

Educational and professional program "Plant Protection and Quarantine"

No.	Name disciplines
3rd year	
1.	Viral diseases plants
2.	Geography spread quarantine organisms
3.	Protection floral, decorative and medical plants
4.	Quarantine pests and neutralization quarantine plant products
5.	Methods trial means protection plants
6.	Method agrochemical research
7.	Microbial drugs for rural farms
8.	Seed production
9.	Pathology seed agricultural plants
10.	Forecast development diseases agricultural cultures
11.	Radiobiology
12.	Agricultural rodentology
13.	Symbiotic interactions plants
14.	Toxicology pesticides and biosafety in protection plants
15.	Phytoncidology
16.	Diseases floral ,decorative and medical plants
17.	Chemical interaction plants
18.	Harmful adventitious organisms
4th year	
1.	Biotechnology
2.	Using methods cultivation in in vitro in protection plants
3.	Genetic resource plants
4.	Ecological protection agroecosystem and agroecology
5.	Ecologically safe technology in protection plants
6.	Protection floral , decorative and medical plants
7.	Protection plants from ticks and nematode
8.	Immunity plants
9.	Methods analysis and control surrounding environment
10.	Methods review and examinations lenses regulation
11.	International phytosanitary standards
12.	Monitoring pests agricultural cultures
13.	Seed production
14.	Organic gardening
15.	Foundations biological protection plants from pests
16.	Protection nature
17.	Forecast development diseases agricultural cultures
18.	Forecast numbers pests agricultural cultures
19.	Programming harvest at protection plants
20.	Rodentology
21.	World agricultural technologies with basics protection plants
22.	Agricultural rodentology
23.	Stability plants to biotic stressors

21.	World agricultural technologies with basics protection plants
22.	Agricultural rodentology
23.	Stability plants to biotic stressors
24.	Modern concepts nature management
25.	Theoretical foundations biomethod
26.	Technology growing and using organisms in biological protection plants
27.	Technology protection gardens
28.	Technology storage and processing products crop production
29.	Technology Internet of Things (IoT) in rural economy
30.	Management environmental protection activity and protected area case
31.	Diseases floral , decorative and medical plants
32.	Digital technology (by professional direction)



FOUNDATIONS SCIENTIFIC RESEARCH IN PLANT PROTECTION

Educational program	Educational and professional program "Plant Protection and Quarantine"
Specialty	202 Plant Protection and Quarantine
Level higher education	first (bachelor's) level
Teachers	Candidate of Biological Sciences Oksana Mayorova
Language teaching	Ukrainian
Chair	Botanists and Zoology
Amount	3 loans ECTS
Course	2 nd year
Semester of teaching	4 th semester
Summary form control	credit
Link on the syllabus	https://tnpu.edu.ua/navchannya/syllabusy/bakalavr/him-bio/Osnovy_naukovyh_dosliren_u_zahysti_roslyn.pdf
Abstract of the discipline	Training of plant protection specialists involves: the ability to conduct field and laboratory experiments at a high scientific and methodological level to study the biological characteristics of harmful organisms and the effectiveness of plant protection products, and based on the analysis of the obtained experimental data, predict the degree of harmfulness of pests. The academic discipline "Fundamentals of Scientific Research in Plant Protection" allows you to perform experimental research, provided bachelor's degree, Master's degree and others scientific by robots and evaluate the results of these studies. The latter is facilitated by studying the basics of statistical processing of research results. Goal educational disciplines – study main stages of planning experiments, choosing the topic and objects (plants, harmful organisms) of a plant protection experiment.



VIRAL DISEASES OF PLANTS

Educational program	Educational and professional program "Plant Protection and Quarantine"
Specialty	202 Plant Protection and Quarantine
Level higher education	first (bachelor's) level
Teacher	Doctor of Agricultural Sciences, Professor Svitlana Pyda
Language of instruction	Ukrainian
Chair	Botanists and Zoology
Amount	3 loans ECTS
Course	3 rd year
Semester of teaching	6 th semester
Summary form control	credit
Link on the syllabus	
Annotation disciplines	Studying the discipline "Viral diseases of plants" provides formation in applicants higher education knowledge about viruses and viroids as pathogens of agricultural crops, their structure, type of symmetry, morphological features, cultivation and reproduction, nomenclature and taxonomy, the influence of environmental factors on the strain diversity of phytoviruses, methods of combating plant viruses. The main objectives of the discipline are: studying the signs (symptoms) and etiology (reasons) viral diseases plants; vectors pathogens these diseases, ways spread of viral infection, harmfulness, patterns of occurrence and development of epiphytotic and their prevention. Students master techniques and methods for identifying pathogens, assessing the extent of plant damage, as well as methods obtaining virus-free planting and seed material.



GEOGRAPHY SPREAD QUARANTINE ORGANISMS

Educational program	Educational and professional program "Plant Protection and Quarantine"
Specialty	202 Plant Protection and Quarantine
Level higher education	first (bachelor's) level
Teacher	Candidate of Biological Sciences, Associate Professor Liubov Shevchyk
Language of instruction	Ukrainian
Chair	Botanists and Zoology
Amount	3 loans ECTS
Course	3 rd year
Semester of teaching	5 th semester
Form final control	credit
Link on the syllabus	
Abstract of the discipline	The course "Geography of the Distribution of Quarantine Organisms", studying the areas of quarantine harmful organisms, is designed to ensure that applicants of the first (bachelor's) level of higher education master knowledge of the geography of the distribution of adventitious harmful organisms for the purpose of their identification and express diagnostics , and to form in students knowledge about the spatial distribution of quarantine harmful organisms on the globe and in its individual regions, the main reasons and patterns of such distribution. Student work on topics that are being studied according to with working program, is being reduced to study of the main causes and patterns of distribution of harmful organisms. Using the principle of comparative geographical analysis of habitats, fauna, flora, vegetation, animal world of the Earth, features of distribution and spatial organization of quarantine harmful organisms in different regions of the globe, the role of individual natural and anthropogenic factors in modern and possible future placement quarantine harmful organisms.



PROTECTION FLOWER, DECORATIVE AND MEDICINAL PLANTS

Educational program	Educational and professional program " Plant Protection and Quarantine"
Specialty	202 Plant Protection and Quarantine
Level higher education	first (bachelor's) level
Teacher	Candidate of Biological Sciences, Associate Professor Natalia Hertz
Language teaching	Ukrainian
Chair	Botanists and Zoology
Amount	3 loans ECTS
Course	3 rd year
Semester teaching	5 th semester
Summary form control	credit
Link on the syllabus	
Abstract of the discipline	The purpose of the academic discipline is to study and master a set of knowledge and skills related to the effective protection of various categories plants, in particular floral, decorative and medicinal. The course covers both theoretical and practical aspects related to the detection, prevention and treatment of diseases and pests that may affect these plant species. Applicants will receive knowledge about various protective strategies and methods, used in agriculture and landscaping design to maintain the health and aesthetic appearance of plants. The course includes the study of current trends in the use of biological, chemical and physical methods protection, and also aspects of the choice and use of preparations for the treatment and restoration of plants. Particular attention is paid to the study of the influence of various factors on development plants and definition optimal strategies for maintaining their health and decorativeness. Course aimed at developing professional application skills in students methods protection and preservation vegetable material.



