

**MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE  
SUMY NATIONAL AGRARIAN UNIVERSITY**

**"APPROVED"**

by Academic Council of Sumy NAU  
Minutes

«25».03.2019 №10

\_\_\_\_\_ **V.I. Ladyka**

**EDUCATIONAL-SCIENTIFIC PROGRAM**

**Third (educational-scientific) level of higher education**

**Speciality 202 " PLANT PROTECTION AND QUARANTINE"**

**Field of study 20 "Agricultural Science and Food"**

**Qualification: Doctor of Philosophy (PhD) in Plant Protection and Quarantine**

**Sumy 2019**

**LETTER OF AGREEMENT**  
**Educational-Scientific Program 202 " Plant Protection and Quarantine"**  
*Higher Education Level – third (educational-scientific)*

<b>The project team consists of:</b>		
<b>The Chairman of the project team:</b>		
Doctor of Agricultural Sciences, Professor, Head of the Department of Plant Protection	_____ (Signature)	Vlasenko Volodymyr Anatoliiovych
<b>Project team members:</b>		
Doctor of Agricultural Sciences, Professor, Department of Plant Growing	_____ (Signature)	Zhatov Oleksii Hnatovych
Candidate of Agricultural Sciences, Associate Professor, Department of Plant Protection	_____ (Signature)	Demenko Viktor Mykhailovych
Candidate of Biological Sciences, Associate Professor, Department of Plant Protection	_____ (Signature)	Rozhkova Tetyana Oleksandrivna

## Foreword

The Educational-Scientific Program (ESP) for the preparation of third-level higher education (adjunct) applicants for the program subject area 202 " Plant Protection and Quarantine" contains the amount of ects credits required to obtain an appropriate higher education degree: a list of competencies; normative content of adjunct training, formulated in terms of learning outcomes; forms of attestation of applicants of the third level of higher education; requirements for the availability of internal quality assurance system for higher education.

ESP of training of specialists of the third educational and scientific level of higher education was developed in accordance with the law of Ukraine "On Higher Education" of July 1, 2014, resolution of the Cabinet of Ministers of Ukraine "On Higher Education" of November 23, 2011 "On Approval of the National Qualifications Framework" of December 30 2015 no. 1187, "On Approval of Licensing Conditions for Carrying out Educational Activities of Educational Institutions" of December 20, 2015, and taking into account the Draft of Higher Education Standard of Ukraine for the third level of higher education (Doctor of Pphilosophy) developed by a scientific and methodical subcommittee.

The educational-scientific program in speciality 202 «Plant Protection and Quarantine» is developed by the working (project) group consisting of:

	<b>Full name</b>	<b>Position</b>	<b>Scientific Degree, Academic Degree (if any)</b>
1	Vlasenko Volodymyr Anatoliiovych	Head of the Department of Plant Protection	Doctor of Agricultural Sciences, Professor
2	Zhatov Oleksii Hnatovych	Professor	Doctor of Agricultural Sciences, Professor
3	Demenko Viktor Mykhailovych	Associate Professor	Candidate of Agricultural Sciences, Associate Professor
4	Rozhkova Tetyana Oleksandrivna	Associate Professor	Candidate of Biological Sciences, Associate Professor

Program approved: at a meeting of the Department of Plant Protection (Minutes №19, March 18, 2019); (Minutes № 8 21.03.2019); approved by the Scientific and Methodological Council (Minutes №10 25.03.2019).

External stakeholder reviews:

1. Kabanets V.M., Director of the Institute of Agriculture of the North-East of NAAS of Ukraine.
2. Golinach O.L., Head of the Phytosanitary Safety Department of the Main Department of the State Consumer Service in Sumy Oblast.
3. Sloboda L.O., a third-level higher education candidate.

