientific literature, speaking using the structure “manager-subordinate”, “subordinate-manager”, abstracts and text annotation.

Educational and professional Master's program

2.2. Disciplines offered by students

2.2.1. Specialization “Social and Pedagogical Activity in Rural Areas”

Organization of Work with Different Social Groups. Current problems of social and educational work with different social groups, methods, planning and organization of work of social educators.

Social Work with Children at Risk. Current problems of social work with children at risk, methods of work, planning and organization of work of social educators.

Culture of Speech and Business Communication. Communication as a social phenomenon, functions of communication, the importance of nonverbal communication in business relationships, shapes and styles of business communication, requirements for communication.

Information Technologies in Education. The place and role of information technologies in education, organizational principles of using information technologies in education, the structure of information systems and scientific research planning.

Advertising and Information Technologies in the Social Sphere. Specific usage of advertising and information technologies in the social sphere, strategy and technology of social educator interaction with the media, advertising specificity of social educators and institutions.

Professiology. Work content to identify capabilities, knowledge and skills of a professional to perform specific work efficiently or to be able to cope with specific activity, a complex of measures and technical means for competence estimation and assessment.

2.2.2. Specialization “Social and Pedagogical Monitoring of Rural Areas and Social Network Diagnostics”

Organization of Work with Different Social Groups. Current problems of social and educational work with different social groups, methods, planning and organization of work of social educators.

Social Work with Children at Risk. Current problems of social work with children at risk, methods of work, planning and organization of work of social educators.

Expertise of Psychological and Sociological Tools. Methods of preparation for psychological and sociological expertise of tools, analysis, synthesis, evaluation of expertise data, formulation of expert opinion and documentation of expertise, personal and professional commitment to professional carrying out psychological expertise.

Information Technologies for Social and Pedagogical Research. The place and role of information technologies in education, organizational principles of using information technologies in education, the structure of information systems and scientific research planning.

Social Network Diagnostics. Objectives and aims of social network diagnostics, the means of diagnostics, peculiar features of diagnostic techniques, data processing.

Human Resources and Labour Market. Human resources and performance efficiency, labour market and its peculiar features, correlation among employment, staff quality and efficiency, attracting human resources to social production sphere, allocation of human resources regarding workload and time management.

**Master's course
in Specialty "TRANSLATION"
branch of knowledge "Human Sciences"**

Form of training, licensed number of students:

- | | |
|-------------|------------|
| – Full-time | 20 persons |
| – Part-time | 20 persons |

Duration of Training:

- | | |
|--|----------|
| – Full-time educational and professional program | 1,5 year |
| – Part-time | 2 years |

Credits:

- | | |
|--|---------|
| – educational and professional program | 90 ECTS |
|--|---------|

Language of teaching

Ukrainian, German, English

Qualification of graduates

philologist-researcher,
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 interpreting of scientific literature in agrobiolgy, environmental protection, economics, 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.

**Educational and Professional Master's Program
*Specialization "Translation Activity in Agroindustrial and Environment
Protection Branches"***

The Master's degree programme combines the study of the theoretical and methodological foundations of translation, linguistic and social bases of translation, discourse features of scientific and technical communication (agricultural aspect) in foreign and native languages; assimilation of models and algorithms for translation process, taking into account the peculiarities of the industry; mastering the ways of adequate reproduction of various types of terminology that is typical for professional agricultural literature; overcoming translation difficulties with verbal and extralinguistic factors; integrative development of all types of speech activity of the dominant pragmatic, intercultural and professional competence; formation and improvement of translation competence in the areas of agriculture and the environment.

According to the programme, Master of Science students are trained to be competent in professional activities that require general humanitarian education and socio-economic, psychological, pedagogical and professional knowledge. The educational content provides the cycle of humanitarian, social and economic training (intellectual property, rhetoric, professional labour protection, civil protection, intercultural communication, Ukrainian language for translation), professional and practical training (pedagogy of higher school, psychology of higher education, teaching methodology of translation in higher education, methodology and organization of scientific research, communication strategies of the first foreign language, communication strategies of the second foreign language, theory of translation, translation techniques (the first foreign language), translation techniques (the second foreign language), information technology in

translation activity, comparative typology of the first foreign and Ukrainian languages, actual problems of translation, translation editing of texts on agricultural issues, interpretation and translation of specialized texts).

Master degree students in Translation are also prepared as researchers who are able to do research in linguistics, translation, literature, present research outcomes on translation and foreign philology at different levels. Moreover, they get education as specialists in implementing social and cultural communication (activities outside educational institutions: communication with native speakers, etc.); organizing and conducting educational work with students at higher educational institutions).

Areas of employment for graduates

Alumni can work as translators at different organizations and institutions and as teachers of German and English languages at higher educational institutions of I-IV levels of accreditation.

Practical Training

Practical training is carried out according to the educational process schedule directly on authorized practice bases, including: institutions and enterprises of agricultural and environmental profiles of all forms of ownership that have departments of translation; research institutes and laboratories, higher educational institutions of I-IV levels of accreditation.

Topics Proposed for Master Theses

1. Editing Texts on Landscape Architecture and Forestry after Automated Systems Translation.
2. Structural and Semantic Characteristics of Terms in Veterinary Sanitarian Expertise, Sanitation, Hygiene and Animal Production in the Aspect of Translation.
3. Contextual Solution of Polysemy of Term Units in the Texts on Production in Pig, Sheep and Horse Breeding.
4. Typology of Business Correspondence in the German and Ukrainian languages.
5. Principles of Legal Terminology Reproduction of Foreign Codes in Land Management and Land Law in the Ukrainian Language.
6. Diachronic Aspects of Professional Terminology Research.
7. Structural Analysis of Terminology Clusters in Texts on Physiology, Pharmacology and Immunology of Animals in the Aspect of Translation.
8. Typology of Stylistic Means in English Advertising Texts on Agricultural and Consumer Issues.
9. Transformation of Syntax Constructions in Texts on Agricultural Management, Marketing and Information Support of the AIC.
10. English-Ukrainian Translation of Official and Business Documentation for International Trade, Exchange Activities and Agricultural Economics.

Academic rights of applicants entering Master course

Applicants with Bachelor of Science degree may continue their education in relative specialties, including the branch of knowledge Specific Categories, (Table 2) or other specialties (Table 3) in accordance with The Terms of Admission to the Higher Educational Institutions of Ukraine in 2015, adopted by Order 1172 of the Ministry of Education and Science of Ukraine, 15 October 2014, and The Rules of Admission to National University of Life and Environmental Sciences of Ukraine (basic university institution, Kyiv) in 2015.

**Curriculum of Master training in Specialty “Translation”
Educational and professional training programme**

№	Discipline	Semester	Number	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	Pedagogy and Psychology of Higher School	1, 2	90	3
2	Methods of Teaching Translation at Higher School	2	90	3
3	Communication Strategies of the First Foreign Language	1, 2, 3	240	8
4	Theory of Translation	1, 2	90	3
5	Ukrainian Language for Translation	1, 2	90	3
6	Translation Techniques (the first foreign language)	1, 2, 3	270	9
7	Communication Strategies of the Second Foreign Language	1, 2, 3	210	7
Total for standard part			1110	37
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by University				
1	Methodology and Organization of Scientific Research with Fundamentals of Intellectual Property	1	120	4
2	Rhetoric and Cross-Cultural Communication	1, 2	120	4
3	Comparative Typology of the First Foreign and Ukrainian Languages	2	90	3
Total (Disciplines offered by University)			330	11
2.2. Disciplines offered by students				
2.2.1. Specialization “Translation Activity in Agroindustrial and Environment Protection Branches”				
1	Methods of Creation of E-Learning Online Courses	3	90	3
2	Information Technologies in Translation	1	90	3
3	Translation Techniques (the second foreign language)	1, 2	180	6
4	Translation Editing of Texts on Agricultural Issues	3	90	3
5	Interpreting and Translation of Specialized Texts (horticulture and forestry; ecology and agronomy; veterinary medicine and animal science; agrarian law; quality, standardization and certification of production; agricultural machinery, agricultural mechanization and electrification)	3	90	3
Total (Disciplines offered by students)			540	18
Total elective part			870	29
3. OTHER TYPES OF TRAINING				
1	Introductory (professional) internship	2	60	2
2	Practical training (assistance)	2	180	6
3	Practical training (translation and technology)	2	60	2
4	Practical (graduate) training	2	60	2
5	State examination in Theory and Practice of Translation (the first foreign language)	3	30	1
6	State examination in Theory and Practice of Translation (the second foreign language)	3	30	1
7	Master’s thesis preparation and defense	3	300	10
Total			720	24
Total for specialty			2700	90

Annotations educational plan disciplines

1. STANDARD ACADEMIC DISCIPLINES

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 assessment of knowledge and skills of students. Organization of education at higher educational institutions. Subject, tasks and methods of psychology of higher school. Developmental characteristics of students. Psychological foundations of interactive learning. Teaching and learning styles and their correction. Learning motivation of students. Psychological theories for effective methods of teaching at higher educational institutions.

Methods of Teaching Translation at Higher School. Didactic basics of translation. Translator professional competence. Content of translation training. Teaching translation and training translators at the higher educational institutions of Ukraine. Working out syllabi for basic foreign languages (department of translation). Organization of self-education of students.

Communication Strategies of the First Foreign Language. Basic complex of topics for conversations and communicative situations to improve linguistic, educational, strategic, pragmatic, intercultural and professional competence of students.

Theory of Translation. Bases of the theory of translation. Translation within interlingual 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 modeling and evaluating quality of translation. Invariant and the unit of translation.