QUARANTINE PESTS AND NEUTRALIZATION OF QUARANTINED PLANT PRODUCTS

Educational program	Educational and professional program " Plant Protection and Quarantine"
Specialty	202 Plant Protection and Quarantine
Level higher education	first (bachelor's) level
Teacher	Candidate of Biological Sciences, Associate Professor Natalia Herts
Language teaching	Ukrainian
Chair	Botanists and Zoology
Amount	3 loans ECTS
Course	3 rd year
Semester teaching	5 th semester
Summary form control	credit
Link on the syllabus	
Abstract of the discipline	The course "Quarantine pests and neutralization of quarantined plant products" is designed to provide students of the first (bachelor's) level of higher education with familiarization and study of the species composition of quarantine pests that occur in the territory of Ukraine and are potentially dangerous. The student's work on the topics studied in accordance with the work program is reduced to considering the range of feeders of these pests, the biological and ecological features of their development and ways to neutralize quarantined plant products. It involves studying the history of the creation of the Lists of quarantine organisms (List A1 - absent in the territory of European countries and List A2 - species that occur in one or more European countries in order to prevent their spread. National List of quarantine organisms). As well as: disinfection of quarantined products (fumigation, history of disinfection). Fumigants and their substitutes. Disinfection of plant products, vehicles.



METHODS TRIAL PLANT PROTECTION PRODUCTS

Educational program	Educational and professional program "Plant Protection and Quarantine"
Specialty	202 Plant Protection and Quarantine
Level higher education	first (bachelor's) level
Teacher	Candidate of Agricultural Sciences, Associate Professor Margaryta Kryzhanovska
Language teaching	Ukrainian
Chair	Botanists and Zoology
Amount	3 loans ECTS
Course	3 rd year
Semester of teaching	6 th semester
Summary form control	credit
Link on the syllabus	
Abstract of the discipline	The course "Methods of Testing Plant Protection Products" provides professional training for bachelors in the field of protecting agricultural crops from harmful organisms, which is one of the leading subjects in the professional training of specialists for agriculture. Study disciplines will allow agricultural production specialists to know the basic methods of conducting experiments in plant protection; general principles and stages planning experiments and requirements for the formulation and conduct of research; the system of relationships between different species in agrophytocenoses and the competitive ability of cultivated plants; rules for the preparation of research documentation, drawing up a scientific report, and recommendations for production; methods accounting harmful organisms; methods assessments efficiency pesticides.



METHOD AGROCHEMICAL RESEARCH

Educational program	Educational and professional program "Plant Protection and Quarantine"
Specialty	202 Plant Protection and Quarantine
Level higher education	first (bachelor's) level
Teacher	Candidate of Biological Sciences, Associate Professor Oksana Matsiuk
Language of instruction	Ukrainian
Chair	Botanists and Zoology
Amount	3 loans ECTS
Course	3 rd year
Semester of teaching	6 th semester
Summary form control	credit
Link on the syllabus	
Abstract of the discipline	The purpose study disciplines "Method agrochemical research" is to form theoretical knowledge and practical skills in higher education students regarding the basics of remote monitoring, planning, development of agrochemical research methods, systematization, analysis of the results obtained and provision of recommendations for optimizing the use of fertilizers as an effective factor in increasing productivity agricultural crops. Applicants master the planning of agrochemical research; the methodology and technique of conducting biological: field, vegetation experiments; the methodology and technique of conducting agrochemical laboratory research soil, plants and fertilizers; types, monitoring methods mineral feeding plants; selection methods, their advantages and disadvantages, methods and carrying out statistical processing of experimental data.



MICROBIAL MEDICATIONS FOR AGRICULTURE

Educational program	Educational and professional program "Plant Protection and Quarantine"
Specialty	202 Plant Protection and Quarantine
Level higher education	first (bachelor's) level
Teacher	Doctor of Agricultural Sciences, Professor Svitlana Pyda
Language of instruction	Ukrainian
Chair	Botanists and Zoology
Amount	3 loans ECTS
Course	3 rd year
Semester of teaching	6 th semester
Summary form control	credit
Link on the syllabus	
Abstract of the discipline	Study disciplines "Microbial drugs for agriculture" provides formation in applicants higher education knowledge about microbial preparations based on nitrogen-fixing and phosphate-mobilizing bacteria, used in agriculture to improve mineral feeding plants and stimulation their growth, the role of microbes drugs in protection plants from pests and diseases The main objectives of the discipline are: studying the theoretical foundations of the use of microorganisms to improve the biological fixation of molecular nitrogen, the breakdown of poorly soluble phosphorus compounds in the soil, potassium nutrition, and the control of plant pests and diseases; familiarization with methods allocation, selection, cultivation, testing of biological activity of producer strains; production technologies and application of microbial drugs. Students master receptions and methods assessing the effectiveness of the use of microbial preparations.



SEED PRODUCTION

Educational program	Educational and professional program "Plant Protection and Quarantine"
Specialty	202 Plant Protection and Quarantine
Level higher education	first (bachelor's) level
Teacher	Candidate of Agricultural Sciences, Margaryta Kryzhanovska
Language teaching	Ukrainian
Chair	Botanists and Zoology
Amount	3 loans ECTS
Course	3 rd year
Semester of teaching	5 th semester
Summary form control	credit
Link on the syllabus	
Abstract of the discipline	Educational discipline "Seed production" provides students study issues of modern technologies for growing, collecting, cleaning and storing high-quality seeds of agricultural crops; state and international legislative and regulatory framework for the production, sale and use of seeds of agricultural crops; methods for determining the sowing qualities of seeds. The future specialist must know the rules of intra-farm control over the varietal, sowing and yield qualities of seeds of agricultural crops at all its stages and carry out state inspection of seeds of agricultural crops. cultures as systems control production, realization and using seed.



PATHOLOGY OF AGRICULTURAL PLANT SEEDS

Educational program	Educational and professional program "Plant Protection and Quarantine"
Specialty	202 Plant Protection and Quarantine
Level higher education	first (bachelor's) level
Teacher	Candidate of Agricultural Sciences, Margaryta Kryzhanovska
Language teaching	Ukrainian
Chair	Botanists and Zoology
Amount	3 loans ECTS
Course	3 rd year
Semester of teaching	6 th semester
Summary form control	credit
Link on the syllabus	
Abstract of the discipline	Studying the discipline "Pathology of agricultural plant seeds" will allow students to form a system of professional knowledge regarding the symptoms of pathological changes in the seeds of agricultural crops; the influence of diseases on morphophysiological changes and sowing qualities of seed material; establishing the species composition of disease pathogens, their morphological features; studying the causes and patterns that cause damage to the generative organs of plants by phytopathogens; selecting methods and means of phytopathological examination of agricultural crop seeds in accordance with the current National DSTU, international standards and the latest scientific developments; planning measures to prevent infection of seeds with phytopathogens and improve their sowing qualities and reduce damage and injury to agricultural crop seeds.



FORECAST OF THE DEVELOPMENT OF DISEASES OF AGRICULTURAL CROPS

Educational program	Educational and professional program "Plant Protection and Quarantine"
Specialty	202 Plant Protection and Quarantine
Level higher education	first (bachelor's) level
Teacher	Candidate of Pedagogical Sciences, Associate Professor Natalia Moskalyuk
Language teaching	Ukrainian
Chair	Botanists and Zoology
Amount	3 loans ECTS
Course	3 rd year
Semester of teaching	6 th semester
Summary form control	credit
Link on the syllabus	
Abstract of the discipline	The course "Forecast of the Development of Diseases of Agricultural Crops" is designed to ensure that applicants of the first (bachelor's) level of higher education acquire the knowledge, skills and abilities of professional activity capable of professionally solving production issues of cost-effective and environmentally safe protection of agricultural, medicinal, ornamental crops, forest plantations, etc. from harmful organisms and diseases. The purpose of the course is to form in students professional knowledge and skills in determining the spread and development of diseases, the feasibility of carrying out active measures to protect individual agricultural crops from diseases, and the phytosanitary condition of agricultural crops. The subject of the discipline is the study of diseases of agricultural crops.