# 1. PROFILE OF EDUCATIONAL-SCIENTIFIC PROGRAM

## Program Subject Area 202 " Plant Protection and Quarantine "

<b>1. General information</b>	
<b>Full name of higher education institution</b>	Sumy National Agrarian University, Department of Plant Protection
<b>Higher education level</b>	The third (educational-scientific) level
<b>Higher education degree</b>	Doctor of Philosophy
<b>Field of study</b>	20 Agrarian Sciences and Food
<b>Program subject area</b>	202 Plant Protection and Quarantine
<b>The official name of the Educational-Scientific Program</b>	Plant Protection and Quarantine
<b>Educational qualification</b>	«Plants Protection and Quarantine»
<b>Professional qualification</b>	
<b>Qualification in diploma</b>	Higher education level - Doctor of Philosophy Program Subject Area 202 " Plant Protection and Quarantine " educational program " Plant Protection and Quarantine "
<b>Type of diploma and scope of educational program</b>	PhD Diploma, single, 57 ECTS credits, program length - 4 years
<b>Restrictions on forms of study</b>	
<b>Accreditation availability</b>	Not accredited
<b>Cycle / level</b>	NQF of Ukraine – level, 9, FQ-EHEA – third cycle, EQF LLL – Level, 8
<b>Prerequisites</b>	Based on the second ( master's ) higher education level, (specialist higher education level) Program Subject Area 202 " Plant Protection and Quarantine " and related specialties. Admission Requirements are determined by the Doctor of Philosophy Admission Program.
<b>Language of instruction</b>	Ukrainian, English
<b>Length of the educational program</b>	to 2023 (started in 2016).
<b>The link for the Educational-Scientific Program</b>	<a href="https://agro.snau.edu.ua/aspirantura/">https://agro.snau.edu.ua/aspirantura/</a>
<b>2 - The purpose of the Educational-Scientific Program</b>	
The aim of the Educational-Scientific Program is to form the ability to dynamically combine knowledge, skills, communication skills and abilities while solving complex problems in the field of professional and / or research and innovation activity in the Program Subject Area “Plants Protection and Quarantine”, which involves deep rethinking of existing and creating new knowledge and / or professional practice and the desire for continuous self-development and self-improvement.	
<b>3 - Characteristics of Educational-Scientific Program</b>	
<b>Field of study</b>	20 Agrarian Sciences and Food
<b>Program subject area</b>	202 Plant Protection and Quarantine
<b>Orientation of Educational-Scientific Program</b>	The educational and scientific program is focused on gaining the third level of higher knowledge, skills, communication skills and responsibilities and other competencies for successful implementation of scientific, professional (pedagogical) activity.
<b>Subject area:</b>	Objects of the study are algorithms for monitoring, control, and management of harmful organisms in agrobiocenoses with the assessment of patterns of influence of abiotic, biotic, anthropic and other factors.

	Systematization and mathematical modeling of experimental and analytical information indicators on the management of harmful organisms in modern farming systems.
<b>Targets of Educational-Scientific Program</b>	To investigate the features of development, reproduction, distribution of harmful species of organisms with ecological-economic evaluation of their control at species and population levels. Creation of science-based phytosanitary monitoring systems in protective and quarantine measures.
<b>The main focus of the Educational-Scientific Program and specialization</b>	Formation of conceptual and methodological knowledge in the subject area "Plant Protection and Quarantine", in the field of study "Agrarian Sciences and Food" or at the border of the fields of knowledge or professional activity. Use in the professional activity and research of the academic Ukrainian, foreign language, which will provide free communication in the sphere of scientific and expert knowledge, with colleagues, the broad scientific community, society in general. Developing the skills needed to tackle significant problems in professional, science and innovation, expanding and re-evaluating pre-existing knowledge and professional practice. Formation of an authoritative personality that is capable of innovation, high degree of independence, academic and professional integrity, consistent commitment to the development of new ideas or processes in advanced contexts and scientific activity of the subject area 202 Plant Protection and Quarantine, committed to continuous self-development and self-improvement.
<b>Theoretical content of the subject area</b>	Profound comprehensive study of fundamental and applied sciences related to (related) subject area 202 "Plant Protection and Quarantine".
<b>Features of programs</b>	<p>The program is focused on the preparation of third-level higher education applicants in the subject area 202 "Plant Protection and Quarantine", who can carry out scientific research based on the latest achievements in the field of study 20 "Agrarian Sciences and Food" based on the National Scientific Agricultural University of Sumy and agrarian University scientific institutions of the region.</p> <p><b>The educational component of the program.</b> The program provides for 57 ECTS credits, of which 42 ECTS credits - for all cycles of compulsory subjects (philosophy of science, modern information technologies in scientific activity, communication in the scientific environment, the methodology for conducting research, plant in the experiment, modeling, and planning of the scientific experiment, registration of intellectual property rights, organization and methodology of training sessions, organization of scientific publications preparation (Ukrainian language), management of scientific projects, foreign language for professional purposes, methods of preparation of scientific publications in foreign language teaching practice). And 15 ECTS credits are provided for the discipline of the cycle of special (professional) training (at the choice of the applicant).</p> <p><b>The scientific component of the program.</b> The scientific component of the educational and scientific program involves carrying out one's scientific researches under the guidance of one or two scientific supervisors with appropriate registration of the obtained results in the form of a dissertation. This component of the program is not measured by ECTS credits but is designed separately as an individual postgraduate research plan.</p>

