MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE
SUMY NATIONAL AGRARIAN UNIVERSITY

"APPROVED"
by Academic Council of Sumy NAU
Chairman of the Academic Council _____ V.I. Ladyka
14 25 05 20 20
(Order No.)
Educational and scientific program implemented
_____ 05 20 20
Rector _____ V.I. Ladyka
(Order No. 213-к 03 07 20 20)

EDUCATIONAL AND SCIENTIFIC PROGRAM

«ECOLOGY»

HIGHER EDUCATION LEVEL The third (PhD) level
(name of higher education level)

FIELD OF STUDY 10 «NATURAL SCIENCES»

PROGRAM SUBJECT AREA 101 «ECOLOGY»

Background: (PhD)

Sumy 2020

LETTER OF AGREEMENT

Educational - Professional Program

"Ecology"

Higher Education Level – The 3rd level

The project team consists of:		
The Chairman of the project team:		
Doctor of Biological Sciences, Professor of the Department of Ecology and Botany, the Dean of the Faculty	(signature)	Kovalenko Ihor Mykolaiovych
Project team members:		
Doctor of Biological Sciences, Professor, the Head of Ecology and Botany Department	(signature)	Skliar Victoria Hryhorivna
Candidate of Biological Sciences Associate Professor, Associate Professor of Ecology and Botany Department	(signaturte)	Klymenko Hanna Olexandrivna
Candidate of Biological Sciences Associate Professor, Associate Professor of Ecology and Botany Department	(signaturte)	Kyrylchuk Kameryna Serhiivna
Applicant of Higher Education	(signature)	Melnyk Yulia Yuriivna a

Vice-Rector for Academic Activity , Candidate of Economic Sciences, Professor — Valerii Mykolaiovych Zmailov

Head of the Higher Education Quality, Licensing and Accreditation Department , Candidate of Economic Sciences, Associate Professor — Iryna Dmytrivna Skliar

PREREQUISITE

The Educational and Scientific Program (ESP) for the training of applicants for higher education (military postgraduate student) of the third educational and scientific level in the specialty 101 "Ecology" contains the amount of ECTS credits required to obtain the appropriate degree of higher education: list of competencies; normative content of military post graduate students training, formulated in terms of learning outcomes; forms of certification of applicants for the third level of higher education; requirements for the availability of a system of internal quality assurance of higher education.

ESP of the third educational and scientific level of higher education is developed in accordance with the Law of Ukraine "On Higher Education" dated July 1, 2014, Resolutions of the Cabinet of Ministers of Ukraine "On Higher Education" dated November 23, 2011 "On approval of the national qualifications framework" dated December 30, 2015 No 1187, “On approval of licensing conditions for educational activities of educational institutions” dated December 20, 2015 and taking into account the draft standard of higher education of Ukraine for the third level of higher education (PhD) developed by the scientific-methodical subcommittee.

The program was approved: at the meeting of the Ecology and Botany Department (Minutes No 14 dated May 13, 2020, the Academic Council of the Faculty of Agrotechnology and Nature Management (Minutes No 10 dated May 20, 2020); approved by the Academic Council of the University (Minutes No 14 dated "25" May 2020)

1. Profile of educational - professional program 101 «Ecology»

1– General information	
Full name of higher education institution	Sumy National Agrarian University
Higher education level	The 3rd level
Academic Degree	PhD
Field of Study	10 – Natural Sciences
Subject Area	101 – Ecology
The official name of the educational program	«Ecology»
Educational qualification	PhD in natural sciences
Professional Qualification	-
Qualification in diploma	Academic Degree – PhD Subject area – 101 «Ecology» Educational Program «Ecology»
Type of diploma and scope of educational program	Single 57 ECTS credits, program length - 4 academic years
Limitation as for educational forms	No
Accreditation availability	Non-accredited
Cycle / level	NQF of Ukraine – the 8th level, FQ-EHEA – the 3rd cycle, EQF LLL – the 8th level
Prerequisites	Availability of higher education of the second (master's) level, (educational qualification level of the specialist). Demand Requirements are determined by the "The rules of admission to PhD educational program"
Language of instruction	Ukrainian, English
Length of the educational program	till 2024 p. (starts in 2020).
The link for the educational – professional program	https://science.snau.edu.ua/aspirantura/

2 – The aim of educational programs
The aim of the educational and scientific program is to form applicants' ability to combine knowledge, skills, communication skills and abilities while solving complex problems in the field of professional and / or research and innovation activities in the specialty 101 "Ecology", which involves complete rethinking holistic knowledge and / or professional practice in the realization of continuous self-development and self-improvement.