RADIOBIOLOGY

Educational program	Educational and professional program "Plant Protection and Quarantine"
Specialty	202 Plant Protection and Quarantine
Level higher education	first (bachelor's) level
Teacher	Candidate of Biological Sciences, Associate Professor Iryna Chen
Language teaching	Ukrainian
Chair	General Biology and Methods Teaching Natural Sciences Disciplines
Amount	3 loans ECTS
Course	3 rd year
Semester of teaching	5 th semester
Summary form control	credit
Link on the syllabus	
Abstract of the discipline	The purpose study course there are formation in students knowledge about types of ionizing radiation and their interaction with substances of cells of living organisms, radiosensitivity and biological effects of radioactive radiation in plants, animals and humans, sources of radionuclides and their migration in the natural environment, use of ionizing radiation in various spheres of human activity, radiation protection and basics of radiation hygiene, basic principles of organizing the introduction of agriculture on contaminated radionuclides territories, as well as the ability to apply the acquired theoretical knowledge in practical activities, in particular, to use dosimetry and radiometry methods to assess the radiation state of the environment, conduct from ahoy from reduction content radionuclides in products crop production.



AGRICULTURAL RODENTOLOGY

Educational program	Educational and professional program "Plant Protection and Quarantine"
Specialty	202 Plant Protection and Quarantine
Level higher education	first (bachelor's) level
Teacher	Candidate of Biological Sciences, Associate Professor Liubov Shevchyk
Language of instruction	Ukrainian
Chair	Botanists and Zoology
Amount	3 loans ECTS
Course	4 th year
Semester teaching	7 th semester
Form final control	exam
Link on the syllabus	
Abstract of the discipline	Course "Agricultural Rodentology" called to provide mastery applicants the first (bachelor's) level of higher education in a specialized field terminology, methods detection and recording of rodent pests field, vegetable, fruit crops, food supplies and livestock, as well as rodents that damage meadows and pastures. Based on a multi-year, annual or short-term forecast, be able to justify decision of organizations and optimization protective measures against these animals. Student work on topics studied in accordance with work program, involves the study of morphological, anatomical, physiological and ecological features of representatives of this group of animals. Mastering modern classification, formation of skills in identifying and accounting for mouse-like rodents, assessment of economic and epidemiological value animals and events struggle with these pests.



SYMBIOTIC INTERACTIONS OF PLANTS

Educational program	Educational and professional program "Plant Protection and Quarantine"
Specialty	202 Plant Protection and Quarantine
Level higher education	first (bachelor's) level
Teacher	Candidate of Biological Sciences, Associate Professor Mariana Prokopiak
Language teaching	Ukrainian
Chair	Botanists and Zoology
Amount	3 loans ECTS
Course	3 rd year
Semester of teaching	6 th semester
Summary form control	credit
Link on the syllabus	
Abstract of the discipline	Formation of ideas about the structure of plant-microbial communities of the root zone of plants and the processes that underlie plant-microbial interactions; study of the role of endophytes in providing plants with macro- and microelements, production of biologically active substances. Study of the dependence of the composition of the phyllosphere and phyllosphere microbiota on biotic and abiotic factors; mechanisms of influence of rhizosphere microorganisms on plant growth, mechanisms of interaction between legume plants and nodule bacteria. Formation of ideas about nodule nitrogen fixation and use of the possibilities of legume-rhizobial symbiosis in agriculture. Study of the interaction of diazotrophs with plants as one of the main mechanisms of cycle regulation nitrogen in the biosphere and their spread in soil. Research nitrogen-fixing potential non-legumes plants.



PESTICIDE TOXICOLOGY AND BIOSAFETY

Educational program	Educational and professional program "Plant Protection and Quarantine"
Specialty	202 Plant Protection and Quarantine
Level higher education	first (bachelor's) level
Teacher	Candidate of Biological Sciences, Associate Professor Oleksandr Kononchuk
Language teaching	Ukrainian
Chair	Botanists and Zoology
Amount	3 loans ECTS
Course	3 rd year
Semester of teaching	6 th semester
Summary form control	credit
Link on the syllabus	
Abstract of the discipline	The course "Pesticide Toxicology and Biosafety in Plant Protection" is designed to ensure that first-year (bachelor's) higher education students acquire knowledge about the physical and chemical properties of toxicants (pesticides), the variety of their effects on living organisms, as well as on other components of agrocenoses and the natural environment. The course also covers the study of signs of poisoning and methods of prevention and treatment in case of poisoning. The main goal of the discipline is to study the harmful effects of pesticides on insects, mites, fungi, bacteria, weeds and the crop-producing crop protected by pesticides, as well as to study the effect of pesticides in general on agrobiocenoses and the natural environment. It is necessary to be able to solve problems of protecting agrocenoses, select optimal groups of pesticides with the least negative impact on them, the environment and humans, and provide primary pre-medical aid in cases of pesticide poisoning.



PHYTONCIDOLOGY

Educational program	Educational and professional program "Plant Protection and Quarantine"
Specialty	202 Plant Protection and Quarantine
Level higher education	first (bachelor's) level
Teacher	Candidate of Biological Sciences, Associate Professor Oksana Matsiuk
Language of instruction	Ukrainian
Chair	chair botanists and zoology
Amount	3 loans ECTS
Course	3 rd year
Semester of teaching	5 th semester
Summary form control	credit
Link on the syllabus	
Abstract of the discipline	The purpose educational disciplines "Phytoncidology" there are to learn skills of using phytoncidal medicinal plants and their phytoncides in various areas of economic activity, in particular phytoncidal method of plant protection and allelopathy, closed and open phytodesign, medicine and veterinary medicine, feed production, beekeeping, immunity, food, cosmetic, perfume and other industries, etc. Study of the discipline "Phytoncidology" provides the formation of higher education applicants education knowledge about phytoncide-therapeutic properties of trees, shrubs, perennial and annual herbs, making skills study plants, which contain volatile and non-volatile biologically active substances phytoncides and affect harmful and beneficial organisms, assimilation of their biochemical composition, introduction of wild plants into culture, cultivation, harvesting, storage, processing of raw materials, use in different industries economic complex.



DISEASES OF FLOWERING, ORNAMENTAL AND MEDICINAL PLANTS

Educational program	Educational and professional program "Plant Protection and Quarantine"
Specialty	202 Plant Protection and Quarantine
Level higher education	first (bachelor's) level
Teacher	Candidate of Biological Sciences, Associate Professor Natalia Herts
Language of instruction	Ukrainian
Chair	Botanists and Zoology
Amount	3 loans ECTS
Course	3 rd year
Semester of teaching	5 th semester
Summary form control	credit
Link on the syllabus	
Abstract of the discipline	The educational discipline aims to study the characteristics and principles of diagnosis, prevention and treatment of diseases that can affect various types of plants, including flower, ornamental and medicinal. The course is focused on providing theoretical knowledge and practical skills in the field of plant protection from diseases, which is an important element in agriculture, landscape design. Applicants will receive information about various pathogenic microorganisms, fungi and other factors that cause plant diseases, as well as learn to distinguish their symptoms and determine identification methods. The course covers the issues of effective prevention and the use of biological, chemical and physical protection methods. The course is aimed at developing competencies in the detection, prediction and implementation of measures to control diseases of flower, ornamental and medicinal plants.



CHEMICAL INTERACTION OF PLANTS

Educational program	Educational and professional program "Plant Protection and Quarantine"
Specialty	202 Plant Protection and Quarantine
Level higher education	first (bachelor's) level
Teacher	Candidate of Biological Sciences, Associate Professor Oksana Matsiuk
Language of instruction	Ukrainian
Chair	Botanists and Zoology
Amount	3 loans ECTS
Course	3 rd year
Semester of teaching	5 th semester
Summary form control	credit
Link on the syllabus	
Abstract of the discipline	The aim of the course "Chemical Interaction of Plants" is to study the function of plant secretion of water-soluble and volatile exometabolites, to establish their chemical composition and influence on the interaction between plants in an inextricable link. their between by yourself and conditions environment, and also their formation in the process of evolution and individual development. Studying the discipline ensures the formation of candidates higher education knowledge about about chemical plant interaction in ecosystems and phytocenoses – physiological and biochemical mechanisms of allelopathy, allelopathic activity and tolerance of plants, soil, processes of plant excretion of substances and their chemical nature, the importance of microorganisms in the allelopathy of higher plants and the importance of chemical interaction in plant production.