Ukrainian Language for Translation. History of translation and development of theoretical views on it. Lexical and grammatical peculiar features of sentence structures in Ukrainian while translating from a foreign language.

Translation Techniques (the first foreign language). Consecutive Ukrainian interpreting of German texts into Ukrainian, Ukrainian texts in German, translation of excerpts into Ukrainian. Verbal and written summarization in Ukrainian, German. Listening comprehension and translation of excerpts of original texts.

Communication Strategies of the Second Foreign Language. Basic complex of topics for conversations and communicative situations to improve linguistic, educational, strategic, pragmatic, intercultural and professional competence of students.

2. ELECTIVE ACADEMIC DISCIPLINES

2.1. Disciplines offered by University

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. Scientific system of cognitive activity. Basic model of scientific research. Searching and processing scientific information. Methods of preparation and design for publications. Scientific methodological culture.

Rhetoric and Cross-Cultural Communication. Basic concepts of classical rhetoric. Kinds of eloquence. Rhetoric at different historical stages. Patriotic rhetoric. Oratory of the Kievan state. The main sections of classic oratory. Breathing techniques and speech of speakers, their appearance and personality features. Peculiar features of modern oratory. Development of new forms and oratory methods in the modern mass media.

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 comparative languages.

Educational and professional Master's program

2.2. Disciplines offered by students

2.2.1. Specialization “Translation Activity in Agroindustrial and Environment Protection Branches”

Methods of Creation of E-Learning Online Courses. Fundamentals of creating e-learning online courses. Content of e-learning online courses. Organization of self-education of students and indicators of e-learning online course quality.

Information Technologies in Translation. Informational environment of translation. Using information technology at stages of: preparation, understanding, interpreting of English scientific texts, information and reference searching, composing translation text and selection of translation equivalents, checking the translation. Modern systems and machine-aided translation, CAT-systems.

Translation Techniques (the second foreign language). Consecutive Ukrainian interpreting of English texts in Ukrainian, Ukrainian texts into English, translation of excerpts into Ukrainian. Verbal and written summarization in Ukrainian, English. Listening comprehension and translation of excerpts of original texts.

Translation Editing of Texts on Agricultural Issues. Principles of translation theory, types of translation. Steps to create and edit translations. Peculiar features of translating different textual information. Translation problems of closely related languages. Translation of emotionally expressive units and terms. Role of background knowledge in translation.

Interpreting and Translation of Specialized Texts (horticulture and forestry; ecology and agronomy; veterinary medicine and animal science; agrarian law; quality, standardization and certification of production; agricultural machinery, agricultural mechanization and electrification). Consecutive Ukrainian interpreting of German texts on horticulture and forestry, ecology and agronomy, veterinary medicine and animal science, agrarian law, quality, standardization and certification of production, agricultural machinery, agricultural mechanization and electrification Consecutive German interpreting of Ukrainian texts, Ukrainian translation of excerpts. Verbal and written summarization in Ukrainian, German.

**Master's course
in Specialty "MANAGEMENT OF EDUCATIONAL INSTITUTION"
branch of knowledge "Specific Categories"**

Form of training, licensed number of students:

- | | |
|-------------|------------|
| – Full-time | 25 persons |
| – Part-time | 25 persons |

Duration of Training:

- | | |
|--|----------|
| – Full-time educational and professional program | 1,5 year |
| – Part-time | 2 years |

Credits:

- | | |
|--|---------|
| – educational and professional program | 90 ECTS |
|--|---------|

Language of teaching

Ukrainian

Qualification of graduates

manager of enterprise,
institution and organization
(for education and practical
training)

The Concept of Training

The training of managers of enterprises, institutions and organizations (for education and production training) is determined by the state's demand for specialists who perform designing and optimization of organization structure of educational institutions; management of its educational and economic activity; control of the given tasks; elaborating the personnel policy of the educational institution and those who study there.

Educational and Professional Master's Program

Specialization "Management Activity at Comprehensive Educational Institutions"

The Master's degree programme aims to train future specialists in planning and organization of work in comprehensive educational institutions, managing the educational and economic activity of comprehensive educational institutions, controlling the given tasks, elaborating human resources policy of comprehensive educational institutions and those who study there. Specialist preparation includes theoretical and practical training and combined classroom work and work at the very place of practice, which allows graduates to adapt to their future workplaces.

Areas of employment for graduates

Alumni qualified as managers of enterprises, institutions and organizations (for education and production training) may work at comprehensive educational institutions (comprehensive schools) on positions of headmasters, educational center directors, managers of out-of-school establishments.

Specialization "Management Activity at Technical Schools"

The Master's degree programme aims to train future specialists in planning and organization of work at technical schools, managing the educational and economic activity of technical schools, controlling the given tasks, elaborating human resources policy of educational institutions and those who study there. Specialist preparation includes theoretical and practical training and combined classroom work and work at the very place of practice, which allows graduates to adapt to their future workplaces.

Areas of employment for graduates

Alumni qualified as managers of enterprises, institutions and organizations (for education and production training) may work at technical schools (comprehensive schools) on positions of headmasters of technical schools, heads (of training production centers; training centers), heads (of training schools, educational centers, extension service), heads of training divisions, departments, sectors.

Specialization “Management Activity at Higher Educational Institutions of I-II Levels of Accreditation”

The Master’s degree programme aims to train future specialists in planning and organization of work at higher educational institutions of I-II levels of accreditation, managing the educational and economic activity of higher educational institutions of I-II levels of accreditation, controlling the given tasks, elaborating human resources policy of educational institutions and those who study there. Specialist preparation includes theoretical and practical training and combined classroom work and work at the very place of practice, which allows graduates to adapt to their future workplaces.

Areas of employment for graduates

Alumni qualified as managers of enterprises, institutions and organizations (for education and production training) may work at higher educational institutions of I-II levels of accreditation on positions of: heads of higher educational institutions; heads (of courses, extension service, training center); chiefs of departments, practice bases, laboratories; supervisors of student design engineering (research) bureaus.

Specialization “Management Activity at Higher Educational Institutions of III-IV Levels of Accreditation”

The Master’s degree programme aims to train future specialists in planning and organization of work in higher educational institutions of III-IV levels of accreditation, managing the educational and economic activity of higher educational institutions of III-IV levels of accreditation, controlling the given tasks, elaborating human resources policy of educational institutions and those who study there. Specialist preparation includes theoretical and practical training and combined classroom work and work at the very place of practice, which allows graduates to adapt to their future workplaces.

Areas of employment for graduates

Alumni qualified as managers of enterprises, institutions and organizations (for education and production training) may work at higher educational institutions of III-IV levels of accreditation on positions of: headmasters (rector, chief) of higher educational institutions; heads (of extension service, training center); deans, heads of departments (postgraduate school, internship school, residency training, laboratory); supervisors of student design engineering (research) bureaus; heads of divisions, departments, sectors.

Practical Training

Practical training is carried out according to the educational process schedule directly on authorized practice bases, including comprehensive educational institutions (comprehensive schools), technical schools and higher educational institutions of I-IV levels of accreditation.

Topics Proposed for Master Theses

1. Management of Technical School Using Innovative Technologies.

2. Organization of Technical School Management.
3. The Content and Peculiarities of Comprehensive School Management.
4. Company Culture of Technical School Staff.
5. Formation of Managerial Culture of Technical School Manager.
6. Information Support for Management of Educational Process at Higher Educational Institutions of I-II Levels of Accreditation.
7. Education Quality Management at Higher Educational Institutions in Norway.
8. Systematic Approach to Innovation Management of Research Universities.
9. The Content and Peculiarities of Human Resources Management at Technical Schools.
10. The System of Effective Human Resources Management at Comprehensive Schools.

Academic rights of applicants entering Master course

Except for the specialty "Management of Educational Institution", applicants with Bachelor of Science degree in different directions of education and training may continue their education in specialties in Area of knowledge 1801 "Specific categories":

- 8.18010004 "Extension service";
- 8.18010009 "Stockbroking";
- 8.18010010 "Quality, Standardization and Certification";
- 8.18010012 "Management of Innovative activity";
- 8.18010018 "Administrative Management";
- 8.18010021 "Pedagogy of Higher School".

Curriculum of Master training in Specialty "Management of Educational Institution" Educational and professional training programme

№	Discipline	Semester	Number	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	Financial and Economic Activity Management	2	90	3
2	Audit and Management Activity Assessment	1	90	3
3	Psychology of Management	2	90	3
4	Legal Framework for Educational Institution	1	90	3
5	Manager of Educational Institution	2	90	3
6	Theory of Performance Organization and Management	1, 2	120	4
7	Management of Educational Institution and Management Techniques	3	90	3
8	Management of Education and Training	2	90	3
9	Human Resources Management	3	90	3
10	Information Technologies in Education and Automated Systems for Educational Institution Management	1, 2, 3	150	5
11	Modern Systems of Education	2	90	3
Total for standard part			1080	36
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by University				
1	Business Foreign Language	1	150	5
2	Methodology and Organization of Scientific Research with Fundamentals of Intellectual Property	1	90	3
3	Education Technologies	2	90	3
Total (Disciplines offered by University			330	11
2.2. Disciplines offered by students				
1	Document Management and Business Communication	1	90	3

№	Discipline	Semester	Number	
			hours	credits ECTS
	in Management of Educational Institution			
Total			90	3
2.2.1. Specialization "Management Activity at Comprehensive Educational Institutions"				
1	Organization of Comprehensive Educational Institution Activity	1	90	3
2	Management Techniques	3	90	3
3	Modern Software and Online Technologies in Education	1	90	3
Total specialization part			270	9
2.2.2. Specialization "Management Activity at Technical Schools"				
1	Theory and Methods of Professional Training	1	90	3
2	Management Techniques	3	90	3
3	Conflictology	1	90	3
Total specialization part			270	9
2.2.3. Specialization "Management Activity at Higher Educational Institutions of I-II Levels of Accreditation"				
1	Theory and Methods of Professional Training	1	90	3
2	Management Techniques	3	90	3
3	Conflictology	1	90	3
Total specialization part			270	9
2.2.4. Specialization "Management Activity at Higher Educational Institutions of III-IV Levels of Accreditation"				
1	Theory and Methods of Professional Training	1	90	3
2	Management Techniques	3	90	3
3	Human Resources Management	1	90	3
Total specialization part			270	9
Total (Disciplines offered by students)			360	12
Total elective part			690	23
3. OTHER TYPES OF TRAINING				
1	Practical training	2	630	21
2	Master's thesis preparation and defense	3	300	10
Total			930	31
Total for the specialty			2700	90

Annotations educational plan disciplines

1. STANDARD ACADEMIC DISCIPLINES

Financial and Economic Activity Management. Estimates of institution activity, evaluation criteria for decision making, technology of decision making management on financial, economic and business issues of educational institutions.