3 – Characteristics of educational - professional program	
Subject category (field of study, subject area, Specialty (if available))	Field of Study 10 «Natural Sciences» Subject Area 101 «Ecology»

Focus of the educational and scientific program	ESP has an academic focus. The program is aimed at developing students' research and teaching competencies, communication skills. The educational and scientific program contains educational and scientific components. *Educational component* of the program - 57 ECTS credits, among which 42 ECTS credits are compulsory subjects, 15 ECTS credits are selective subject. *The scientific component* of the program involves the realization of their own research under the guidance of scientific advisor / advisors with the presentation of the results in the form of thesis. This component of the program is not measured by ECTS credits, but is drawn up separately in the form of an individual plan of research work of the postgraduate student.
Object of study	Structure and functional components of ecosystems at different levels and origins; anthropogenic impact on the environment and optimization of nature management.
Targets of the program	To deepen theoretical knowledge and practical skills in the field of Natural Sciences in "Ecology"; to develop philosophical and linguistic competencies; to acquire the ability to produce new ideas; to solve complex problems in the field of ecology and to conduct their own research.
The main focus of the program	Special, in the field of study "Natural Sciences", subject area 101 "Ecology" **Key words***:* ecology, protection of environment, complex population analysis, anthropogenic impact, monitoring, balanced nature management, nature protection measures, greening of the agrosphere
Theoretical content of the subject area	Comprehensions, concepts, principles of modern ecology and their use for environmental protection, well-balanced use of nature and sustainable development.
Features of the program	The program is aimed at training applicants for higher education of the third educational and scientific level in the specialty 101 "Ecology", who can conduct research based on the latest advances in knowledge 10 "Natural Sciences" on the basis of Sumy National Agrarian University, as well as leading scientific and environmental institutions of Ukraine and the world. ESP provides professional training in combination with general. The general training involves the development of students' skills of teamwork, academic writing, teaching competencies. In this case, professional training is realized mainly in the selective component of the ESP, and general is realized

	mainly in the compulsory component of the program. Professional training is aimed at the formation of conceptual and methodological knowledge and skills in specialty "Ecology", with priority given to studying the features and patterns of phytodiversity at the population level of living matter, as well as the development and realization of comprehensive population analysis of environmental measures and environmental management .
Methods, techniques and technologies	Methods of collecting, processing and interpreting the results of ecological research, methods of computer modeling, physical, chemical and biological methods of studying the structure and properties of ecological systems.
4 – Graduates' eligibility to employment and further education	
Employment eligibility	Graduates have ample opportunity for career development depending on their personal interests, including: scientific, teaching, expert, managerial, administrative activities in the field of natural sciences in the specialty 101 «Ecology». The level of training allows to develop a professional career based on strategic thinking and in-depth knowledge in the field of natural sciences. The specialist is able to perform the professional work (in accordance with Occupational classification (OC 003:2010): 1221 heads of production units in agriculture, forestry and water management, fish farming, fisheries and nature reserves; 1237 heads of research subdivisions and subdivisions for scientific and technical preparation of production; 2213 professionals in agronomy, water management, zooengineering, forestry, land reclamation and nature reserve; 2310 instrucrors of universities and higher educational institutions; and other areas of activity in the specialty.
Further training	Training for development and self-improvement in scientific and professional spheres of activity 101 «Ecology», as well as other related branches of scientific knowledge: training at the 10th (scientific) level of the NQF of Ukraine in the field of natural sciences; educational programs, research grants and scholarships (including overseas) that contain additional educational components. Various forms of lifelong learning (both in Ukraine and abroad) for further training and improvement of managerial, administrative, scientific, research, teaching and other activities.