HARMFUL ADVENTIVE ORGANISMS

Educational program	Educational and professional program "Plant Protection and Quarantine"
Specialty	202 Plant Protection and Quarantine
Level higher education	first (bachelor's) level
Teacher	Candidate of Biological Sciences, Associate Professor Natalia Herts
Language teaching	Ukrainian
Chair	Botanists and Zoology
Amount	3 loans ECTS
Course	4 th year
Semester of teaching	7 th semester
Summary form control	credit
Link on the syllabus	
Annotation disciplines	Educational discipline directed on study issues introduction of unwanted and harmful species that enter new ecosystems or expand their distribution in existing ones. The course covers theoretical and practical aspects of identification, classification, ecology and management methods of invasive species that can negatively influence on biodiversity, agricultural systems and ecosystems in general. Candidates will gain knowledge about the origin of adventitious species, mechanisms their spread and influence on surrounding environment. The course also includes an analysis of measures and strategies for the control and management of these species, including the use of biological methods, chemical agents, technical techniques and other effective management tools. Particular attention is paid to practical aspects detection, monitoring and prognostication spread adventitious species, as well as developing strategies for their detection and control in different environments. The course is aimed at developing students' skills rational management adventitious organisms in in different ecosystems and agricultural systems.



BIOTECHNOLOGY

Educational program	Educational and professional program "Plant Protection and Quarantine"
Specialty	202 Plant Protection and Quarantine
Level higher education	first (bachelor's) level
Teacher	Doctor of Biological Sciences, Professor Drobyk Nadia
Language teaching	Ukrainian
Chair	General Biology and Methods Teaching Natural Sciences Disciplines
Amount	3 loans ECTS
Course	4 th course
Semester of teaching	7 th semester
Summary form control	credit
Link on the syllabus	
Abstract of the discipline	Formation of theoretical, practical foundations and principles aimed at determining the main biotechnological directions of using the properties of microorganisms, cells, tissues and organs of plants and animals to meet human needs. A feature of the course is its focus on the practical use of the results of fundamental sciences in various branches of human economic activity. The main objective of the course is to master the basic concepts, chemical foundations and technological principles biotechnological productions based on the involvement of theoretical and practical knowledge of related sciences. Biotechnology provides an opportunity to master the basic methods and skills of working with <i>in vitro culture</i> of plants, animal organisms and microorganisms, obtaining transgenic plants, plants resistant to herbicides, diseases, adverse conditions surrounding environment, What necessary for the formation of highly qualified agricultural specialists.



USE OF IN VITRO CULTIVATION METHODS IN PLANT PROTECTION

Educational program	Educational and professional program "Plant Protection and Quarantine"
Specialty	202 Plant Protection and Quarantine
Level higher education	first (bachelor's) level
Teacher	Doctor of Biological Sciences, Professor Nadia Drobyk
Language teaching	Ukrainian
Chair	General Biology and Methods Teaching Natural Sciences Disciplines
Amount	3 loans ECTS
Course	4 th course
Semester of teaching	7 th semester
Summary form control	credit
Link on the syllabus	
	Mastering knowledge of the basic principles of obtaining isolated cells, ensuring their sterility and ability to reproduce; features of the application of in vitro cultivation methods for cells, tissues and plant organs, taking into account the trophic needs of these objects, as well as technological parameters and requirements; callus, suspension cultures, cultures of isolated organs: their obtaining and use; isolated protoplasts: obtaining, cultivating, hybridizing and using in cell breeding and genetic engineering; methods of in vitro cultivation of plant cells; organ culture: obtaining, growing and research; technological foundations of biotechnological production.



PLANT GENETIC RESOURCES

Educational program	Educational and professional program "Plant Protection and Quarantine"
Specialty	202 Plant Protection and Quarantine
Level higher education	first (bachelor's) level
Teacher	Candidate of Agricultural Sciences, Associate Professor Margaryta Kryzhanovska
Language teaching	Ukrainian
Chair	Botanists and Zoology
Amount	3 loans ECTS
Course	4 th year
Semester of teaching	8 th semester
Summary form control	credit
Link on syllabus	
Abstract of the discipline	Course "Genetic resource plants" contributes formation in students knowledge and skills on the scientific foundations of creating and preserving collections of plant genetic resources, forming genetic banks, and introducing gene pool samples plants and effective search and selection collectible samples with the economic and biological characteristics necessary for the breeder. The need to collect and preserve samples of the plant gene pool for current and future generations is also due to the fact that due to the rapid development of scientific and technological progress and environmental problems, many wild species are disappearing and the varietal diversity of cultivated plants is narrowing. At the same time, thanks to the use of new technologies, development genetics, genetic engineering and biotechnology, the value and role of germplasm is significantly increasing. Wild species, ancient local varieties, as well as breeding varieties created by world science over the past hundred years, in their genetic systems carry many valuable genes, their hereditary basis always will be source day off material for creation new generations varieties.



ECOLOGICAL PROTECTION AGROECOSYSTEM AND AGROCENOLOGY

Educational program	Educational and professional program "Plant Protection and Quarantine"
Specialty	202 Plant Protection and Quarantine
Level higher education	first (bachelor's) level
Teacher	Candidate of Biological Sciences, Associate Professor Oksana Matsiuk
Language of instruction	Ukrainian
Chair	Botanists and Zoology
Amount	3 loans ECTS
Course	4 th year
Semester of teaching	7 th semester
Summary form control	credit
Link on the syllabus	
Abstract of the discipline	Goal study disciplines "Ecological protection agroecosystem and agrocnology" consists of in formation in applicants higher education of knowledge of natural resources of beneficial organisms and products of their vital activity for use in environmental protection agroecosystems, highlighting the environmental problems of intensive farming and modern agricultural production, their consequences for nature and human; software sustainable production high-quality and environmentally friendly crop production through preservation and playback natural resources bases agricultural sector and the use of biological methods for protecting crops and plantings of cultivated plants from pests and diseases. The main objectives of the discipline are to conduct biomonitoring of beneficial organisms in field conditions; to familiarize yourself with modern environmentally safe cultivation technologies agricultural products using useful animals and microorganisms and products their vital activity to ensure high productivity, ecological balance and economic efficiency agroecosystems.



ECOLOGICALLY SAFE TECHNOLOGIES IN PLANT PROTECTION

Educational program	Educational and professional program "Plant Protection and Quarantine"
Specialty	202 Plant Protection and Quarantine
Level higher education	first (bachelor's) level
Teacher	Candidate of Biological Sciences, Associate Professor Olexandr Kononchuk
Language teaching	Ukrainian
Chair	Botanists and Zoology
Amount	3 loans ECTS
Course	4 th course
Semester of teaching	7 th semester
Summary form control	credit
Link on the syllabus	
Abstract of the discipline	The course "Environmentally Safe Technologies in Plant Protection" is designed to ensure that students of the first (bachelor's) level of higher education acquire knowledge about modern methods and strategies for plant protection in the context of maintaining environmental sustainability. The academic discipline covers a wide range of topics, including using biological agents, effectiveness of organic pesticides, integrated quantity management pests and other innovative environmentally friendly approaches to plant protection. Participants will have the opportunity to learn the principles of sustainable agricultural production and interaction with the ecosystem, contributing to the reduction of negative impacts agricultural activities on environment. Course also takes into account the ethical aspects of the use of technology in agriculture and emphasizes the importance of a balance between receiving high harvest and preservation natural resources.