Audit and Management Activity Assessment. Systems for monitoring and evaluating the effectiveness of methods and results of organization management (companies, institutions) for different types of ownership.

Psychology of Management. The main problems of the concept, general principles, structure, functions, methodology, current trends of management psychology.

Legal Framework for Educational Institution. The constituent documents of educational institution, state registration and state regulation of educational institution activity, types and procedures of legal liability, the system of education regulations, laws and regulations on safety management and civil protection.

Top Manager of Educational Institution. Organizational principles of educational institution top manager work, duties and responsibilities of educational institution administrative service, management of disciplinary relations, institution management technology.

Theory of Performance Organization and Management. General theory of the system of education, organizational plan, methods and tools for information modeling management processes and systems, building effective organizations.

Management of Educational Institution and Management Technique. Criteria for evaluation of personnel, evaluation and monitoring of institution performance regarding its objectives, organizational activities, plans for future, types and activities of educational institutions, educational institution development strategy.

Management of Education and Training. Contingent formation, excluding and reenrollment, organization of educational and training process at educational institution, educational activities plans, decision-making procedures and criteria for assessing the quality and effectiveness of the educational process in the institution.

Information Technologies in Education and Automated Systems for Educational Institution Management. The place and role of information technologies in education, organizing training and education, organizational principles of information technologies in research, construction and planning of information systems for research.

Modern Systems of Education. Theoretical basis of models of education, modeling of educational processes, characteristics of the main models of in Ukraine and abroad.

2. ELECTIVE ACADEMIC DISCIPLINES

2.1. Disciplines offered by University

Business Foreign Language. Formation of knowledge and skills in reading professional and scientific literature, conducting conversations in the “manager-subordinate” mode, “subordinate -manager” mode, abstracts and text annotation.

Methodology and Organization of Scientific Research with Fundamentals of Intellectual Property. Characteristics of the main regulative and legal documents on intellectual property, theoretical and practical issues of legal organization of scientific research.

Educational Technologies. Theoretical foundations of educational technologies, history of educational process, technology, developmental education, project-based learning, interactive technologies in education, educational technology and creative personality development.

Educational and professional Master's program

2.2. Disciplines offered by students

Document Management and Business Communication in Management of Educational Institution. Types of documents and requirements for them, document management and control of document storage and their use, ethical and psychological peculiarities of business communication, communication and speech etiquette.

2.2.1. Specialization “Management Activity at Comprehensive Educational Institutions”

Organization of Comprehensive Educational Institution Activity. Scientific principles of educational institution management, control service at educational institution, organizing the technical work, research, compilation and sharing advanced experience.

National Standards and Quality of Education. National standards for education, quality of education, system of quality management, criteria and indicators of ensuring quality of education.

Modern Software and Online Technologies in Education. The place and the role of modern software and online technologies in education, organizational principles of modern software and online technologies in education.

2.2.2. Specialization “Management Activity at Technical Schools”

Theory and Methods of Professional Training. Theoretical and methodological principles of the educational and training process organization, the structure of methods of teaching, selection and structure of educational content, academic class organization. Theoretical and methodological aspects of education work organization at higher educational institutions.

National Standards and Quality of Education. National standards for education, quality of education, system of quality management, criteria and indicators of ensuring quality of education.

Conflictology. Tolerance formation for people, interaction strategies in conflict situations, basics of conflict prevention, conflict resolution techniques.

2.2.3. Specialization “Management Activity at Higher Educational Institutions of I-II Levels of Accreditation”

Theory and Methods of Professional Training. Theoretical and methodological principles of the educational and training process organization, the structure of methods of teaching, selection and structure of educational content, academic class organization. Theoretical and methodological aspects of education work organization at higher educational institutions.

National Standards and Quality of Education. National standards for education, quality of education, system of quality management, criteria and indicators of ensuring quality of education.

Conflictology. Tolerance formation for people, interaction strategies in conflict situations, basics of conflict prevention, conflict resolution techniques.

2.2.4. Specialization “Management Activity at Higher Educational Institutions of III-IV Levels of Accreditation”

Theory and Methods of Professional Training. Theoretical and methodological principles of the educational and training process organization, the structure of methods of teaching, selection and structure of educational content, academic class organization. Theoretical and methodological aspects of education work organization at higher educational institutions.

National Standards and Quality of Education. National standards for education, quality of education, system of quality management, criteria and indicators of ensuring quality of education.

Human Resources Management. Theoretical principles of human resources policy, forms and sources for staff formation, the content and activity of human resources manager.

**Master's course
in Specialty "PEDAGOGY OF HIGHER SCHOOL"
branch of knowledge "Specific Categories"**

Form of training, licensed number of students:

- | | |
|-------------|------------|
| – Full-time | 50 persons |
| – Part-time | 50 persons |

Duration of Training:

- | | |
|--|----------|
| – Full-time educational and professional program | 1,5 year |
| – Part-time | 2 years |

Credits:

- | | |
|--|---------|
| – educational and professional program | 90 ECTS |
|--|---------|

Language of teaching Ukrainian

Qualification of graduates teacher of higher educational institution

The Concept of Training

The training of academic staff for higher educational institutions is determined by the state's demand for specialists who are competent to be engaged in work on the organization of the educational process, methodical and scientific work at colleges and higher schools, initiate special activities to motivate social development of students of higher educational institutions.

Educational and Professional Master's Program

Specialization "Methods of Teaching the Cycle of Agrobiological Disciplines"

The Master's degree programme provides future professionals with mastering a complex of subjects, studying historical aspects of theory and methods of teaching disciplines of the cycle of professional and practical training; rules, principles, forms, methods and means of training courses in agronomy and their content, system of control and assessment of learning performance; improvements, design and content of disciplines modules; theory and methods of practical training, planning and organization of the educational and training process at higher school; theory and practice of pedagogical education.

Areas of employment for graduates

Alumni qualified as teachers of higher educational institution may work as assistants, teachers of higher educational institutions of different accreditation levels (technical schools, colleges, higher schools, institutes).

Specialization "Methods of Teaching the Cycle of Economic and Information Disciplines"

The Master's degree programme provides future professionals with mastering a complex of subjects, studying historical aspects of theory and methods of teaching disciplines of the cycle of professional and practical training; rules, principles, forms, methods and means of training courses in economics of enterprise and their content, system of control and assessment of learning performance; improvements, design and content of disciplines modules; theory and methods of practical training, planning and organization of the educational and training process at higher school; theory and practice of pedagogical education.

Areas of employment for graduates

Alumni qualified as teachers of higher educational institution may work as assistants, teachers of higher educational institutions of different accreditation levels (technical schools, colleges, higher schools, institutes).

Specialization “Methods of Teaching the Cycle of Social Sciences and Humanities”

The Master’s degree programme provides future professionals with mastering a complex of subjects, studying historical aspects of theory and methods of teaching disciplines of the cycle of professional and practical training; rules, principles, forms, methods and means of training courses in social pedagogy and their content, system of control and assessment of learning performance; improvements, design and content of disciplines modules; theory and methods of practical training, planning and organization of the educational and training process at higher school; theory and practice of pedagogical education.

Areas of employment for graduates

Alumni qualified as teachers of higher educational institution may work as assistants, teachers of higher educational institutions of different accreditation levels (technical schools, colleges, higher schools, institutes).

Specialization “Methods of Teaching the Cycle of Technical and Technological Disciplines”

The Master’s degree programme provides future professionals with mastering a complex of subjects, studying historical aspects of theory and methods of teaching disciplines of the cycle of professional and practical training; rules, principles, forms, methods and means of training courses in mechanization for agriculture and their content, system of control and assessment of learning performance; improvements, design and content of disciplines modules; theory and methods of practical training, planning and organization of the educational and training process at higher school; theory and practice of pedagogical education.

Areas of employment for graduates

Alumni qualified as teachers of higher educational institution may work as assistants, teachers of higher educational institutions of different accreditation levels (technical schools, colleges, higher schools, institutes).

Specialization “Methods of Teaching the Cycle of Animal Science and Veterinary Medicine Disciplines”

The Master’s degree programme provides future professionals with mastering a complex of subjects, studying historical aspects of theory and methods of teaching disciplines of the cycle of professional and practical training; rules, principles, forms, methods and means of training courses in veterinary medicine and their content, system of control and assessment of learning performance; improvements, design and content of disciplines modules; theory and methods of practical training, planning and organization of the educational and training process at higher school; theory and practice of pedagogical education.