5 – Training and assessment	
Teaching and learning approaches	Teaching and learning approaches: - active learning (interactive teaching methods that provide a student-centered approach and development of systemic, creative and strategic thinking; joint learning in multidisciplinary groups; - learning by teaching (teaching practice); - education through research (including participation in the realization of budgetary and contractual research works, participation in research projects); - personalized learning: individual consultations with scientific supervisors, selective professional subjects.
Assessment	***Educational program component.*** The grading system of the obtained training subject results of the educational and scientific program consists of current and final control. *Current control* of knowledge is carried out orally (questionnaire on the results of the learnt material). *Final control* of knowledge is carried out in the form of exam / credit oral or in writing. During the current and final control in the process of the subject assessment that provides professional training, the applicant's prepared and published scientific articles that are included in professional publications and / or publications that are included in international scientometric databases. are taken into account. ***Scientic program component.*** Scientific activity assessment of the applicant is carried out in accordance with the applicant's curricfulum through: - participation in department seminars, conferences; - review of scientific works; - recommendations of the scientific advisor; - midline attestations of the graduate student in the form of the annual report on the individual plan performance; - preparation and presentation of the thesis.
Form of postgraduate student's (applicant's) progress control	***Educational program component.*** Summative control is conducted as: - exam is based on the results of studying of the educational program required components, the cycle of research training, the cycle of language training, as well as the cycle of special (professional) training; credit – based on the studying result of all other subjects provided by the syllabus.

	Scientific program component. The scientific component of the program provides for the current certification of graduate students at the department meeting twice a year. The aim of the midline attestation is to assess the level of the individual plan realization, support providing and the applicant's feedback.. The aim of the final certification is to establish compliance with the level of educational and scientific training of graduate students to the requirements of the educational and scientific program of PhD in the specialty 101 "Ecology" and ends with the public defense of the thesis. The defense of the thesis takes place in public at the meeting of the specialized academic council. Prerequisite for admission to the thesis defense, subject to the successful realization of an individual scientific plan, is the approbation of research results and main conclusions at scientific conferences and their publication in professional scientific journals, in accordance with current requirements.
6 – Program competencies	
Integral competence	Ability to solve complex problems in the field of ecology, environmental protection and sustainable use of nature in the implementation of research and innovation, which involves a complete rethinking of existing knowledge and creation of new holistic knowledge, mastering the methodology of scientific and scientific-pedagogical activities, conducting individual research the results of which have scientific novelty, theoretical and practical significance.
Competencies (GC)	01. Ability to abstract thinking, analysis and synthesis. 02. Ability to communicate in the state language both orally and in writing 03. Ability to communicate in a foreign language. 04. Ability to conduct research at the appropriate level. 05. Ability to search, process and analyze information from various sources. 06. Ability to identify, define and solve problems. 07. Ability to work in an international context. 08. Ability to work autonomously. 09. Ability to develop and manage projects.
Professional Competencies (PC)	10. Ability to master concepts, theoretical and practical problems, history of development and current state of scientific knowledge in the field of ecology, environmental protection and optimization of nature. 11. Ability to form a systematic scientific view of modern science, professional ethics and general

	cultural worldview. 12. Ability to present the results of their own scientific and technical activities, through scientific publications. 13. Ability to deliver to students modern knowledge and scientific results of their own research, including in the framework of scientific and pedagogical activities in the field of natural sciences. 14. Ability to intellectual creative activity aimed at obtaining new knowledge and (or) finding ways to apply them in the field of ecology, environmental protection and optimization of nature. 15. Ability to study and assess the population state of as a real form of species existence and one of the basic levels for ensuring the efficient functioning of ecosystems, conservation of biodiversity and the development and implementation of the principles of environmental management.
7 – Program training outcomes	
	01 Demonstrate a deep knowledge of the advanced conceptual and methodological foundations of the natural sciences, which makes it possible to rethink and deepen the science of the environment. 02. Demonstrate mastery of modern science general concepts. 03. Plan and implement in practice an original individual scientific research, which is characterized by novelty, theoretical and practical value and contributes to the solution of significant problems of ecology, environmental protection and sustainable use of nature. 04. Formulate, research and solve problems of ecology, environmental protection and sustainable use of nature using the scientific method of cognition. 05. Individually develop innovative comprehensive research projects in the field of ecology, environmental protection and optimization of nature management. 06. Apply methods of mathematical and geoinformation analysis and modeling of the current state and forecasting changes in ecosystems and their components. 07. Individually use modern equipment for research in the field of ecology, environmental protection and sustainable use of nature. 08. Communicate in a foreign language, in question-and-answer mode with the general scientific