PROTECTION OF FLOWERING, ORNAMENTAL AND MEDICINAL PLANTS

Educational program	Educational and professional program "Plant Protection and Quarantine"
Specialty	202 Plant Protection and Quarantine
Level higher education	first (bachelor's) level
Teacher	Candidate of Biological Sciences, Associate Professor Natalia Herts
Language teaching	Ukrainian
Chair	Botanists and Zoology
Amount	3 loans ECTS
Course	4 th course
Semester of teaching	7 th semester
Summary form control	credit
Link on the syllabus	
Abstract of the discipline	The purpose of the academic discipline is to study and master a set of knowledge and skills related to the effective protection of various categories of plants, in particular flower, ornamental and medicinal. The course covers both theoretical and practical aspects related to the detection, prevention and treatment of diseases and pests that can affect these types of plants. Applicants will gain knowledge about various protective strategies and methods used in agriculture and landscape design to maintain the health and aesthetic appearance of plants. The course includes the study of modern trends in the use of biological, chemical and physical methods of protection, as well as aspects of the selection and use of preparations for the treatment and restoration of plants. Special attention is paid to the study of the influence of various factors on the development of plants and the determination of optimal strategies for maintaining their health and decorativeness. The course is aimed at developing in students the skills of professional application of methods of protection and preservation of plant material.



PROTECTION OF PLANTS FROM MITES AND NEMATODES

Educational program	Educational and professional program "Plant Protection and Quarantine"
Specialty	202 Plant Protection and Quarantine
Level higher education	first (bachelor's) level
Teacher	Candidate of Agricultural Sciences, Associate Professor Halyna Holinei
Language teaching	Ukrainian
Chair	Botanists and Zoology
Amount	5 ECTS credits
Course	4 th course
Semester of teaching	7 th semester
Summary form control	credit
Link on the syllabus	
Abstract of the discipline	The course of the academic discipline is designed to ensure that students master a number of features of the biology of ticks and nematodes, the main development cycles and interactions between the parasite and the host, and classification based on modern data. taxonomists, definition main pests mites and nematodes by the nature of damage and the formation of professional skills in protecting agricultural crops from harmful organisms. The goal of the course is to create a systematic approach to understanding parasitic organisms based on knowledge of the structural features, insects; assimilation modern principles taxonomies and animal taxonomy; students' study of crop pests and finding pests by individual signs of damaged plants.



PLANT IMMUNITY

Educational program	Educational and professional program "Plant Protection and Quarantine"
Specialty	202 Plant Protection and Quarantine
Level higher education	first (bachelor's) level
Teacher	Candidate of Pedagogical Sciences, Associate Professor Natalia Moskalyuk
Language teaching	Ukrainian
Chair	Botanists and Zoology
Amount	3 loans ECTS
Course	4 th course
Semester of teaching	8 th semester
Summary form control	credit
Link on the syllabus	
Abstract of the discipline	The course "Plant Immunity" is designed to ensure that candidates master the first (bachelor's) equal higher education with knowledge, skills and abilities specialties, especially the specialty "Plant Protection and Quarantine", must possess not only knowledge, skills and abilities for professional activity in relevant industries, and capable to highly professional solution production questions cost-effective and environmentally friendly protection, medical, decorative cultures, forest plantations etc. The purpose of the course is to provide students with knowledge of the theoretical foundations of plant immunity against diseases and pests and skills with practical their application. Subject disciplines: prevention systems and means of combating specific diseases plants, methods selection plants on stability against diseases and pests.



METHODS OF ENVIRONMENTAL ANALYSIS AND CONTROL

Educational program	Educational and professional program "Plant Protection and Quarantine"
Specialty	202 Plant Protection and Quarantine
Level higher education	first (bachelor's) level
Teacher	Candidate of Geographical Sciences, Associate Professor Iryna Barna
Language teaching	Ukrainian
Chair	Botanists and Zoology
Amount	3 loans ECTS
Course	4 th course
Semester of teaching	8 th semester
Summary form control	credit
Link on the syllabus	
Abstract of the discipline	The course "Methods of Environmental Analysis and Control" is designed to ensure that higher education students master the theoretical and methodological principles of environmental analysis of the quality of the natural environment and clarify the principles of the functioning of the environmental control system; acquire skills in characterizing, assessing and analyzing environmental pollution by economic objects; improve the knowledge system in the context of the sustainable development strategy. The work of a higher education student on the topics studied in accordance with the work program also includes the preparation of practical tasks focused on mastering the methodology and techniques of sampling water, soil, atmospheric air, analyzing the selected samples, determining the quality indicators of environmental components, as well as studying the principles, features of functioning and algorithms of automated systems for monitoring the state and quality of environmental components.



METHODS OF INSPECTION AND EXAMINATION OF REGULATION OBJECTS

Educational program	Educational and professional program "Plant Protection and Quarantine"
Specialty	202 Plant Protection and Quarantine
Level higher education	first (bachelor's) level
Teacher	Candidate of Biological Sciences, Associate Professor Natalia Herts
Language teaching	Ukrainian
Chair	Botanists and Zoology
Amount	3 loans ECTS
Course	4 th course
Semester of teaching	8 th semester
Summary form control	credit
Link on the syllabus	
Abstract of the discipline	The academic discipline is designed to study and deepen the knowledge of applicants in the field of methods, techniques and techniques of inspection and examination of various regulated objects in various fields. The course covers theoretical and practical aspects of procedures and methods used for objective analysis and assessment of regulated objects. Students will receive instrumental skills and the ability to use specialized methods, including measurement, testing, validation and expert assessments. The main emphasis is on understanding the principles and techniques used to determine the compliance of objects with regulations, standards and established regulatory criteria. The course is focused on the development of critical thinking, analytical and communication skills in students for effective interaction with regulated objects in their future professional activities.



INTERNATIONAL PHYTOSANITARY

Educational program	Educational and professional program "Plant Protection and Quarantine"
Specialty	202 Plant Protection and Quarantine
Level higher education	first (bachelor's) level
Teacher	Candidate of Biological Sciences, Associate Professor Oksana Matsiuk
Language of instruction	Ukrainian
Chair	Botanists and Zoology
Amount	3 loans ECTS
Course	4 th year
Semester of teaching	8 th semester
Summary form control	credit
Link on the syllabus	
Abstract of the discipline	While studying the discipline "International Phytosanitary Standards" applicants higher education are getting acquainted with phytosanitary principles of quarantine and plant protection, international phytosanitary security services, regulatory documents used in international trade. Also studied is the code of conduct for the export, transshipment, import and release of biological control agents and other beneficial organisms, and guidelines for phytosanitary certificates. The purpose educational disciplines "International phytosanitary standards" is to deepen knowledge about the application of phytosanitary events in international trade, mastery international standards EPPO.



MONITORING OF PESTS OF AGRICULTURAL CROPS

Educational program	Educational and professional program "Plant Protection and Quarantine"
Specialty	202 Plant Protection and Quarantine
Level higher education	first (bachelor's) level
Teacher	Candidate of Biological Sciences, Associate Professor Liubov Shevchyk
Language of instruction	Ukrainian
Chair	Botanists and Zoology
Amount	3 loans ECTS
Course	4 th year
Semester of teaching	7 th semester
Summary form control	credit
Link on the syllabus	
Abstract of the discipline	The course "Monitoring of pests of agricultural crops" is designed to ensure that applicants of the first (bachelor's) level of higher education master modern methods of detecting and recording pests and a modern system of observing their reproduction in agroecosystems, determining the harmful effect of these animals on cultivated plants, as well as determining economic thresholds of harm, with substantiation of decisions on the organization and optimization of protective measures against pests on the basis of multi-year, annual or short-term forecasts, which are based on the developments of modern scientists in Ukraine and in the world. The student's work on the topics studied in accordance with the work program involves consolidating knowledge on the methodology for detecting and determining the state of populations of harmful organisms; mastering the methodological principles of predicting the development of pest populations based on the main predictors of the forecast; consolidating knowledge on the features of monitoring studies depending on the type of agricultural crop.