	The peculiarity of the scientific component of the educational program of training of doctors of philosophy in the subject area 202 Plant protection and Quarantine is that certain components of their scientific research can be carried out by postgraduate students during the study of vocational training disciplines and on the bases of leading regional research institutions.
<b>Methods, techniques and technologies</b>	Methods and techniques of field and laboratory studies of the development, reproduction and dynamics of the spread of harmful organisms in agrocenoses, information systems and technologies.
<b>4. Employment and further education</b>	
<b><i>Employment eligibility</i></b>	<p>Graduates have ample career opportunities depending on their interests, including scientific, teaching, expert, managerial, administrative activities in the field of study Agricultural Sciences and Food in the subject area 202 Plant Protection and Quarantine.</p> <p>The level of preparation enables you to develop a professional career based on strategic thinking and profound knowledge of plant protection and quarantine.</p> <p>Specialist capable of performing the specified professional work for (DK 003: 2010):</p> <p>1221 heads of production units in agriculture, forestry, and water, fisheries, fisheries, and nature conservation;</p> <p>1237 heads of research and production training units and other heads;</p> <p>2213 professionals in agronomy, aquaculture, zoo engineering, forestry, land reclamation, and nature conservation;</p> <p>2310 University Teachers and Higher Education Teachers;</p> <p>and other areas of specialty.</p>
<b><i>Further training</i></b>	Training for development and self-improvement in the scientific and professional spheres of activity in the subject area 202 Plant protection and quarantine, as well as other related branches of scientific knowledge: training at the 10th (scientific) level of the NRC of Ukraine in field of study 20 Agrarian sciences and food; educational programs, research grants and scholarships (including overseas) that contain additional educational components. Various forms of lifelong learning (both in Ukraine and abroad) to enhance skills and improve management, administrative, scientific, research, pedagogical or other activities.
<b>5 – Training and assessment</b>	
<b>Approaches to teaching and learning</b>	<p><b>Approaches to teaching and learning:</b></p> <ul style="list-style-type: none"> <li>- active learning (interactive teaching methods that provide a person-centered approach and development of systemic, creative and strategic thinking; joint learning in interdisciplinary groups; "upturned class";</li> <li>- learning by teaching (pedagogical practice);</li> <li>- training through research (including participation in the execution of budgetary and contractual research work, participation in research projects);</li> <li>- Personalized Learning: individual consultations with scientific leaders; selective disciplines).</li> </ul>
<b>Assessment</b>	<b>The educational component of the program.</b> The system of evaluation of the obtained results of training in the disciplines of the educational and scientific program consists of current and final control. Current control of knowledge is carried out orally (questionnaire on the results