	community, students and the public in the field of ecology, environmental protection and optimization of nature. 09. Deliver clearly and unambiguously professional knowledge, the results of own research, justifications and conclusions orally and in writing for different audiences, both nationally and internationally. 10. Apply modern technologies (including information) in scientific and pedagogical, ecological and educational activities. 11. Demonstrate leadership qualities, responsibility and full autonomy in the implementation of complex research projects 12 Realize the intellectual property right to the results of scientific and scientific-technical activities within the framework of scientific ethics. 13 Be able to carry out a comprehensive analysis of the populations and assess the degree, and the different type features of anthropopression on the environment
8. Certification forms of applicants for higher education	
Certification forms of applicants for higher education	The attestation form of the educational component is the applicant's fulfillment the curriculum of the educational-scientific program in full. Certification is carried out in the form of a public presentation of the research results in the form of the PhD thesis research
Qualifying paper requirements	Thesis for the degree of PhD is an individual detailed research that offers solutions to theoretical and / or practical topical environmental issues, the results of which make an original contribution to the amount of knowledge in modern ecology, environmental protection and sustainable use of nature and is characterized with scientific novelty, theoretical and practical significance. The main thesis results must be tested, published in accordance with the requirements in force at the time of thesis defense, as well as tested for academic plagiarism. Thesis and the abstract should be posted on the website of the higher education institution (scientific institution).
Requirements for public defense	Requirements for the procedure and special conditions for conducting public defense are determined by the Cabinet of Ministers of Ukraine. The thesis work defence is public at a meeting of a specialized Academic Council. An obligatory prerequisite for admission to the thesis defence is to approve the results of the research and the main conclusions at scientific conferences and to publish

	them in professional scientific issues, including to scientometric bases, in accordance with current requirements.
9 – Resources support for program implementation	
Academic staff	Scientific and teaching staff satisfiess the requirements of the current legislation of Ukraine. The staff involved in the implementation of the educational program are employees of Sumy NAU, providing upgrade qualifications at least once every five years. 100% of scientific-pedagogical staff involved in the teaching of disciplines have scientific degrees and academic ranks. The personnel potential of Sumy NAU allows for the training of third-level higher education applicants in the specialty 101 "Ecology" and answers the regulatory requirements.
Technical support and educational facilities	Material and technical resources of Agrotechnology and Nature Management Faculty of Sumy NAU allows training of third-level higher education applicants and answer purposes of regulatory requirements, the university has the equipment, facilities and software needed for field, laboratory and remote studies of the ecological systems structure and properties at different levels and origins. ESP peculiarities are the possibility of laboratory research conducting on the basis of the university laboratories: "Educational and scientific PCR laboratories" within the Erasmus + KA2 project, "Electron microscopy", "Laboratory of ecological agriculture and nature management", and on the basis of nature reserves, subordinate to SNAU. Long-term experience of effective cooperation with environmental institutions, established in cooperation agreements, also allows using their territory and material and technical resources for the training of third-level higher education in the specialty "Ecology".
Information and training support	The educational process of training higher education applicants is provided with methodological and informational materials in a sufficient amount in relation to regulatory needs. Moreover informational, educational and methodical support of all participants of the educational process is carried out through the university website (https://snau.edu.ua/), which contains information about educational programs, educational, scientific and educational activities, structural units, contacts, repository, scientific libraries and reading rooms, etc. All resources of Sumy NAU library are available

	through the university website and the library website (https://library.snau.edu.ua/), SNAU ordinary and electronic reading rooms are provided with wireless Internet access. Applicants have free access to the repository of Sumy NAU (http://repo.snau.edu.ua/) and the use of the scientific libraries fund of higher education institutions in Sumy, the National Library of Ukraine named after V.I. Vernadsky and others. In accordance with the order of the Ministry of Education and Science No 213 dated 06.11.2018 "On Granting Access to Higher Education Institutions and Research Institutions in Branch the Ministry of Education and Science to Electronic Scientific Databases", Sumy National Agrarian University was granted access to international scientometric databases Scopus and Web of Science.
9 – Academic mobility	
National credit mobility	Based on bilateral treaty between Sumy NAU and universities of Ukraine. Agreements on academic mobility for teaching and research in universities and research institutions of Ukraine are drawn. Leading specialists of universities and research institutions of Ukraine may be involved in the management of scientific work of applicants for higher education on the terms of individual treaties.
International credit mobility	On the basis of bilateral treaties between Sumy NAU and higher educational institutions of foreign partner countries on the terms of cooperation agreements. Detailed information is presented on the website of Sumy National Agrarian University: https://snau.edu.ua/mizhnarodni-proekti/
Training of foreign applicants for higher education	Training of third-level higher education applicants is carried out on general terms with additional language training. Sumy NAU has the right to train applicants for higher education with the opportunity to train foreigners and stateless persons. Training of applicants for the third (educational and scientific) level of higher education is carried out on general terms with additional language training, research and teaching staff has B2 certificates.