SEED PRODUCTION

Educational program	Educational and professional program "Plant Protection and Quarantine"
Specialty	202 Plant Protection and Quarantine
Level higher education	first (bachelor's) level
Teacher	Candidate of Agricultural Sciences, Associate Professor Margaryta Kryzhanovska
Language teaching	Ukrainian
Chair	botanists and zoology
Amount	3 loans ECTS
Course	4 th year
Semester of teaching	7 th semester
Summary form control	credit
Link on syllabus	
Abstract of the discipline	The academic discipline "Seed Production" provides for students to study issues of modern technologies for growing, collecting, cleaning and storing high-quality seeds of agricultural crops; state and international legislative and regulatory framework for the production, sale and use of seeds of agricultural crops; methods for determining the sowing qualities of seeds. The future specialist must know the rules of intra-farm control over the varietal, sowing and yield qualities of seeds of agricultural crops at all its stages and carry out state inspection of seeds of agricultural crops cultures as systems control production, realization and using seed.



ORGANIC GARDENING

Educational program	Educational and professional program "Plant Protection and Quarantine"
Specialty	202 Plant Protection and Quarantine
Level higher education	first (bachelor's) level
Teacher	Candidate of Biological Sciences, Associate Professor Olexandr Kononchuk
Language teaching	Ukrainian
Chair	Botanists and Zoology
Amount	3 loans ECTS
Course	4 th year
Semester of teaching	7 th semester
Summary form control	credit
Link on the syllabus	
Abstract of the discipline	The course "Organic Gardening" is designed to ensure that applicants for the first (bachelor's) level of higher education acquire knowledge about the features of implementing and maintaining organic gardening in soil and climatic conditions. Ukraine, regulatory and legal software, basic principles of varietal politicians, features cultivation and care for the soil and the preservation and restoration of its fertility, ensuring optimal feeding plants, the use of environmentally safe elements of garden protection and other elements of organic production technology in horticulture. Educational discipline contributes development in students skills in managing the garden ecosystem in harmony with natural processes, conserving and efficiently using natural resources, etc., in order to create a healthy and productive environment.



BASICS OF BIOLOGICAL PROTECTION OF PLANTS FROM PESTS

Educational program	Educational and professional program "Plant Protection and Quarantine"
Specialty	202 Plant Protection and Quarantine
Level higher education	first (bachelor's) level
Teacher	Candidate of Biological Sciences, Associate Professor Natalia Herts
Language teaching	Ukrainian
Chair	Botanists and Zoology
Amount	3 loans ECTS
Course	4 th year
Semester of teaching	8 th semester
Summary form control	credit
Link on the syllabus	
Abstract of the discipline	The purpose of the training course is to provide students with theoretical and practical knowledge of modern methods of plant protection from harmful organisms. The course covers aspects of the development of beneficial organisms, their individual development cycles, phenology and ecology. The relationship between living organisms in the biocenosis, the influence of biotic factors, the diversity of plant protection products and the basics of biotechnology for their production are also considered. Special attention is paid to the ability to select biological preparations for effective protection of agricultural crops from pests and diseases. Students must also learn to identify harmful organisms, correctly establish their species affiliation and choose optimal measures for the rational use of biological protection methods.



NATURE CONSERVATION

Educational program	Educational and professional program "Plant Protection and Quarantine"
Specialty	202 Plant Protection and Quarantine
Level higher education	first (bachelor's) level
Teacher	Candidate of Pedagogical Sciences, Associate Professor Natalia Moskalyuk
Language teaching	Ukrainian
Chair	Botanists and Zoology
Amount	3 loans ECTS
Course	4 course
Semester of teaching	8 semester
Summary form control	credit
Link on the syllabus	
Abstract of the discipline	The course "Nature Conservation" is designed to ensure that applicants for the first (bachelor's) level of higher education acquire the knowledge, skills and abilities of professional activity aimed at understanding global ecological problems, determining environmental facts and their impact on humans and the environment. To form among higher education students knowledge of nature protection and rational use of nature, which includes a complex of theoretical ecological knowledge; a fundamental modern materialistic idea of the levels of organization of living nature; basic ecological concepts and patterns; factors and their impact on the vital activity of organisms, problems of environmental pollution. Subject disciplines there are study main aspects of environmental pollution, protection of the atmosphere, hydrosphere, lithosphere, vegetable, animal world, energy resources and protected areas, human actions on the environment and its consequences.



FORECAST OF CROP DISEASE DEVELOPMENT

Educational program	Educational and professional program "Plant Protection and Quarantine"
Specialty	202 Plant Protection and Quarantine
Level higher education	first (bachelor's) level
Teacher	Candidate of Pedagogical Sciences, Associate Professor Natalia Moskalyuk
Language teaching	Ukrainian
Chair	Botanists and Zoology
Amount	3 loans ECTS
Course	4 th year
Semester of teaching	8 th semester
Summary form control	credit
Link on the syllabus	
Abstract of the discipline	The course "Forecast of Crop Disease Development" is designed to ensure that applicants of the first (bachelor's) level of higher education acquire the knowledge, skills and abilities of professional activity capable of professionally solving production issues of cost-effective and environmentally safe protection of agricultural, medicinal, ornamental crops, forest plantations, etc. from harmful organisms and diseases. The purpose of the course is to form in students professional knowledge and skills in determining the spread and development of diseases, the feasibility of carrying out active measures to protect individual agricultural crops from diseases, and the phytosanitary condition of agricultural crops. The subject of the discipline is the study of diseases of agricultural crops.



FORECAST OF THE NUMBER OF CROP PESTS

Educational program	Educational and professional program "Plant Protection and Quarantine"
Specialty	202 Plant Protection and Quarantine
Level higher education	first (bachelor's) level
Teacher	Candidate of Biological Sciences, Associate Professor Liubov Schevchyk
Language teaching	Ukrainian
Chair	Botanists and Zoology
Amount	3 loans ECTS
Course	4 th year
Semester of teaching	7 th semester
Summary form control	credit
Link on the syllabus	
Abstract of the discipline	The course "Forecast of the number of pests of agricultural crops" is designed to ensure that applicants of the first (bachelor's) level of higher education master modern methods of detecting and recording pests and a modern system of observing their reproduction in agroecosystems, determining the harmful effect of these animals on cultivated plants, as well as determining economic thresholds of harm, with substantiation of decisions on the organization and optimization of protective measures against pests on the basis of multi-year, annual or short-term forecasts, which are based on the developments of modern scientists in Ukraine and in the world. The student's work on the topics studied in accordance with the work program involves consolidating knowledge on the methodology for detecting and determining the state of populations of harmful organisms; mastering the methodological principles of predicting the development of pest populations based on the main predictors of the forecast; consolidating knowledge on the features of monitoring studies depending on the type of crop.



CROP PROGRAMMING IN PLANT PROTECTION

Educational program	Educational and professional program "Plant Protection and Quarantine"
Specialty	202 Plant Protection and Quarantine
Level higher education	first (bachelor's) level
Teacher	Candidate of Biological Sciences, Associate Professor Oleksandr Kononchuk
Language teaching	Ukrainian
Chair	Botanists and Zoology
Amount	3 loans ECTS
Course	4 th year
Semester of teaching	8 th semester
Summary form control	credit
Link on the syllabus	
Abstract of the discipline	The course "Crop Programming in Plant Protection" is designed to ensure that first-year (bachelor's) higher education students acquire knowledge about the problems of obtaining high, stable yields of agricultural crops by determining the impact of the main environmental factors on them, establishing the degree of provision of these factors, the possibility and necessity of their regulation, the ability to assess the impact of limiting factors and ways to overcome their negative consequences, the ability to predict the yield of individual crops at different stages of their development, taking into account the elements of their protection. The academic discipline considers the improvement of agricultural processes of plant cultivation using software. Students will gain practical skills in developing and implementing programs to support decision-making in the field of plant cultivation and protection, contributing to the efficient use of resources and increasing yields in an economically profitable way.