	<p>of the processed material). Final control of knowledge - in the form of written and oral examinations, tests. During the current and final control in the process of evaluation of the disciplines providing professional training, prepared by the applicant and published scientific articles in the collections included in the professional publications and/or publications included in the international scientometric bases shall be taken into account.</p> <p><b>The scientific component of the program.</b> Assessment of scientific activities of applicants is carried out by the scientific plan of the graduate student through:</p> <ul style="list-style-type: none"> <li>- participation in seminars of the department, conferences</li> <li>- peer review of scientific works;</li> <li>- self-esteem</li> <li>- recommendations of the scientific advisor;</li> <li>- intermediate postgraduate certification in the form of an annual report on the implementation of the individual plan;</li> <li>- preparation and presentation of the dissertation.</li> </ul>
<p><b>Form of control of success of training of the graduate student (applicant)</b></p>	<p><b>The educational component of the program.</b> The system of assessment of knowledge of the educational and scientific program provides for the implementation of current and final control. Current control is carried out in the form of tests, work at classes, performances at seminars and conferences, preparation of scientific reports. The final control of the success of the training of the applicant is in the form of Exam - the results of studying the compulsory disciplines of the educational program of the block of philosophical competences - philosophy of science; teaching - organization, and methodology of training; research - registration of intellectual property rights, management of scientific projects; communicative - foreign language by professional direction, the methodology of preparation of scientific papers in a foreign language, organization of preparation of scientific publications (Ukrainian language) and sampling components. A graduate student is considered to be admitted to the final control of the disciplines of the educational-scientific program if he has completed all kinds of work provided in the curriculum in this discipline. Modular rating system by which the evaluation of applicants is carried out taking into account all types of audit and non-audit activities. Assessments of educational achievement are carried out on 100-point (rating scale), national 4-point scale ("excellent", "good", "satisfactory", "unsatisfactory") and verbal ("enrolled", "unaccounted") systems.</p> <p><b>The scientific component of the program.</b> The scientific component of the educational and scientific program involves the disciplines of cycles of general training, special (professional), research training, language special (vocational) and practical training (compulsory and elective) and pedagogical practice, which together with the educational part of the program and scientific research with the participation of the supervisor. Preparation and public defense of the dissertation in the specialized academic council ensures obtaining the educational level "Doctor of Philosophy" in the subject area 202.</p>
<p><b>6 – Program competencies</b></p>	
<p><b>Integral competence</b></p>	<p>Ability to identify and solve complex problems in the field of professional, including research and innovation, which involves a deep rethinking of existing and creation of new holistic knowledge and</p>



	<p>training in plant protection and quarantine, as well as to hypothesize and generate new ideas about educational, scientific and professional (industrial) activity.</p>
<p><b>General competence (GC)</b></p>	<ol style="list-style-type: none"> <li>1. The ability to learn, master modern knowledge, self-improve and form a systematic scientific outlook.</li> <li>2. The ability to analyze and evaluate modern scientific achievements, synthesis of holistic knowledge, complex problem solving</li> <li>3. Ability to abstract creative thinking, identify, receive, systematize, synthesize and analyze information from various sources with the use of modern information technologies in scientific activity.</li> <li>4. Ability to plan and carry out comprehensive research at the modern level using the latest information and communication technologies and adherence to the parameters of safe activity on the basis of a comprehensive systematic scientific worldview using knowledge in the field of history and philosophy of science.</li> <li>5. The ability to generate new ideas and make informed decisions to achieve goals.</li> <li>6. The ability to develop and manage research projects, to initiate research organizations in the field of research and innovation, to assess the needs of research funding, to carry out the registration of intellectual property rights.</li> <li>7. Ability to participate in the work of national and international research teams to solve scientific and scientific-educational tasks.</li> <li>8. Ability to take initiative, take responsibility, motivate people and move toward a common goal.</li> <li>9. Ability to perform activities while maintaining the natural and cultural heritage, to work effectively in a team, to communicate with experts and experts of different levels of other fields of knowledge.</li> <li>10. Ability to adhere to the rules of scientific ethics, copyright and related intellectual property rights.</li> <li>11. Ability to prepare scientific texts, present, discuss, debate and debate scientific results</li> <li>12. Ability to speak national and foreign languages (professional), to freely receive, process and reproduce information in a volume sufficient to fully understand general and professional topics, demonstrating a culture of scientific oral and written language.</li> <li>13. Ability to participate in scientific discussions, critical dialogues at the domestic and international levels, to defend their scientific position.</li> <li>14. Ability to plan and conduct training sessions using a competency based approach (learning outcomes based approach).</li> </ol>
<p><b>Special (professional) competence (SC)</b></p>	<ol style="list-style-type: none"> <li>1. The ability to apply methods for the identification of harmful organisms, to conduct scientifically sound phytosanitary diagnostics in agrobiocenoses and to control and manage the density of harmful organisms.</li> <li>2. Ability to develop effective scientific models and technological schemes for determining the objects of regulation to ensure compliance with phytosanitary measures in import-export products and the latest crop management systems.</li> <li>3. The ability to identify patterns of development and spread of a complex of harmful organisms and to develop scientifically sound</li> </ol>