List of components of educational and professional program and their logical consistency

List of ESP components

Code	Components of the educational program (disciplines, course projects (works), practice, qualification work)	Amount of credits	Assessment
1	**2**	**3**	**4**
	Required EP components		
EC 1.	Philosophy of Science	4	exam
EC 2.	Modern Information Technologies in Scientific Activity	3	exam
EC 3.	Communication in Scientific Environment	3	credit
EC 4.	Methodology of Scientific Research Conduction	3	credit
EC 5.	Plant Research	3	exam
EC 6.	Modelling and Planning of Scientific Experiment	3	credit
EC 7.	Registration of Intellectual Property Rights	3	credit
EC 8.	Organization and Methods of Training Session Delivering	3	exam
EC 9.	Organization of Scientific Publication Preparation	3	exam
EC 10.	Management of Scientific Projects	3	exam
EC 11.	Foreign Language of Professional Direction	4	exam
EC 12	Preparation Methods of Scientific Work in Foreign Language	3	exam
EC 13	Teaching Practice	4	credit
Total		**42**	
	Selective EP components		
SC 1.	Professional selective subject 1*	5	exam
SC 2.	Professional selective subject 2*	5	exam
SD 3.	Professional selective subject 3*	5	exam
Total		**15**	
TOTAL SCOPE OF THE EDUCATION PROGRAM		**57**	

*Note: hereinafter - * changes in the curriculum for the training of foreign applicants for the third level of higher education*