RODENTOLOGY

Educational program	Educational and professional program "Plant Protection and Quarantine"
Specialty	202 Plant Protection and Quarantine
Level higher education	first (bachelor's) level
Teacher	Candidate of Biological Sciences, Associate Professor Liubov Shevchyk
Language of instruction	Ukrainian
Chair	Botanists and Zoology
Amount	3 loans ECTS
Course	4 th year
Semester teaching	7 th semester
Form final control	exam
Link on the syllabus	
Abstract of the discipline	The course "Rodentology" is designed to ensure that applicants for the first (bachelor's) level of higher education master the methods of detecting and recording rodent pests of agricultural crops. on basis modern systems observations by their reproduction in agroecosystems with justification of decisions regarding organizations and optimization protective events against these animals based on a multi-year, annual or short-term forecast. The student's work on the topics studied in accordance with the work program involves the study of morphological, anatomical, physiological and ecological features representatives this one groups animals. Mastery modern classification, developing skills in identifying and accounting for rodent pests, assessing economic and epidemiological value animals and rodent control measures.



WORLD AGRICULTURAL TECHNOLOGIES WITH THE BASICS OF PLANT PROTECTION

Educational program	Educational and professional program "Plant Protection and Quarantine"
Specialty	202 Plant Protection and Quarantine
Level higher education	first (bachelor's) level
Teacher	Candidate of Biological Sciences, Associate Professor Oleksandr Kononchuk
Language of instruction	Ukrainian
Chair	Botanists and Zoology
Amount	3 loans ECTS
Course	4 th year
Semester teaching	7 th semester
Form final control	credit
Link on the syllabus	
Abstract of the discipline	The course "World Agrotechnologies with the Fundamentals of Plant Protection" is designed to ensure that applicants of the first (bachelor's) level of higher education acquire knowledge about the integrity and immutability of agricultural technologies, as a clearly defined and scientifically substantiated system of interconnected elements that perform the corresponding functions and tasks aimed at increasing the productivity and protection of crop yields. The main goal of the course is to combine and integrate knowledge from different fields of knowledge to solve theoretical and practical problems of agronomy in the context of various crop growing technologies. To be able to evaluate the modern range of fertilizers, chemical plant protection products, biological preparations, biotechnology products in order to develop scientifically substantiated systems for their application, which would take into account the environmental aspects of their use, the peculiarities of agricultural landscapes, their economic efficiency, etc.



AGRICULTURAL RODENTOLOGY

Educational program	Educational and professional program "Plant Protection and Quarantine"
Specialty	202 Plant Protection and Quarantine
Level higher education	first (bachelor's) level
Teacher	Candidate of Biological Sciences, Associate Professor Liubov Shevchyk
Language of instruction	Ukrainian
Chair	Botanists and Zoology
Amount	3 loans ECTS
Course	4 th year
Semester teaching	7 th semester
Form final control	exam
Link on the syllabus	
Abstract of the discipline	Course "Agricultural Rodentology" called to provide mastery applicants the first (bachelor's) level of higher education in a specialized field terminology, methods detection and recording of rodent pests field, vegetable, fruit crops, food supplies and livestock, as well as rodents that damage meadows and pastures. Based on a multi-year, annual or short-term forecast, be able to justify decision of organizations and optimization protective measures against these animals. The student's work on the topics studied in accordance with the work program involves the study of morphological, anatomical, physiological and ecological features of representatives of this group of animals. Mastering modern classification, formation of skills in identifying and accounting for mouse-like rodents, assessment of economic and epidemiological value animals and events struggle with these pests.



PLANT RESISTANCE TO BIOTIC STRESSORS

Educational program	Educational and professional program "Plant Protection and Quarantine"
Specialty	202 Plant Protection and Quarantine
Level higher education	first (bachelor's) level
Teacher	Candidate of Pedagogical Sciences, Associate Professor Natalia Moskalyuk
Language of instruction	Ukrainian
Chair	Botanists and Zoology
Amount	3 loans ECTS
Course	4 th year
Semester teaching	7 th semester
Form final control	exam
Link on the syllabus	
Abstract of the discipline	The course "Plant Resistance to Biotic Stressors" is designed to ensure that applicants for the first (bachelor's) level of higher education acquire the knowledge, skills and abilities of professional activity. In accordance with modern social demands, the training of higher education specialists should be based on a methodological basis. Bachelors of biological specialties, especially the specialty "Plant Protection and Quarantine", should be ready to solve production issues of cost-effective and environmentally safe protection of agricultural, medicinal, ornamental crops, forest plantations, etc. The purpose of the course is to study the basics of plant resistance to biotic stressors, the functioning of the plant organism and the mechanisms of its regulation. The subject of the discipline is the study of the functions of plant organisms, their organs, tissues, cells and cellular components, their relationships, regulation and adaptation to the action of biotic stressors, as well as their formation in the process of individual development.



MODERN CONCEPTS OF NATURE MANAGEMENT

Educational program	Educational and professional program "Plant Protection and Quarantine"
Specialty	202 Plant Protection and Quarantine
Level higher education	first (bachelor's) level
Teacher	Candidate of Pedagogical Sciences, Associate Professor Natalia Moskalyuk
Language of instruction	Ukrainian
Chair	Botanists and Zoology
Amount	3 loans ECTS
Course	4 th year
Semester teaching	8 th semester
Form final control	credit
Link on the syllabus	
Abstract of the discipline	The course "Modern Concepts of Environmental Management" is designed to ensure that applicants for the first (bachelor's) level of higher education acquire knowledge, skills and abilities of professional activity capable of professionally solving production issues. The purpose of the course is to lay the foundations of knowledge in the theory and practice of modern environmental management, to show the need for greening all spheres of human life. As a result of studying the discipline, students should be able to: – critically assess the impact of human activity on the environment; – apply the main conceptual provisions to solve environmental problems; – assess the degree of harmony between society and nature; — substantiate their own opinion regarding environmental conservation based on the provisions of scientific concepts.



THEORETICAL BASIS OF THE BIOMETHOD

Educational program	Educational and professional program "Plant Protection and Quarantine"
Specialty	202 Plant Protection and Quarantine
Level higher education	first (bachelor's) level
Teacher	Candidate of Biological Sciences, Associate Professor Natalia Herts
Language teaching	Ukrainian
Chair	Botanists and Zoology
Amount	3 loans ECTS
Course	4 th year
Semester of teaching	8 th semester
Summary form control	credit
Link on syllabus	
Abstract of the discipline	The course is aimed at studying the theoretical foundations and applied aspects of the use of biometric methods in the field of plant protection and quarantine. The course considers the use of biological plant characteristics for effective identification, monitoring and control of harmful organisms. Students will gain knowledge of various biometric approaches in plant protection and quarantine, including leaf prints, genetic characteristics, morphological parameters and others. The course also covers methods for processing and analyzing the obtained biometric data for the detection and classification of harmful organisms, the development of protective strategies and the determination of effective control measures. Special emphasis is placed on studying the ecological and ethical aspects of the use of biometric technologies in agriculture. The course is aimed at developing students' competencies in the use of modern methods to ensure the efficiency and stability of agricultural crops in the context of plant protection.



TECHNOLOGY OF CULTIVATION AND USE OF ORGANISMS IN BIOLOGICAL PLANT PROTECTION

Educational program	Educational and professional program "Plant Protection and Quarantine"
Specialty	202 Plant Protection and Quarantine
Level higher education	first (bachelor's) level
Teacher	Candidate of Agricultural Sciences, Associate Professor Margaryta Kryzhanovska
Language teaching	Ukrainian
Chair	Botanists and Zoology
Amount	3 loans ECTS
Course	4 th year
Semester of teaching	7 th semester
Summary form control	credit
Link on syllabus	
Abstract of the discipline	Studying the academic discipline "Technology of Cultivation and Use of Organisms in Biological Plant Protection" will allow students to familiarize themselves with the theoretical and methodological foundations of breeding and using zoophages (insects, mites, nematodes) for use in biological control of harmful organisms, to optimize the breeding process of beneficial organisms and increase its efficiency; to develop the skills of breeding beneficial insects and microorganisms, technologies for breeding beneficial insects on host insects, and to improve the skills of using these technologies to create artificial populations in biological and integrated plant protection against pests in open and closed soil.