	<p>protective measures.</p> <p>4. Ability to develop mathematical models of seasonal and perennial dynamics of the number of harmful organisms and to apply highly effective scientific methods of elimination of harmful organisms in the time and space of Ukraine, the EU and individual countries of the world.</p> <p>5. Ability to develop technological schemes of effective control of a complex of harmful organisms based on regular knowledge and skills in the field of entomology, phytopathology and herbology</p> <p>6. Ability to carry out laboratory studies, analyze the relationships of plants and harmful organisms with the development of a methodology for the management of harmful organisms at species and population levels at agricultural sites of intended and non-intended use.</p> <p>7. Ability to develop models of forecasting, complex economic thresholds of the harmfulness of phytophages, scientifically-substantiated complex measures on protection and quarantine of plants for the enterprises, establishments, organizations of all forms of ownership, the activity of which is connected with the use of land, water objects, cultivation of agricultural plants and other purposes, their implementation, processing, storage and use in modern forms of land use.</p> <p>8. The ability to formulate a scientific problem, develop working hypotheses, determine the relevance, purpose, tasks that need to be accomplished to achieve the goal, evaluate the resources needed and time to implement, which involves a deep rethinking of existing and creation of new holistic knowledge and/or professional practice in plant protection and quarantine.</p> <p>9. Ability to analyze, systematize and summarize the results of scientific research, compare them with the results of other domestic and foreign scientists in the the subject area "Plant Protection and Quarantine" and relevant specialties of the industry, make sound and reliable conclusions, create databases and use Internet resources.</p> <p>10. The ability to find ways to possibly use the results obtained for the further development of science, improving the quality of the educational process and / or economic efficiency of the agro-industrial complex.</p> <p>11. The ability to carry out educational and pedagogical activities within the the subject area "Plant Protection and Quarantine", applying traditional and innovative methods, techniques, tools and more.</p> <p>12. Ability to prepare scientific texts, work with various sources, carry out, process, analyze and organize the information obtained. Ability to shape the structure of scientific</p> <p>13. Ability to introduce research-based results of dissertation research by specialty into research institutions, production.</p> <p>14. The ability to cover the results of scientific research on the plants protection and quarantine in domestic and foreign scientific publications.</p>
<b>7 - Program training outcomes</b>	
	<p>1. Speak fluent national and foreign languages, be able to present professionally the results of scientific research at national and international scientific conferences, seminars, scientific, innovative and pedagogical activities.</p> <p>2. Communicate freely in a dialogue mode with the broad scientific community and the public in the relevant field of scientific and / or</p>

professional activity.

3. To have up-to-date advanced conceptual and methodological knowledge in performing research and / or professional activity and at the border of subject areas of knowledge, guided by the principles of academic integrity and scientific ethics.

4. Generate your own ideas, make sound decisions, have a thorough knowledge of the subject area and understanding of the profession, knowledge of the works of leading domestic and foreign scientists, fundamental research work, to formulate the purpose of their own scientific research as part of the civilization process.