Areas of employment for graduates

Alumni qualified as teachers of higher educational institution may work as assistants, teachers of higher educational institutions of different accreditation levels (technical schools, colleges, higher schools, institutes).

Practical Training

Practical training is carried out according to the educational process schedule directly on authorized practice bases, including higher educational institutions of I-III accreditation levels (technical schools, colleges, higher schools, institutes).

Topics Proposed for Master Theses

1. Personality Formation of Future Specialist in Environmental Protection and Agricultural Higher Educational Institutions on the Basis of the National and Patriotic Values.
2. Formation of Leadership Skills of Students of Life Science and Agricultural Higher Educational Institutions.
3. Organization of Student Governance at Higher Educational Institution.
4. Educational Methods of Educators at Student Accommodation.
5. The Ways of Development of Pedagogical Skills for Future Academic Staff of Higher Educational Institutions.
6. Activation of Scientific and Learning Activities of Students While Studying Professional Disciplines.
7. Methods of Game Classroom Activities While Teaching Professional Disciplines.
8. Methods of Academic Performance Control for Students While Studying Professional Disciplines.
9. Methods of Student Self-Education Organization While Studying Professional and Training Disciplines at Agricultural Higher Educational Institution.
10. Problematic Teaching While Studying Professional Disciplines.

Academic rights of applicants entering Master course

Except for the specialty "Pedagogy of Higher School", applicants with Bachelor of Science degree in different directions of education and training may continue their education in specialties in Area of knowledge 1801 "Specific categories":

- 8.18010004 "Extension service";
- 8.18010009 "Stockbroking";
- 8.18010010 "Quality, Standardization and Certification";
- 8.18010012 "Management of Innovative activity";
- 8.18010018 "Administrative Management";
- 8.18010020 "Management of Educational Institution".

Curriculum of Master training in Specialty "Pedagogy of Higher School" Educational and professional training programme

№	Discipline	Semester	Number	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	Introduction to Specialty	1	90	3
2	Pedagogy	1	180	6
3	Developmental and Pedagogical Psychology	1	120	4
4	Principles of Scientific Research in Pedagogy	1	90	3

№	Discipline	Semester	Number	
			hours	credits ECTS
5	History of Pedagogy and Development of Higher Education in Foreign Countries	1, 2	90	3
6	Principles of Pedagogical Skills and Ethics for Academic Staff of Higher School	2	120	4
7	Theory and Methods of Professional Training	2	180	6
8	Organization of Educational Work at Higher Education Institutions	2	120	4
9	Methods of Creation of E-Learning Online Courses	2	120	4
10	Information Technologies in Education	2	120	4
Total for standard part			1230	41
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by University				
1	Business Foreign Language	1	150	5
2	Methodology and Organization of Scientific Research with Fundamentals of Intellectual Property	1	90	3
3	Pedagogical Technologies	2	90	3
Total (Disciplines offered by University)			330	11
2.2. Disciplines offered by students				
1	Higher Education of Ukraine and the Bologna Process	3	90	3
2	Professional Training	3	90	3
3	Social Psychology and Psychology of Creativity	3	90	3
Total			270	9
2.2.1. Specialization "Methods of Teaching the Cycle of Agrobiological Disciplines"				
1	Methods of Teaching the Cycle of Agrobiological Disciplines	3	180	6
2.2.2. Specialization "Methods of Teaching the Cycle of Animal Science and Veterinary Medicine Disciplines"				
1	Methods of Teaching the Cycle of Animal Science and Veterinary Medicine Disciplines	3	180	6
2.2.3. Specialization "Methods of Teaching the Cycle of Technical and Technological Disciplines"				
1	Methods of Teaching the Cycle of Technical and Technological Disciplines	3	180	6
2.2.4. Specialization "Methods of Teaching the Cycle of Economic and Information Disciplines"				
1	Methods of Teaching the Cycle of Economic and Information Disciplines	3	180	6
2.2.5. Specialization "Methods of Teaching the Cycle of Social Sciences and Humanities"				
1	Methods of Teaching the Cycle of Social Sciences and Humanities	3	180	6
Total specialization part			180	6
Total (Disciplines offered by students)			450	15
Total elective part			780	26
3. OTHER TYPES OF TRAINING				
1	Practical training	2	360	12
2	Master's thesis preparation and defense	3	330	11
Total			690	23
Total for the specialty			2700	90

Annotations educational plan disciplines

1. STANDARD ACADEMIC DISCIPLINES

Introduction to Specialty. Development of the main tasks and functions for university lecturers, requirements for their personality and organization of work.

Pedagogy. Theoretical and practical issues of teaching process organization (didactics), education management (school organization and management).

Developmental and Pedagogical Psychology. Peculiarities of psychological, personal development of human at different stages of life, learning and using psychological capacities of educator, pupil (student) while training, educating, mastering of social experience.

Principles of Scientific Research in Pedagogy. Pedagogical research, methods of research, organization of scientific research, processing of research findings, teaching experiment.

History of Pedagogy and Development of Higher Education in Foreign Countries. Development of theory and practice of education and teaching from ancient times to the present, in different historical periods and under socio-economic formations.

Principles of Pedagogical Skills and Ethics for Academic Staff of Higher School. Content of professional and educational work of university lecturer, components of pedagogical skills, conditions and means of formation of educational technology, development of pedagogical abilities and skills.

Theory and Methods of Professional Training. Theoretical and methodological basis of educational process, structure of teaching methods, teaching material selection and structuring, organization of training sessions. Theoretical and methodological aspects of educational work at university.

Organization of Educational Work at Higher Education Institutions. Theoretical and methodological foundations of organization of the educational process, structure of education methods, selection and content of education, organization of educational work at university.

Methods of Creation of E-Learning Online Courses. Fundamentals of creating e-learning online courses. Content of e-learning online courses. Organization of self-education of students and indicators of e-learning online course quality.

Information Technologies in Education. The place and role of information technologies in education, organizational principles of using information technologies in education, the structure of information systems and scientific research planning.

2. ELECTIVE ACADEMIC DISCIPLINES

2.1. Disciplines offered by University

Business foreign language. Formation of knowledge and skills for reading of professional and scientific literature, conducting conversations in the mode “teacher-student”, “leader-subordinate”, “subordinate-manager”, annotation and text summarization.

Methodology and Organization of Scientific Research with Fundamentals of Intellectual Property. Characteristics of the main regulative and legal documents on intellectual property, theoretical and practical issues of legal organization of scientific research.

Pedagogical Technologies. The technological approach to education, student-centered educational technologies, analysis of leading contemporary educational technology.

Educational and professional Master's program

2.2. Disciplines offered by students

Higher Education of Ukraine and the Bologna Process. Studying regulations of the united Europe regarding the common educational and scientific area.

Professional Training. The main theoretical and practical problems of organization (area of knowledge of basic higher education) in the state and abroad.

Social Psychology and Psychology of Creativity. Social and psychological mechanisms, ways and means of effective communication, show features of human group

activity, the nature of mental mass phenomena. Problems of structure, diagnosis, psychological support and development of creative abilities and talents of capable individuals; history of development and main areas of current research in psychology of creativity.

2.2.1. Specialization “Methods of Teaching the Cycle of Agrobiological Disciplines”

Methods of Teaching the Cycle of Agrobiological Disciplines. Methods of teaching as an academic discipline. Objectives, goals, place and content of agrobiological disciplines. Educational and methodological support for educational and training process. Organization of student educational work. Criteria, norms and measures of student learning performance assessment and evaluation. Methods of preparing and conducting lectures and practical classes, as well as laboratory work. Organization of student self-education. Preparing and assisting during practical training and internship. Organization of course projects.

2.2.2. Specialization “Methods of Teaching the Cycle of Animal Science and Veterinary Medicine Disciplines”

Methods of Teaching the Cycle of Animal Science and Veterinary Medicine Disciplines. Methods of teaching as an academic discipline. Objectives, goals, place and content of animal science and veterinary medicine disciplines. Educational and methodological support for educational and training process. Organization of student educational work. Criteria, norms and measures of student learning performance assessment and evaluation. Methods of preparing and conducting lectures and practical classes, as well as laboratory work. Organization of student self-education. Preparing and assisting during practical training and internship. Organization of course projects.

2.2.3. Specialization “Methods of Teaching the Cycle of Technical and Technological Disciplines”

Methods of Teaching the Cycle of Technical and Technological Disciplines. Methods of teaching as an academic discipline. Objectives, goals, place and content of technical and technological disciplines. Educational and methodological support for educational and training process. Organization of student educational work. Criteria, norms and measures of student learning performance assessment and evaluation. Methods of preparing and conducting lectures and practical classes, as well as laboratory work. Organization of student self-education. Preparing and assisting during practical training and internship. Organization of course projects.

2.2.4. Specialization “Methods of Teaching the Cycle of Economic and Information Disciplines”

Methods of Teaching the Cycle of Economic and Information Disciplines. Methods of teaching as an academic discipline. Objectives, goals, place and content of economic and information disciplines. Educational and methodological support for educational and training process. Organization of student educational work. Criteria, norms and measures of student learning performance assessment and evaluation. Methods of preparing and conducting lectures and practical classes, as well as laboratory work. Organization of student self-education. Preparing and assisting during practical training and internship. Organization of course projects.

**2.2.5. Specialization “Methods of Teaching the Cycle
of Social Sciences and Humanities”**

Methods of Teaching the Cycle of Social Sciences and Humanities. Methods of teaching as an academic discipline. Objectives, goals, place and content of social sciences and humanities. Educational and methodological support for educational and training process. Organization of student educational work. Criteria, norms and measures of student learning performance assessment and evaluation. Methods of preparing and conducting lectures and practical classes, as well as laboratory work. Organization of student self-education. Preparing and assisting during practical training and internship. Organization of course projects.