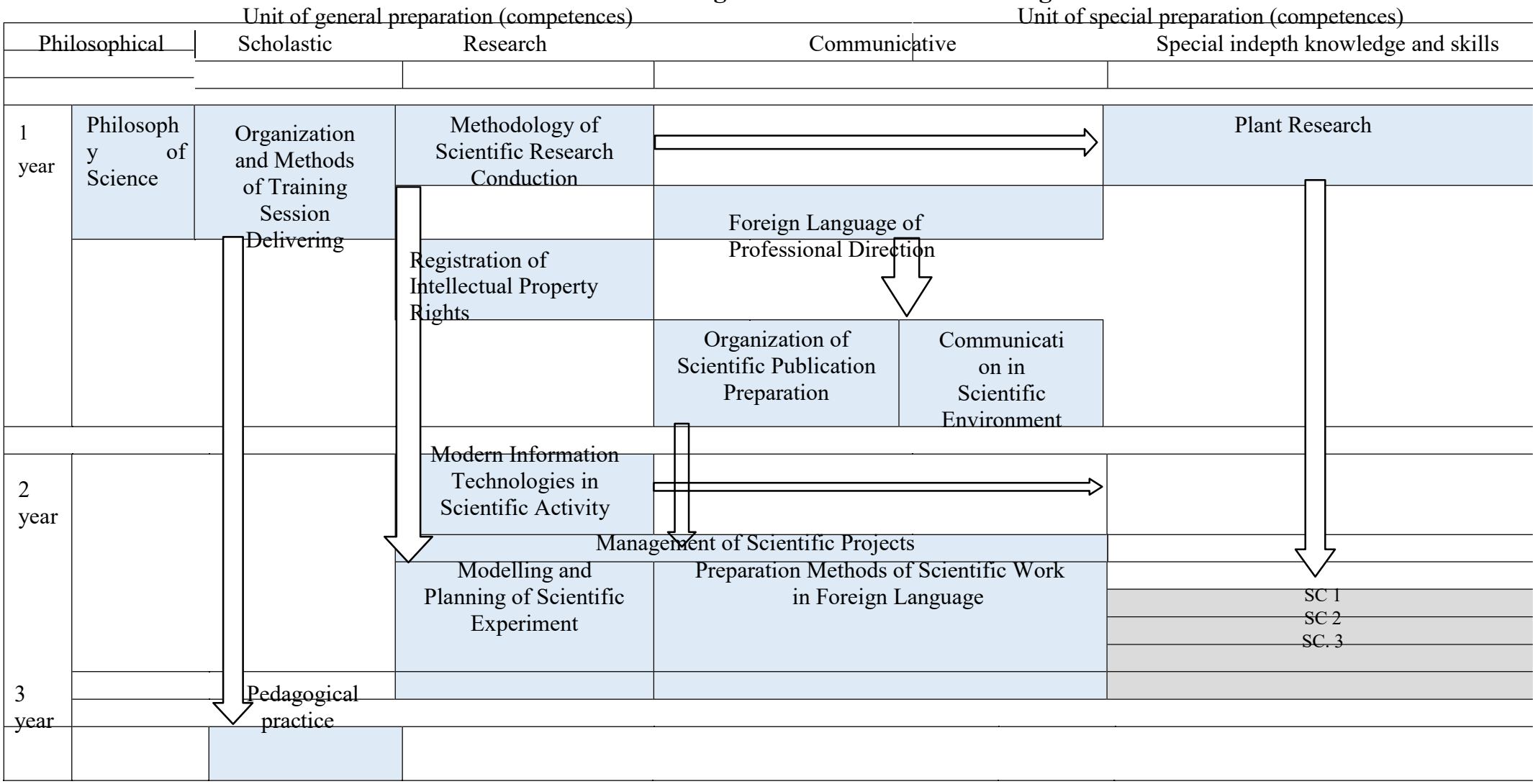
***List of Selective Components**

1. Biology
2. Bioindication and biotesting
3. Population ecology
4. Biosocology
5. Biometrics with the basics of modeling and forecasting population processes
6. Resource science

Structural and logical scheme of the EP

Higher education applicants are eligible to choose academic subjects within the relevant educational and scientific program and work curriculum not less than 25% of the total ECTS credits provided for a given higher education level

Structural and logical scheme of PhD Trainings



Note: *** For the training of foreign applicants for the third level of higher education, changes in the structural and logical scheme are possible according to the agreements under the conditions of study at the third level of higher education in Sumy NAU for non-citizens of Ukraine*

The list of normative documents on which the project of the of third (educational and scientific) level of higher education standard in specialty 101 "Ecology" is based on

- Law of Ukraine "On Higher Education" dated 01.07.2014 No 1556-VII. - http://zakon4.rada.gov.ua/laws/show/1556-18
- Law of Ukraine dated 26.11.2015. No 848—VIII "On Scientific, Scientific and Technical Activity" - http://zakon3.rada.gov.ua/laws/show/848-19
- Cabinet of Ministers Resolution No. 266, of April 29, 2015 "On Approving the List of Subject Areas and Specialties for the PhD Students" - http://zakon4.rada.gov.ua/laws/show/266-2015-п.
- Resolution of the Cabinet of Ministers of Ukraine dated 30.12.2015. No 1187 "On the Aproving of Licensing Conditions of Carrying out Educational Activity of Educational Institutions" - http://zakon4.rada.gov.ua/laws/show/1187-2015-п
- Resolution of the Cabinet of Ministers of Ukraine dated 23.11.2011. No 1341 "On the Approving of the National Qualifications Framework" - http://zakon4.rada.gov.ua/laws/show/1341-2011
- Resolution of the Cabinet of Ministers of Ukraine dated 23.03.2016. No 261 "On the Approving of the Applicants for higher Education Preparation Order for the PhD Degree and the Doctor of Sciences in higher educational institutions (scientific institutions)" - :http://zakon3.rada.gov.ua/laws/show/261-2016.
- National Classification of Ukraine: «Classification of economic activity types» OC 009: 2010 - http://www.ukrstat.gov.ua.
- National Classification of Ukraine: «Occupational classification» OC 003: 2010 OC 003:2010 - http://www.dk003.com.
- Methodical Recommendations on the Development of Higher Education Standards, Approved by Order of the Ministry of Education and Science of Ukraine dated 01.06.2017. No 600 (as Amended by the Order of the Ministry of Education and Science of Ukraine dated 21.12.2017. No 1648), Approved by the Higher Education Sector of the Scientific and Methodological Council of the Ministry of Education and Science of Ukraine (Minutes dated 29.03.2016 No3) - http://mon.gov.ua/activity/education/reforma-osviti/naukovo-metodichna-rada-ministerstva/metodichni-rekomendacziyi.html

The Chairman of the project team (guarantor of the program):