5. To possess methods of statistical processing of the received results of scientific researches with use of modern information technologies. To conduct professional interpretation of the received materials on the basis of modern software using existing theoretical models, to create own object-theories.

6. To know the principles of organization, forms of realization of educational process in modern conditions, its scientific, educational-methodical and normative providing, working out of scientific and informational sources during preparation for employment, application of active teaching methods.

7. Be able to work with various literary sources, carry out, process, analyze and organize the information received. Understanding of scientific articles in the field of the chosen specialty. Ability to work with up-to-date bibliographic and abstract databases, as well as scientometric platforms such as Web of Science, Scopus and others.

8. Be able to analyze critically, evaluate and synthesize new scientific provisions, various information sources, scientific literature, research of domestic and foreign authors on plant protection and quarantine. Keep up with the latest developments in the industry and find scientific sources relevant to the field of scientific interest of the applicant. Analyze information sources, identify contradictions and previously unsolved problems or parts of them, formulate working hypotheses.

9. Understand the peculiarities of structure and be able to prepare scientific works (monographs, scientific articles, etc.), following the principles of academic integrity. Qualified to reflect the results of scientific research in scientific articles published both in professional domestic publications and in publications included in international scientometric databases.

10. Being able to make informed decisions, self-development and self-improvement, be responsible for the reliability and novelty of their own research and decision-making, be able to motivate employees to move towards a common goal.

11. To formulate a scientific problem with regard to the values of modern society and the state of its scientific development, working hypotheses of the problem under study, which should extend and deepen the state of scientific research in the specialty "Plant Protection and Quarantine".

12. To use modern information and communication technologies during communication, information exchange, collection, analysis, processing, interpretation of different sources of information and obtained research results.

	<p>13. Be able to work in a team, including interdisciplinary, have interpersonal skills.</p> <p>14. Initiate, organize and conduct comprehensive plant protection and quarantine studies that lead to new knowledge.</p> <p>15. Assess the value of humanitarian, natural science knowledge. Find optimal solutions according to the field of research, have sufficient competence in independent research methods, be able to interpret their results.</p> <p>16. Identify, summarize and solve problems related to the specialty 202 "Plant Protection and Quarantine" and those that arise in the process of professional activity, to form a sense of responsibility for the work performed.</p> <p>17. Demonstrate social optimism and respect for ethical principles on the basis of humanitarian knowledge. To show positive professional, social and emotional behavior and adapt it to the system of universal values; within the competence to exercise independence and responsibility in the work</p> <p>18. Perform clear and qualitative research on plant protection and quarantine. Understand ways to implement the results of specialty research, improve methods of their conduct and teach others.</p> <p>19. To possess principles of financial support of research work, structure of estimates for its execution, preparation of the request for financing, preparation of reporting documentation.</p> <p>20. Combine a combination of different technological methods of carrying out scientific research, including laboratory, to solve typical professional problems, taking into account national and world standards for plant protection and quarantine. Perform research according to methodologies.</p> <p>21. Have the ability to act socially consciously and responsibly on the basis of ethical motives, to make informed decisions, to develop and self-improve, to be responsible for the novelty of scientific research and expert decisions, to motivate employees and to move toward a common goal.</p> <p>22. Ability to present research results, including in the form of dissertation, to defend the results of research.</p>
<b>8. Forms of attestation of applicants of higher education</b>	
<b>Forms of attestation of applicants of higher education</b>	Certification is carried out in the form of a public presentation of the research results in the form of a dissertation of the doctor of philosophy, provided that the graduate student completes his individual curriculum.
<b>Requirements for qualification work</b>	The dissertation work of Doctor of Philosophy provides the solution of the actual theoretical and / or experimental (practical) problem in field of study 20 "Agrarian sciences and food" on a program subject area 202 "Plants Protection and Quarantine" and testifies to the ability of the applicant to form independent scientific research, formulate new complex ideas and justify them. The dissertation is the result of the independent scientific work of the applicant, who has the status of intellectual product on the rights of the manuscript and offers the solution of the actual scientific task in the program subject area 202 " Plant Protection and Quarantine".
<b>Public protection requirements</b>	The thesis is defended in public at a meeting of the specialized Academic Council. An obligatory prerequisite for admission to the thesis is to approve the results of the research and the main conclusions