**EDUCATION AND RESEARCH INSTITUTE
OF CONTINUING EDUCATION**

Director – PhD, Associate Professor, Honored Economist of Ukraine Kulayets Mariya M.

Tel.: (044) 259-79-11

E-mail: pdv1204@ukr.net

Location: Building № 10, Room 108

The ERI organizes and coordinates Masters training in the following courses:

8.15010002 “Public Administration”

Graduating departments:

Regional Administration and Local Government

Tel.: (044) 527-86-35

E-mail: kaf_rums@ukr.net

Head of Department – d.derzh.upr, Associate Professor Zhovnirchuk Iaroslav F.

8.18010004 “Extension service”

Graduating departments:

Agricultural Consulting and Service

Tel.: (044) 527-80-61

E-mail: agroconsalt_chair@twin.nauu.kiev.ua

Head of Department – Doctor of Economics, Professor Kalna-Dubinyuk Tetyana P.

8.18010012 “Management of innovative activity”

Graduating departments:

Innovation in AIC

Tel.: (044) 527-86-58

E-mail: inpoagro@gmail.com

Head of Department – Doctor of Economics, Professor Vytvytska Olga D.

**Master's course
in specialty "PUBLIC ADMINISTRATION"
branch of knowledge "Public service"**

Form of Training, Licensed number of persons:

- | | |
|-------------|------------|
| – Full-time | 25 persons |
| – Part-time | 50 persons |

Duration of training

- | | |
|--|-----------|
| – Full-time educational and professional program | 12 months |
| – Part-time | 22 months |

Credits:

- | | |
|--|---------|
| – educational and professional program | 60 ECTS |
|--|---------|

Language of training

Ukrainian

Qualification of graduates:

Master in Public Administration

The concept of training

Master training in the field of knowledge 1501 "Public Service" specialty 8.15010002 "Public Administration" carried out educational and professional programs, based on professional qualification characteristics of civil servants, educational standards. Training involves a deep legal, economic, political, administrative, social, humanitarian, professional training and mastery of the students analytical and research skills, which are based on widely aspect approach to providing legal, organizational and administrative and advisory, administrative activities AIC Ukraine. Prepare a master gives in-depth knowledge of public administration practices of public service, service in local government, political process management, business foreign language and more.

**Educational and professional Master's program
*Specialization "State regulation of agriculture"***

Built on the priorities of professional training of qualified personnel to implement the goals and objectives of state agricultural policy, policy on agriculture and on food security. Training involves a deep legal, economic, political, administrative, social, humanitarian, professional training for legal, organizational and administrative and advisory management activity in the farming industry.

Areas of employment for graduates

The program provides training for the work in departments and divisions of the Ministry of Agriculture and Food, the main offices of Agricultural Development of regional state administrations, the State Agricultural Inspection of Ukraine, the State Agency for Fisheries of Ukraine.

Specialization "Local Government"

The program allows to deepen the knowledge of the problems of formation and development of local government in Ukraine, based on the study of foreign experience and comparison of the actual state of the existing system problems and prospects of the local government. The master's program involves the formation of students a clear understanding of political and legal nature, major trends stages of evolution and prospects of the development of local self-government in Ukraine, understanding the role and place of local government in public administration, as well as in-depth knowledge of the elements, systems, principles of formation local governments, their tasks and powers, warranties and liability, basic legal framework and development of local government.

Areas of employment for graduates

The program provides training in state government, local government and other institutions, organizations covered by the Laws of Ukraine "On Civil Service" and "On service in local government."

Specialization "Organizational and Legal Basis of Public Administration in Agriculture"

The program is dealt with providing special knowledge, abilities and skills in organization and management of legal service activities in agroindustrial complex, legal and staff providing of state management in the sphere, main principles of working with staff of central executive authorities and local state administrations, as well as self-governing authorities.

Areas of employment for graduates

Graduands can be given employment in different subjects of farm management in agroindustrial complex, in state executive bodies, self-governing authorities, relevant departments and authorities which provide warranties concerning state agricultural policy realization.

Specialization "National innovation management in agriculture"

The program is aimed at providing of state and local government employees with a high level of professionalism and administrative culture, able to competently and responsibly perform administrative functions, introducing new technologies, promote innovation processes. The program aims to provide specialized knowledge and skills in management and regulation of innovative development both at national and at sectoral and regional levels, as well as directly at companies and organizations.

Areas of employment for graduates

Graduates are able to work in management of central government and regional authorities, enterprises, institutions and organizations, as well as counseling centers, consulting organizations, scientific-technical and production complexes, scientific and educational institutio

Specialization "Public administration in the use and protection of land resources"

Provides training highly qualified specialists of state administration on land issues, land management, land protection and control over their use. The program is aimed at training specialists for the legal activities of the competent authority to ensure the efficient and effective operation of land all entities within the limits set by the land legislation of Ukraine.

Areas of employment for graduates

The training provides staffing needs for the system of authorized agencies, which according to the law of the land carried out organizational and legal activities to ensure sustainable use of land resources and their protection. These include, in particular: regional, Kyiv and Sevastopol city, district, city districts, city, town and village councils, central executive authority on ecology and natural resources; the central body of executive power on land resources; local administrations.

Practical training (internship)

Students enrolled in full-time education by state order internships in government agencies or local government that sent them to training based on the subject areas of research degree master's works. Students enrolled in the terms of the contract are trained with the assistance of the Department of Public Administration NUBiP Ukraine ministries and departments, committees of the Parliament of Ukraine according to their selected master's programs.

Proposed Topics for Master Theses

1. Responsibility and control system of local government in Ukraine.
2. Interaction of Regional Administration and Local Government.
3. Motivation of officials of local government in Ukraine.
4. Mechanisms of regulation of innovation activity in Ukraine.
5. The development of state regulation of the agricultural sector in the context of food security in Ukraine.
6. Mechanisms supranational governance in the European Union: experience for Ukraine.
7. Introduction of electronic document circulation in Ukraine.
8. Mechanisms of regulation of the agricultural sector of the national economy Ukraine in conditions of globalization of markets.
9. Legal regulation of the system of governance at regional level.
10. Development of state regulation of the service sector in Ukraine.

Academic rights of applicants entering Master course

In addition to the specialty "Public Administration" applicants from different areas of training can continue teaching the field of knowledge 1801 "Specific categories":

- 8.18010004 "Extension service";
- 8.18010009 "Stockbroking";
- 8.18010010 "Quality, Standardization and Certification";
- 8.18010012 "Management of innovative activity";
- 8.18010018 "Administrative Management";
- 8.18010020 "Management of Educational Institution";
- 8.18010021 "Pedagogy of Higher School".

Curriculum of Master training in specialty "Public Administration" Educational and qualification Master's program

№	Name of Academic Discipline	Semester	Volume	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	Introduction to Specialty	1	30	1
2	Methodology of system approach and science research	1	60	2
3	State administration	2	120	4
4	Legal support of state control	1	60	2
5	Civil service	1	90	3
6	Organizing civil servants' activities	3	90	3
7	Social and humanitarian policy	3	60	2
8	Anti-crisis management	2	60	2
9	Resource Management	2	60	2
10	Economics	1, 2	60	2

№	Name of Academic Discipline	Semester	Volume	
			hours	credits ECTS
11	Political aspects of state administration	2	60	2
12	E-control, IT, civil service resources and services	2	60	2
13	Psychology of management	3	90	3
Total for standard part			900	30
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by University				
1	Agrarian policy	3	60	2
2	Globalization and European integration	2	30	1
3	Administrative Law	3	30	1
4	Municipal Government	3	60	2
5	Administrative consulting	2	30	1
6	National anti-corruption policy	1	60	2
7	Current Trends in Management of Public Authority and Local Government Authorities	1	60	2
8	Innovation Activities in Agro-industrial Production	1	30	1
Total (Disciplines offered by University)			360	12
2.2. Disciplines offered by students				
2.2.1. Specialization "State Regulation in Agro-industry"				
1	State control over markets of <i>horticultural products</i>	3	90	3
2	State control over markets of livestock products	3	90	3
3	State control over markets of agricultural resources	3	90	3
Total (Disciplines offered by students)			270	9
2.2.2. Specialization "Local Government"				
1	Local government	3	90	3
2	Territorial Organization of Local Government.	3	90	3
3	International Experience with Organization of Local Government.	3	90	3
Total (Disciplines offered by students)			270	9
2.2.3. Specialization "Organizational and Legal Support for Public Administration in Agro-Industry"				
1	Legislative process.	3	90	3
2	Staffing public administration.	3	90	3
3	Financial law	3	90	3
Total (Disciplines offered by students)			270	9
2.2.4. Specialization "State management of innovation activity in Agro-Industry"				
1	Economy of innovative enterprise.	3	90	3
2	Intellectual Property	3	90	3
3	State management of innovation activity.	3	90	3
Total (Disciplines offered by students)			270	9
2.2.5. Specialization "State management in the use and protection of land resources Development planning"				
1	Development planning of areas	3	90	3
2	State and Municipal Lands Management.	3	90	3
3	Monitoring and Evaluation of Land Management.	3	90	3
Total (Disciplines offered by students)			270	9
Total for elective part			630	21
3. OTHER TYPES OF TRAINING				
1	Production internship	2	90	3
2	Master thesis	3	180	6
Total			270	9
Total on specialty			1800	60

Annotations educational plan disciplines

1. STANDARD ACADEMIC DISCIPLINES

Introduction to the speciality. A discipline that forms general concept about the major definitions, required for the understanding of the educational material of the following disciplines: "Public Administration", "Civil Service", "Organization of a Civil Servant's activities" and other subjects which are taught during the Master's studies. Basing on the acquired theoretical knowledge the students have to possess the due information about the modern techniques and requirements to the individual work of the Master's course's attendees, individually search and apply specialized, scientific, educational and reference literature, manage their working time; build up their future professional activities and carrier.