Doctor of Biological Sciences, Professor Kovalenko Ihor Mykolaiovych

Appendix 1

Compliance Matrix of the required by Educational- Scientific Program competences with the NQF descriptors

Classification of competences according to National Qualifications Framework (NQF)	Knowledge	Skills	Communication	Autonomy and responsibility
General competences				
01. Ability to abstract thinking, analysis and synthesis.	+	+		
02. Ability to communicate in the state language both orally and in writing			+	
03. Ability to communicate in a foreign language.			+	
04. Ability to conduct research at the appropriate level.	+	+		
05. Ability to search, process and analyze information from various sources.		+		+
06. Ability to identify, define and solve problems.		+		+
07. Ability to work in an international context.			+	+
08. Ability to work autonomously.		+	+	+
09. Ability to develop and manage projects.			+	+
Special (professional, subject) competences				
10. Ability to master concepts, theoretical and practical problems, history of development and current state of scientific knowledge in the field of ecology, environmental protection and optimization of nature.	+	+		
11. Ability to form a systematic scientific view of modern science, professional ethics and general cultural worldview.	+	+		
12. Ability to present the results of their own scientific and technical activities, through scientific publications.		+	+	+
13. Ability to deliver to students modern knowledge and scientific results of their own research, including in the framework of scientific and pedagogical activities in the field of natural sciences.			+	+
14. Ability to intellectual creative activity aimed at obtaining new knowledge and (or) finding ways to apply them in the field of ecology, environmental protection and optimization of nature.		+		
15. Ability to study and assess the population state of as a real form of species existence and one of the basic levels for ensuring the efficient functioning of ecosystems, conservation of biodiversity and the development and implementation of the principles of environmental management	+	+		+

Appendix 2

Compliance Matrix of the required by Educational- Scientific Program outcome and competences

Program educational outcome	Competences															
		General competences									Special (professional) competences					
	Integral competences	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**	**12**	**13**	**14**	**15**
01 Demonstrate a deep knowledge of the advanced conceptual and methodological foundations of the natural sciences, which makes it possible to rethink and deepen the science of the environment.	+	+													+	+
02. Demonstrate mastery of modern science general concepts.		+										+			+	+
03. Plan and implement in practice an original individual scientific research, which is characterized by novelty, theoretical and practical value and contributes to the solution of significant problems of ecology, environmental protection and sustainable use of nature.					+		+					+	+			+
04. Formulate, research and solve problems of ecology, environmental protection and sustainable use of nature using the scientific method of cognition.	+		+				+				+					
05. Individually develop innovative comprehensive research projects in the field of ecology, environmental protection and optimization of nature management.					+				+	+						+
06. Apply methods of mathematical and geoinformation analysis and modeling of the current state and forecasting changes in ecosystems and their components.		+			+	+										

07. Individually use modern equipment for research in the field of ecology, environmental protection and sustainable use of nature.					+				+						+	+
08. Communicate in a foreign language, in question-and-answer mode with the general scientific community, students and the public in the field of ecology, environmental protection and optimization of nature.			+	+				+						+		
09. Deliver clearly and unambiguously professional knowledge, the results of own research, justifications and conclusions orally and in writing for different audiences, both nationally and internationally.				+				+					+			
10. Apply modern technologies (including information) in scientific and pedagogical, ecological and educational activities.	+					+						+		+		+
11. Demonstrate leadership qualities, responsibility and full autonomy in the implementation of complex research projects ..									+	+				+		+
12 Realize the intellectual property right to the results of scientific and scientific-technical activities within the framework of scientific ethics.								+					+		+	
13 Be able to carry out a comprehensive analysis of the populations and assess the degree, and the different type features of anthropopression on the environment					+		+		+			+			+	

Appendix 3

Assurance matrix of program educational outcome with adequate components

	PR 01	PR 02	PR 03	PR 04	PR 05	PR 06	PR 07	PR 08	PR 09	PR 10	PR 11	PR 12	PR 13
EC 1		*		*	*								
EC 2			*	*	*	*				*	*		
EC 3								*	*		*		
EC 4	*	*	*	*	*	*	*			*			*
EC 5	*			*	*		*			*			*
EC 6	*	*				*	*						
EC 7											*	*	
EC 8								*	*				
EC 9			*					*	*	*		*	
EC 10			*	*				*			*	*	
EC 11								*	*				
EC 12			*	*				*	*				
EC 13	*	*		*			*	*	*				