	at scientific conferences and publish them in professional scientific publications, in accordance with current requirements.
<b>9 - Resources support for program implementation</b>	
<b>Academic staff</b>	Scientific and teaching staff meets the requirements of the current legislation of Ukraine. Teachers involved in the implementation of the educational program are employees of Sumy NAU, providing training and training of scientific and pedagogical staff at least once every five years. 100% of scientific and pedagogical staff involved in the teaching of disciplines have scientific degrees and academic titles. Personnel potential of Sumy NAU allows to train third-level higher education applicants in the program subject area 202 "Plant Protection and Quarantine" and meets the regulatory requirements.
<b>Technical support and educational facilities</b>	The material and technical support of the Faculty of Agrotechnology and Environmental Management of Sumy NAU allows training of third-level higher education applicants and meets the regulatory requirements. The peculiarities of ONP are the possibility of carrying out laboratory researches at the university, which is ensured by the presence of powerful laboratories - "Educational and scientific PCR laboratory" within the framework of the Erasmus + KA2 project, "Electron microscopy", "Laboratory of ecological agriculture and nature management" and potatoes ».
<b>Information and training support</b>	The educational process of preparation for higher education applicants is provided with methodological and informational materials in a sufficient volume in relation to regulatory needs. In addition, information and educational support for all participants in the educational process is provided through the University's website ( <a href="https://snau.edu.ua/">https://snau.edu.ua/</a> ), which contains information about educational programs, educational, scientific and educational activities, structural units, contacts, repositories, research libraries and reading rooms, and more. All the resources of the Sumy NAU library are accessible through the university's website and the library's website ( <a href="https://library.snau.edu.ua/">https://library.snau.edu.ua/</a> ), the regular and electronic reading rooms of the SNAU library are provided with wireless Internet access. Obtainers have free access to the Sumy NAU repository ( <a href="http://repo.snau.edu.ua/">http://repo.snau.edu.ua/</a> ) and use of the Sumy Higher Education Scientific Libraries Fund of the Sumy National Library of Ukraine. VI Vernadsky et al. According to the Ministry of Education and Science of Ukraine Order No.1213 dated 06.11.2018 "On granting access to electronic scientific databases to higher educational establishments and scientific institutions in the field of MES management", Sumy National Agrarian University has been granted access to international scientific databases Scopus and Web of Science.
<b>9 - Academic mobility</b>	
<b>National credit mobility</b>	Based on bilateral agreements between Sumy NAU and universities of Ukraine. Academic mobility agreements are concluded for study and research at universities and scientific institutions of Ukraine. Leading specialists of universities and research institutions of Ukraine may be involved in the management of the scientific work of higher education applicants on the terms of individual contracts.
<b>International credit mobility</b>	On the basis of bilateral agreements between Sumy NAU and higher educational establishments of foreign partner countries under the terms

	of cooperation agreements. More information on the website of Sumy National Agrarian University: <a href="https://snau.edu.ua/mizhnarodni-proekti/">https://snau.edu.ua/mizhnarodni-proekti/</a>
<b>Training of foreign postgraduates</b>	Third-cycle higher education students receive general language training with additional language training. Sumy NAU has the right to train higher education applicants with the opportunity to train foreigners and stateless persons. Training of third-level (educational-scientific) higher education students is carried out under general conditions with additional language training, scientific and pedagogical workers have B2 certificates.