The methodology of the systematic approach and scientific research. The mentioned notion foresees the mastering of the modern theoretical concepts of conducting scientific research and their practical application in the attendees' investigational work. The sense of the discipline is the mastering of the methodology and methods of conducting scientific research and their practical application when writing a Master's thesis.

Public Administration. The major task of the discipline is to convey to the attendees the principles, functions and methods of the administrative work; the structure of the public administration framework. The course foresees the professional training of highly qualified responsible staff for civil service at any body of the executive branch of power or local administration, capable of developing, analyzing and implementing state policy in a certain sphere of public administration; creatively, efficiently and successfully fulfill administrative functions, encourage innovative processes in the society.

Legal basis of government regulation. The aim of mastering this discipline for the attendees is to acquire profound theoretical knowledge about the basis of the sectoral legal relations and the preparation to the practical work of highly qualified civil servants. The sense of the discipline foresees the studying of the structure of legal system of Ukraine, the major principles of the legal regulation of public relations in the political, social, cultural, economic, ecological, informational and other spheres.

Civil service. The course is aimed at training the attendees to apply the constitutional, legal and regulation principles of the civil service in the professional work of a civil servant; to provide the information about the development and organizational principles of the civil service, general principles of the activities and status of the civil servant, major theoretical theses of the HR policy and civil service; present the information about the technologies of HR management and methods of its application in practice; to promote the formation of skills and abilities necessary for successful functioning within the civil service system.

The organization of a civil servant's activities. This academic discipline aims to form the system of knowledge and skills required for the efficient fulfilment of duties by civil servants; to provide contemporary knowledge about the national and foreign experience about the concepts and systems of the civil service organization; to master scientific approaches to the time and working place management, mechanism of a civil servant's work planning; to convey the information about the requirements and rules of work with internal documents, processing of written and oral inquiries of citizens, norms of the official Ukrainian language.

Social and humanitarian policy. This course foresees the formation of a system of knowledge and skills in the sphere of social and humanitarian policy of Ukraine at the

current stage, major problems of social security and protection, social consequences of economic decisions, social work with different strata of the society.

Anti-crisis management. The aim of studying the “Anti-crisis management” discipline for the attendees is to master the knowledge about the modern techniques of anti-crisis management and the capacities of its application in the public administration processes. Moreover, the sense of project management techniques is the evaluation of the current stage of the activities (a branch, a region, a sector, an enterprise, a body, and organization, etc.), making predictions and selecting an alternative way of development; organization of a project team, cooperation of the project management subjects, planning results, evaluating the efficiency and successfulness, innovational management, etc.

Resources management. Mastering this discipline is aimed at the acquiring of knowledge about the modern techniques of project management and the opportunities for its application in the public administration processes. In particular, the sense of project management techniques is the evaluation of the current stage of the activities (a branch, a region, a sector, an enterprise, a body, and organization, etc.), making predictions and selecting an alternative way of development; organization of a project team, cooperation of the project management subjects, planning results, evaluating the efficiency and successfulness, innovational management, etc.

Economy. The aim of the discipline studying is the formation of a system of knowledge in macroeconomics, which studies the regularities of the economy functioning as a whole, from the point of view of the macroeconomic instability, economic growth, balance on the goods and services market, financial market and HR market. The sense of the discipline is to scrutinize the economic processes of the state’s development on the macro level, maintaining macroeconomic balance on different markets, fiscal, monetary and credit elements at the level of an economic system.

Politological aspects of public administration. The course aims at the formation of a comprehensive system of logically coherent basic knowledge about the political sphere and a person as a socially-political being; the creation of a basis for acquiring further skills and abilities related to the mastering and application of a civil servant’s culture and behavior, necessary for the successful adaptation at the state government bodies and at the public sphere as a whole.

E-government, IT, resources and services at the civil service. The task of the course is to provide theoretical knowledge and practical skills in the basic principles of the creation and functioning of computer networks and their usage in a civil servant’s work. The object of the studies are the facilities of communicative techniques, modern computer networks and methods of network technologies usage in the national economy management. The discipline includes the major theoretical and practical aspects of modern communication facilities and computer networks functioning.

The psychology of management. When mastering this discipline the prospective civil service experts will profoundly investigate the psychological conditions and peculiarities of administrative work aiming to enhance the efficiency and quality of work in the administrative system. The sense of the discipline is to master the knowledge on social, cultural, psychological and ethnopsychological peculiarities of the administrative work; principles and techniques of communications, motivation of activities, stimulation methods, psychological peculiarities of taking administrative decisions, methods of working groups’ formation.

2. ELECTIVE ACADEMIC DISCIPLINES

2.1. Disciplines offered by University

Agrarian Policy. The purpose of the discipline is to master theoretical and methodological bases of formation and implementation of agricultural policies, ability to assess its effectiveness and justify the choice of certain measures of state regulation.

Globalisation and European Integration. The purpose of the discipline is learning regularities and peculiarities of nation building development in conditions of global integration; theories, concepts and strategy on the world community development; the process of integration in historical dynamics of social development; the concept of integration in the context of innovative transformations of modern society.

Administrative Law. The course provides familiarization with modern paradigm of administrative and legal relations, regulation of administrative relations in implementing public authority, human-centered theory in the basis of administrative law, urgent issues of regulating management relations in public authority, areas of concern associated with proper protection of rights and freedoms of man and citizen in the implementation of powers and functions of the executive and local authorities, novelties for civil service institution regulation, administrative offence and administrative responsibility, system of public policy formation and implementation and appropriate organizational and legal changes related to reform of main governing institutions.

Municipal Government. The course provides knowledge on municipal management for effective training of specialists in "Public Administration" to work in local government, municipal and public institutions. In particular, it provides awareness of regularities and characteristics of management activities necessary to be able to carry out them in the local government.

Management Consulting. The discipline involves studying the principles and methods of consulting activities, features of management consulting services, studying phases of consultation process to gain skills to carry out management functions as civil servants and local government officials effectively and efficiently.

The state anti-corruption policy. The purpose of discipline is to obtain fundamental knowledge on basic origins of corruption in public relations in general and economy in particular and the ways to combat corruption. Students get anti-corruption behavior skills and proficiency in the analysis of the causes of corruption, its economic and social consequences and ways to combat it.

Current Trends in Management of Public Authority and Local Government Authorities. The course aims at developing management thinking, gaining knowledge on management, ability to analyze problems and take management decisions.

Innovation Activities in Agro-industrial Production. The purpose of the course is to develop a system of knowledge on innovation in agro-industry with taking into account social problems of the society and the enterprises, defining the role of intellectual property as the basis of innovation. The course includes study of organizational and economic preconditions for innovations, creation and formation of demand for innovations, techniques and components of innovation policy)

Educational and professional Master's program

2.2. Disciplines offered by students

2.2.1. Specialization "State Regulation in Agro-industry"

State Regulation of Crop Production. The purpose of the course is to develop competencies in modern approaches to determining the place and role of state regulation of crop production. The subject of discipline is the process of governance (regulation) of agrarian relations in Ukraine.

State Regulation of Animal Production. The course provides knowledge on theoretical and methodological foundations of public administration and state regulation of agrarian relations. It also provides skills and abilities to develop proposals for the organization of public administration. The subject of discipline is the process of governance (regulation) on agrarian relations in Ukraine.

State Regulation of Resources in Agro-industry. The course provides knowledge on modern approaches to shape resource market of individual sectors of national economy. The subject of discipline is the process of governance (regulation) of agrarian relations in Ukraine in the sphere of agro-industry resource markets.

2.2.2. Specialization "Local Government"

Local Government. The course includes constitutional principles and functions of state and local governments, study of local government as a specific form of public power in order to achieve the goals and objectives of the state through the activities of local governments considering its political, economic, social, legal, institutional, financial and other aspects, responsibilities and powers of deputies of city and village councils, methods of their implementation; regulation mechanisms and tools of economic development and social improvement of local communities.

Territorial Organization of Local Government. The course provides in-depth understanding of development planning in the process of ensuring the consistency of government policy. In particular, planning the formation of a common humanitarian space in Ukraine and regionally, as well as getting acquainted with the legal and regulatory framework of planning cooperation of state authorities, administration, local governments at various levels in the development and implementation of regional development policy.

International Experience with Organization of Local Government. The course goal is to study the local government of foreign countries, especially the powers and responsibilities of municipal government in compliance with the requirements of the European Charter of Local Self-Government. International trends in local governments, municipal reform, functional and structural reforms are studied.

2.2.3. Specialization "Organizational and Legal Support for Public Administration in Agro-Industry"

Legislative process. The course includes theoretical and legal foundations of legislative process and their practical application in Ukraine. The subject of study is the methodology and techniques of legislative activity.

Staffing public administration. The course provides holistic understanding of the mechanisms and processes of public administration staffing. Students study public relations, regularities of organization, functioning and development of public administration staffing as initial condition and an effective factor in successful implementation of social reforms.

Financial law. The course provides in-depth understanding of mobilization, distribution and use of centralized and decentralized financial resources of the state. The subject of study is the public relations in the mobilization, allocation and use of centralized and decentralized state financial resources for ensuring implementation the State's tasks and functions.