GARDEN PROTECTION TECHNOLOGY

Educational program	Educational and professional program "Plant Protection and Quarantine"
Specialty	202 Plant Protection and Quarantine
Level higher education	first (bachelor's) level
Teacher	Candidate of Biological Sciences, Associate Professor Olexandr Kononchuk
Language teaching	Ukrainian
Chair	Botanists and Zoology
Amount	3 loans ECTS
Course	4 th year
Semester of teaching	7 th semester
Summary form control	credit
Link on the syllabus	
Abstract of the discipline	The course "Garden Protection Technology" is designed to ensure that applicants of the first (bachelor's) level of higher education master knowledge about technologies for protecting fruit and berry crops from pests, diseases, weeds and other damaging factors, including the development and improvement of modern environmentally safe methods for protecting these crops, the ability to manage the processes of the phytosanitary situation in various garden agrophytocenoses, and the development and implementation of measures to ensure high technical and economic efficiency of their protection. Educational discipline prepares to independent works in choosing optimal technologies for protecting fruit and berry plantations, choosing effective pesticides, the use of biological controllers, as well as the prediction and management of risks designed to ensure their high productivity and quality products.



TECHNOLOGY OF STORAGE AND PROCESSING OF CROP PRODUCTS

Educational program	Educational and professional program "Plant Protection and Quarantine"
Specialty	202 Plant Protection and Quarantine
Level higher education	first (bachelor's) level
Teacher	Candidate of Agricultural Sciences, Associate Professor Margaryta Kryzhanovska
Language teaching	Ukrainian
Chair	Botanists and Zoology
Amount	3 loans ECTS
Course	4 th year
Semester of teaching	7 th semester
Summary form control	credit
Link on the syllabus	
Abstract of the discipline	Studying the course "Technology of Storage and Processing of Plant Products" contributes to the formation of deep theoretical and practical skills in post-harvest processing, sale, storage and processing of grain, leguminous, cereal, oilseed, industrial, vegetable and fruit plants; will allow the development of rational technological measures that contribute to increasing the stability of plant products during storage, ensure the processing of raw materials and the production of high-quality food products, will provide students with the necessary knowledge to control technological production processes that include technologies for pre-harvest and post-harvest processing and storage of raw materials; the formation of a scientific approach to solving problems of storage and processing of plant products.



INTERNET OF THINGS (IOT) TECHNOLOGY IN AGRICULTURE

Educational program	Educational and professional program "Plant Protection and Quarantine"
Specialty	202 Plant Protection and Quarantine
Level higher education	first (bachelor's) level
Teacher	Candidate of Biological Sciences, Associate Professor Oleksandr Kononchuk
Language teaching	Ukrainian
Chair	Botanists and Zoology
Amount	3 loans ECTS
Course	4 th year
Semester of teaching	8 th semester
Summary form control	credit
Link on the syllabus	
Abstract of the discipline	The course "Internet of Things (IoT) Technology in Agriculture" is designed to provide first-year (bachelor's) students with knowledge of the application of IoT principles - connecting physical objects and devices to the Internet for the purpose of data exchange and interaction in the context of the agricultural industry. Students will gain an understanding of the use of modern technologies to automate and optimize agro-industrial processes, in particular, the introduction of sensors and communication tools into agriculture to monitor and control various parameters, such as soil moisture, weather conditions, yield levels and plant health. The interaction of various devices, including tractors, drones and automated irrigation systems, is studied in order to optimize production processes, taking into account data security, implementation costs, etc. Mastering the discipline will help to understand how to use IoT to create effective management systems in agriculture.



Management environmental protection activity and the protected area

Educational program	Educational and professional program "Plant Protection and Quarantine"
Specialty	202 Plant Protection and Quarantine
Level higher education	first (bachelor's) level
Teacher	Candidate of Pedagogical Sciences, Associate Professor Natalia Moskalyuk
Language teaching	Ukrainian
Chair	Botanists and Zoology
Amount	3 loans ECTS
Course	4 th year
Semester of teaching	8 th semester
Summary form control	credit
Link on the syllabus	
Abstract of the discipline	Course "Environmental Management and Conservation" called to provide mastery applicants first (bachelor's) level of higher education, acquiring knowledge about the role and place of protected areas in the life of the biosphere and the protection of protected areas, the history and state of protected areas in Ukraine and in the world, the environmental, scientific and educational significance of the Red Book; knowledge of the classification of protected areas and the establishment of characteristic features, a list of actions and types of economic activity that do not contradict the provisions of the objects of the nature reserve fund; effectively use materials protected areas territories of various ranks and categories for scientific analysis of ecological conditions of regions and forecasting and modeling of ecological situations; use of materials from reserves and the reserve territories themselves for carrying out environmental education and environmental upbringing of the population, for environmental protection activities; to form an idea of modern state, general principles formation networks objects PZF; to establish an understanding of the specifics of scientific research, monitoring, educational and informational activities of the facilities.



DISEASES FLOWER, DECORATIVE AND MEDICINAL PLANTS

Educational program	Educational and professional program "Plant Protection and Quarantine"
Specialty	202 Plant Protection and Quarantine
Level higher education	first (bachelor's) level
Teacher	Candidate of Biological Sciences, Associate Professor Natalia Herts
Language teaching	Ukrainian
Chair	Botanists and Zoology
Amount	3 loans ECTS
Course	4 th year
Semester teaching	7 th semester
Summary form control	credit
Link on the syllabus	
Abstract of the discipline	Educational discipline has on goals study characteristics and principles of diagnosis, prevention and treatment of diseases that can affect various types of plants, including flowering, ornamental and medicinal plants. The course is oriented on granting theoretical knowledge and practical skills in field protection plants from diseases, What there are an important element in agriculture, landscape design. Applicants will receive information about various pathogenic microorganisms, fungi and other factors that cause plant diseases, and will also learn to distinguish their symptoms and determine methods identification. The course covers issues of effective prevention and application methods biological, chemical and physical protection. The course is aimed at forming competencies in identifying, predicting and implementing measures with control by diseases floral, decorative and medicinal plants.



DIGITAL TECHNOLOGIES (BY PROFESSIONAL DIRECTIONS)

Educational program	Educational and professional program "Plant Protection and Quarantine"
Specialty	202 Plant Protection and Quarantine
Level higher education	first (bachelor's) level
Teacher	Candidate of Biological Sciences, Associate Professor of the Department of Informatics and Methods of Its Teaching Halyna Shmyger
Language teaching	Ukrainian
Chair	Department of Informatics and Methods of Its Teaching
Amount	3 loans ECTS
Course	4 th year
Semester of teaching	8 th semester
Summary form control	credit
Link on syllabus	
Abstract of the discipline	The course "Digital Technologies (Professional)" is intended for for students the first (bachelor's) equal higher education in order to ensure their mastery of knowledge in the field of digital technologies and digital communications. The course covers such aspects as modern web resources, Smart technologies, Internet of Things technologies, and considers the possibilities of their use in practical activities in the chosen professional direction. The main goal of this discipline is to develop skills in using digital technologies to predict the spread of harmful organisms in plants. The course aims to teach students to use digital technologies to model possible threats of plant diseases, and also for granting recommendations of methods struggle with them. In addition, students will learn to use digital tools in professional research and practical activities, the possibility of using applications for plant protection and quarantine, receiving knowledge, which can apply in real situations.