2.2.4. Specialization "State management of innovation activity in Agro-Industry"

Economy of innovative enterprise. The course provides knowledge on the main sections of Applied Economics, organization and effectiveness of primary element of

social production management, taking into account social innovation component; regularities of functioning and development of enterprises in market conditions.

Intellectual Property. The academic discipline includes basic theoretical and methodological principles of regulation of intellectual property in a market economy. The course provides knowledge on legislative, normative and methodological support for the disposal of intellectual property rights, receiving income from intellectual property and intellectual property protection.

State management of innovation activity. The purpose of the course is to develop knowledge on state innovation policy, methods and instruments of regulation and stimulation of innovation processes, importance of the development of copyright, licensing and franchising. The content of the course is learning legislative, normative and methodological ensuring for the disposal of intellectual property rights, income from intellectual property and intellectual property protection.

2.2.5. Specialization "State management in the use and protection of land resources Development planning".

Development planning of areas. The discipline includes gaining knowledge on regularities of land use organization, acceleration of the pace of productivity growth based on scientific and technological progress and rational use of land, labor and financial resources. Students learn legislative, normative and methodological support for the area development planning.

State and Municipal Lands Management. The purpose of the course is to gain basic knowledge on the implementation of land policy in the state, providing a modern legislative and program-based approach in the implementation of state management of land resources at the national and regional level management of land resources state by authorities and executive bodies; the structure and powers of local government development and implementation of effective policies at national and regional levels; principles of management and planning development.

Monitoring and Evaluation of Land Management. The course provides basic knowledge on the implementation of land policy in the state, legislative support and program-based approach to the implementation of state management of land resources at the national and regional level; state authorities and executive bodies management of land resources; the structure and powers of local government in the development and implementation of effective policies at national and regional levels; principles of management and area planning development.

**Master's course
in specialty "EXTENSION SERVICE"
branch of knowledge "Specific categories"**

Form of Training, Licensed number of persons:	
– Full-time	25 persons
Duration of training	
– Full-time educational and professional program	1,5 years
Credits:	
– educational and professional program	90 ECTS
Language of training	Ukrainian
Qualification of graduates:	Adviser in Extension service

The concept of training

Providing training highly qualified specialists in extension service to increase knowledge and information on the innovative areas of agricultural production and environmental, community development, improving children, youth, families, using new technologies for the development of life on the Earth. The program provides a study process with involvement Professors from leading universities of Europe and America to teach the organization of information and consultancy activities based on its actual programs.

Areas of employment for graduates

Graduates will be able to work with the managers of extension services in the social sector, extension services for the development of community, improving children, youth, families and open private consulting firms.

Practical training

The practice will be organize on the basis of extension organizations in Ukraine and abroad - Poland, Hungary, the Netherlands, Portugal, America and so on.

Proposed Topics for Master Theses

1. Implementation of innovative potential of agricultural enterprises as the basis of rural development and the role of extension.
2. Extension service for the development of organic production in Ukraine.
3. Extension service for the development of small enterprises.
4. Organization of extension service in rural tourism.
5. Extension services development in the social sphere.

Academic rights of applicants entering Master course

In addition to specialty "Extension service" Bachelor and Master applicants with a degree in different training areas can continue to study in the field of knowledge 1801 "Specific categories":

- 8.18010009 "Stockbroking";
- 8.18010010 "Quality, Standardization and Certification";
- 8.18010012 "Management of innovative activity";
- 8.18010018 "Administrative Management";
- 8.18010020 "Management of Educational Institution";
- 8.18010021 "Pedagogy of Higher School".

**Curriculum of Master training
in specialty "Extension service"
Educational and professional Master program**

№	Name of Academic Discipline	Semester	Volume	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	Intellectual Property	1	90	3
2	Agrarian, land and environmental law	1	90	3
3	Methodology and organization of scientific research	3	90	3
4	Agricultural extension	1	120	4
5	Planning information and consultation programs in extension	3	120	4
6	Organization of information and consultation activities	2	120	4
7	Consulting management in agriculture	1	120	4
8	Fundamentals of information technology in extension	2	120	4
9	Legal support in extension	1	120	4
10	Organisation of trainings in extension	3	120	4
11	Public relations for consulting	1	120	4
12	Statistical modeling and forecasting extension	2	120	4
Total for standard part			1350	45
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by University				
1	Agrarian policy	2	120	3
2	Business foreign language	1	120	5
3	Extension in agribusiness	2	90	3
4	International Extension	2	90	3
Total (Disciplines offered by University			420	14
2.2. Disciplines offered by students				
1	Extension to agricultural service cooperatives	3	90	3
2	Innovative activity	3	90	3
3	Ethic extension activity	1	90	3
4	Extension for social development in rural areas	3	120	4
5	Extension in agricultural service	2	90	3
6	Home Economics	3	90	3
7	Documentation in extension	3	90	3
Total (Disciplines offered by students)			660	22
Total for elective part			1080	36
3. OTHER TYPES OF TRAINING				
1	Practical training	2	90	3
2	Preparation and defense of thesis	3	180	6
Total			270	9
Total on specialty			2700	90

Annotations educational plan disciplines

1. STANDARD ACADEMIC DISCIPLINES

Intellectual Property. The course provides the theoretical basis for the formation of the system of intellectual property, especially the development of industrial property, copyright and related rights, current commercialization of intellectual property, international cooperation in this area and the formation of the institute of intellectual property in Ukraine.

Agricultural land and environmental law. Academic discipline aims at exploring the conditions and procedure creation and functioning of agrarian relations, issues of land ownership, conditions and procedures for the acquisition and use of land, implementation of land rights and limitations of land rights, environmental rights.

Methodology and organization of scientific research. Academic discipline involves the disclosure of the role of science and research in the modern world, studying theoretical bases of the methodology of research activity, certain types of work on technology implementation research requirements and the basic rules of writing and protection.

Agricultural extension. Academic discipline aims to theoretical knowledge and practical skills for development of agricultural extension services in Ukraine, to master the basics of information and consultancy activities, its programs, models, methods, technologies.

Planning information and consultation programs in extension The course involves the study of information and consultation programs in their planning to meet the needs of agricultural production and the public to raise the level of knowledge, innovation, competitive production development in extension.

Organization of information and consultation activities. Academic discipline aims to study the theory and practice of information and consultation activities in the world and features its formation and functioning in Ukraine, organization extension services firm, basic principles and methods of management, financing, staffing and consultation process, licensing and certification extension activities.

Consulting management in agriculture. 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.

Fundamentals of information technology in extension. The course provides theoretical knowledge of information systems, management, expert systems, decision support, information technology, distance learning, interactive, electronic and practical skills in the extension of their application, study the structure of such systems and their information, technical, programmatic, organizational and methodological support, the use of the electronic system extension - e-Extension in Ukraine.

Legal support in extension. The course provides for the acquisition of theoretical knowledge and practical skills of organizational and legal support in extension, the creation of advisory services consulting firm.

Organisation of trainings in extension. Academic discipline involves exploring the theory and methodology of adult education, learning teaching methods, organization of training events and feedback evaluation.

Public relations for consulting. Academic discipline aims to explore theoretical and methodological and practical issues of public relations in a market economy and its role in consulting, technology concept of the public and their use in crisis situations.

Strategical modeling and forecasting extension. Academic discipline provides theoretical and practical knowledge of modeling and forecasting extension, identify the most pressing problems and determine on this basis the main directions of development of information and consultation services.

2. ELECTIVE ACADEMIC DISCIPLINES

2.1. Disciplines offered by University

Agrarian policy. Purpose of the discipline – the mastery of theoretical and methodological bases of formation and implementation of agricultural policies, ability to assess its effectiveness and justify the choice of certain measures of state regulation.

Business foreign language. The course involves the formation of Competence in Business English skills in the area of extension.

Extension in agribusiness. Academic discipline aims to develop modern knowledge and practical skills in advisory activity in the field of agribusiness as an independent, at the risk of the production of agricultural products, works, information and consultancy services for profit, development and evaluation of agribusiness, farm farms, farm house, etc. carried out by individuals and legal persons registered as subjects of agricultural business in the manner prescribed by law.

International extension. Academic discipline provides theoretical and practical knowledge about the role of extension services in developed countries, its programs, methods and models of development, peculiarities of information and consultation activities in terms of climate change on the Earth.

2.2. Disciplines offered by students

Extension to agricultural service cooperatives. The course aims to provide theoretical knowledge and practical skills of organization extension service cooperatives in the countryside, order creation service cooperative, its effective operation.

Innovation activity. Academic discipline involves mastering the innovative development of enterprises and the acquisition of practical skills for the development of risk management in order to optimize the level of risk in the innovation enterprise.

Ethics extension activity. Discipline involves the formation of a system of theoretical and practical knowledge of rules of extension activity, business and diplomatic protocol, modern methods and business rules adopted in the world.

Extension for social development in rural areas. The course provides knowledge to improve the quality of life of farmers, their social security, and global experience of extension for the development of rural social sphere, information and consultation of the community, organizational and economic measures to development of social problems of the rural population of children, youth and families to ensure integrated and sustainable rural development.

Extension in agricultural service. Academic discipline provides specific skills on organization of extension, planning and management in the field of industrial maintenance of agricultural enterprises, extension software for improving economic relations of production and services serving agriculture of Ukraine.

Home Economics. The course provides knowledge on the specifics of the principles of doing home economics, planning and optimization of the family budget, forecasting the inflation rate, the calculation of real income bank deposits and evaluate credit applications of health and pensions, healthy food and recreation, home improvement, home economics.

Documentation in extension. Academic discipline aims to acquaint with the requirements of new laws, regulations and standards of the latest trends of the office, ordering documentation provide practical skills for creating and documentation in the information and consultation of the agricultural sector.

**Master's course
in specialty "MANAGEMENT OF INNOVATIVE ACTIVITY"
branch of knowledge "Specific categories"**

Form of Training, Licensed number of persons:	
– Full-time	25 persons
Duration of training	
– Full-time educational and professional program	1,5 years
Credits:	
– educational and professional program	90 ECTS
Language of training	Ukrainian
Qualification of graduates:	Master of Management of innovative activity

The concept of training

The urgency of masters preparing of specialty 8.18010012 "Management of innovative activity" of direction "Specific categories" due to the fact that modern achievements of Ukraine, in term of international dimension of economic competitiveness, level of development and especially the efficiency of the national innovation system, are not sufficient to ensure the development of domestic economy, therefore, 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.

Areas of employment for graduates

Master of specialty "Management of innovative activity" can hold positions as managers of enterprises and organizations, in counseling centers, consulting organizations, innovative branches of the central government and regional authorities, innovative funds, innovative financial-credit institutions, scientifically-productional and technical complexes, financially- industrial groups, 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: CJSC "Institute of innovation providing", NAAS of Ukraine, LLC "Kernel-Trade", association with additional responsibility "Terezine", farmer economy "Nina", separated subdivision of NULES of Ukraine, LLC "Companies with foreign investments "Auris" and others.

Proposed Topics for Master Theses

1. Economic methods managing innovative activities of companies.
2. Formation of competitive advantages in innovative activities of the company.
3. Information systems in the compagne's innovation management.
4. Formation the strategy of innovative development of enterprises
5. Management commercialization of innovative products the agricultural sector.

6. Management logistics costs of enterprises in the implementation of innovative enterprises.
7. Management of international innovation projects.
8. Management of innovation development personnel

Academic rights of applicants entering Master course

In addition to the specialty "Management of innovative activity" bachelors from different areas of training can continue teaching the field of knowledge 1801 "Specific categories":

- 8.18010004 "Extension service";
- 8.18010009 "Stockbroking";
- 8.18010010 "Quality, Standardization and Certification";
- 8.18010018 "Administrative Management";
- 8.18010020 "Management of Educational Institution";
- 8.18010021 "Pedagogy of Higher School".

Curriculum of Master training in specialty "Management of innovative activity" Educational and professional Master's program

№	Name of Academic Discipline	Semester	Volume	
			hours	credits ECTS
1. STANDARD ACADEMIC DISCIPLINES				
1	The methodology of scientific research	1	90	3
2	Economics of innovative enterprise	1	120	4
3	The System analysis and acceptance innovative decisions	3	90	3
4	Innovation Management	1	150	5
5	Creative management	2	90	3
6	Financial management	1	90	3
7	Intellectual Property	1	90	3
8	Technology transfer	2	120	4
9	Marketing innovation	3	90	3
10	Strategic management of innovative development	3	120	4
11	Information systems in innovation activity	2	90	3
12	Management of innovation projects	2	120	4
Total for standard part			1260	42
2. ELECTIVE ACADEMIC DISCIPLINES				
2.1. Disciplines offered by University				
1	Business foreign language	1	90	3
2	International Management	3	90	3
3	Agrarian policy	2	90	3
4	Investment management	2	120	4
Total (Disciplines offered by University)			390	13
2.2. Disciplines offered by students				
1	Risks management in innovative activity	2	120	4
2	Logistic support for innovative activity	2	120	4
3	Psychology of the innovative activity	1	90	3
4	Quality management	3	120	4
5	Management of the organizational and production systems	3	120	4
6	Consulting in innovative activity	3	120	4
Total (Disciplines offered by students)			690	23
3. OTHER TYPES OF TRAINING				
1	Production practice	2	180	6

№	Name of Academic Discipline	Semester	Volume	
			hours	credits ECTS
2	Preparation and defense of master's work	3	180	6
Total			360	12
Total on specialty			2700	90

Annotations educational plan disciplines

1. STANDARD ACADEMIC DISCIPLINES

The methodology of scientific research. The course involves review with the methodology of scientific research, forming the ability to apply it in practice; organize research activities in the forms of research: experimental, theoretical, historiographical, comparative analysis; use mathematical methods and methods of statistical analysis of scientific data.

Economics of innovative enterprise. 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.

The System analysis and acceptance innovative decisions. The course intends to form a system of knowledge about modern methods of systems research in the area of economic management, as well as students get practical skills on how to use the modern development methods and innovative decision making under uncertainty and risk purposes.

Innovation management. The course involves the formation of an integrated system of knowledge on innovations and mechanism of management, getting skills of management of innovation processes in the enterprise, industry region and country in view of the major trends in the global innovation and technological development.

Creative management. The course aims to generate innovative thinking, mastery of instruments of creative innovative approach to solving problems, acquiring knowledge and skills in the development of creative environment and creating the creative organization; the promotion of innovative thinking of leaders, business directions of designing and developing business ideas.

Financial management. The course involves the examination of the main ways of solution of issues of the organization of financial operations, review with the specifics of operation and cash flows methods and techniques of financial management for the implementation of professional management of financial assets of industrial and economic activity.

Intellectual property. The course aims to acquire knowledge and practical skills in the field of protection and use of intellectual property; introduce the international system of intellectual property protection, legal protection of inventions, utility models, industrial designs, trademarks, service marks, appellations of origin, trade name, trade secret.

Technology transfer. The course aims to mastering the knowledge and practical skills in the field of technological audit, technology transfer, introduction to economic circulation of intellectual property rights; familiarization with the content and peculiarities of technology commercialization processes, especially the management of intellectual property in the Internet age.

Marketing innovation. The course involves the acquisition of theoretical knowledge in sphere of marketing of innovation and practical skills in relation to forming of the marketing mix for innovation in the market; review with the development of strategic

marketing and innovative software development company in a dynamic market environment, the process of evaluating the commercial prospects of innovative product.

Strategic management of innovative development. The course aims to 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 innovative activity enterprise; exploring models and process innovation

Information systems in innovation activity. The course aims to involves mastering the knowledge of modern information technology, the skills and the ability to use their innovation management; review with the systems of business process management (Business-Process Management), automated systems business process management (Work Flow), protection of information resources in innovation.

Management of innovation projects. Training course aims to develop the knowledge and skills to manage innovative projects using the tools in the management of innovative projects, the examination of innovative projects and programs; familiarization with international and national standards for project management, process of examination of innovative projects and solutions.

2. ELECTIVE ACADEMIC DISCIPLINES

2.1. Disciplines offered by University

Business foreign language. Academic discipline provides the ability to form Competence in Business English skills in the management of innovation processes; introduces the communication peculiarities of business English in the management of innovation processes.

International Management. The course aims to give students theoretical knowledge and practical skills in the management of international economic activities of enterprises; to familiarize with the formation of a marketing strategy for financing exports of developed countries, particularity of the innovative activity of international organizations.

Agrarian policy. Purpose of the discipline - the mastery of theoretical and methodological bases of formation and implementation of agricultural policies, ability to assess its effectiveness and justify the choice of certain measures of state regulation.

Investment management. The course aims to give to students studying the forms and mechanisms of investment activity of the enterprise to ensure the effective development and constant growth of its market value; acquaintance with investment process and types of investment cycle, the main sources of financing investment projects, legislative regulation of investment activity in Ukraine.

2.2. Disciplines offered by students

Risk management in innovative activity. Purpose of the discipline - mastering the latest knowledge about risk management in innovation and the acquisition of practical skills for the development of risk management in order to optimize the level of risk in the innovation enterprise; acquaintance with the degree of incorporation of the goals and interests of the various stakeholders in the current economic development strategy in international markets.

Logistical support of innovative activity. Course will help in the formation of modern system of knowledge about the nature and content of logistic support innovation, in acquiring practical skills for making logistical support innovation, evaluation and selection of the optimal solution by initial conditions conducting logistics audit on innovation to ensure the efficient operation of the enterprise.

Psychology of innovative activity. Academic discipline aims to provide for future professionals the knowledge, skills concerning the basics management of individual and collective activities of different types (academic, industrial, in a game, etc.) to ensure its given parameters taking into account the existing restrictions with the ability to change human characteristics by applying the methods of psychology innovations search for means to improve the effectiveness of human labor in the implementation of innovations.

Management of quality. Academic discipline contributes to the formation of knowledge and skills in quality management of innovative activity of the enterprise; acquaints with a system of quality innovative companies, certification and auditing quality in the enterprise, the World experience on quality management.

Management of organizational and production systems activity. Academic discipline aims to provide to students basic categories of systems theory, their application in the formation and effective functioning of the police, its innovation and production potential in market conditions; acquaint with the development of improved methods of management and management decisions aimed at efficient use of productive and innovative potential OPS.

Consulting in innovative activity. The course promotes in formation skills in consulting services, mastering the methods of diagnosing problems of attracting workers and ways to change processes, acquiring skills of future managers advising on innovation and organizational development; acquaints with direction of evaluation results in innovation consulting the economic and social impact.

Environmental management. The course aims to provide students with theoretical knowledge and practical skills in environmental management companies; reveals the features of environmental management, organizational aspects of planning, provision and prepare environmental-oriented personnel management, environmental management in terms of international cooperation.

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MASTER CURRICULA AND TRAINING PROGRAMS

2015-2016
academic year

Submitted 13.08.15
Circulation 40 copies

Format 60×84 1/8
Order № 7638

Design, layout, prototyping, and printing is performed
by editorial-publishing department of NULES of Ukraine
03041, Kyiv, provulok Silskohospodarskyi, 4