## 2. List of components of Educational-Scientific Program and their logical consistency

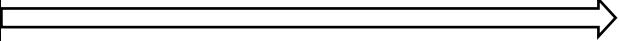
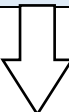
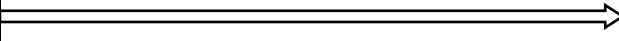
### 2.1. List of ESP components

Code	Components of the educational program (disciplines, course projects (works), practice, qualification work)	Amount of credits	Assessment
1	2	3	4
<b>Required ESP components</b>			
<b>EC 1.</b>	Philosophy of science	3	exam
<b>EC 2.</b>	Contemporary computer technologies in science	3	credit
<b>EC 3.</b>	Communications in scientific area	3	credit
<b>EC 4.</b>	Methodology of conducting scientific researches	3	credit
<b>EC 5.</b>	The plant in the experiment	3	exam
<b>EC 6.</b>	Modeling and planning scientific experiment	3	credit
<b>EC 7.</b>	Registration of intellectual property rights	3	exam
<b>EC 8.</b>	Teaching methodology	3	exam
<b>EC 9.</b>	Ukrainian language	3	exam
<b>EC 10.</b>	Project management	3	exam
<b>EC 11.</b>	English in professional area	3	exam
<b>EC 12.</b>	Methodology for preparing scientific papers in a foreign	3	exam
<b>EC 13.</b>	Practice in Teaching & learning	6	credit
<b>The total amount of required components</b>		<b>42</b>	
<b>Selective components of the ESP</b>			
<b>SC 1.</b>	Selective components	3	exam
<b>SC 2.</b>	Selective components	4	credit
<b>SC 3.</b>	Selective components	4	credit
<b>SC 4.</b>	Selective components	4	credit
Total amount of selective components:		<b>15</b>	
<b>TOTAL SCOPE OF THE EDUCATION PROGRAM</b>		<b>57</b>	

### 2.2. Structural-logical scheme of Educational-Scientific Program

Higher education applicants have the right to choose courses within the limits set by the relevant curriculum and work curriculum, to the extent of at least 25 percent of the total ECTS credits provided for a given higher education level.

### Structural-logical scheme of Doctors of Philosophy training

General Training Unit (Competence)		Professional Training Unit (Competence)				
1 year	Philosophy of Science	Teaching Methodology	Methodology of Conducting Scientific Researches		The Plant in the Experiment	
				Foreign language for professional use		
			Registration of intellectual property rights			
				Ukrainian language	Communications in Scientific Area	
2 year			Contemporary Computer Technologies in Science			
				Project Management		
			Modeling and Planning Scientific Experiments	Methodology for Preparing Scientific Papers in a Foreign		
					SC. 1	
					SC. 2	
				SC. 3		
				SC. 4		
3 year		Practice in Teaching & Learning				

**4. List of normative documents on which the draft standard of the third (educational-scientific) level of higher education on specialty 202 " Plants Protection and quarantine" is based**

1. Law of Ukraine "On Higher Education" of 01.07.2014 № 1556-VII - <http://zakon4.rada.gov.ua/laws/show/1556-18>.
2. Guidelines for the Development of Higher Education Standards // I. Baluba et al. Approved by the Higher Education Sector of the Scientific and Methodological Council. - 29 p.
3. Resolution of the Cabinet of Ministers of Ukraine of November 23, 2011 No. 1341 "On Approval of the National Qualifications Framework".
4. Resolution of the Cabinet of Ministers of Ukraine dated 29.04.15 No. 266 "On approval of the list of branches of knowledge and specialties by which higher education applicants are trained".
5. Order of the Ministry of Education and Science of Ukraine No. 600 dated 01.06.2016 "On Approval and Implementation of Methodological Recommendations for the Development of Higher Education Standards".
6. National Classifier of Ukraine: Classifier of Occupations DK 003: 2010, effective from 2010-11-01.
7. List of branches of knowledge and specialties - <http://zakon4.rada.gov.ua/laws/show/266-2015-p>.
8. Areas of Education and Training 2013 (ISCED-2013): Accompanying Guide to the 2011 International Standard Classification of Education - UNESCO Institute for Statistics, 2014. - Access Mode: <http://www.uis.unesco.org/Library/Documents/isced-f-2013-fields-of-education-training-2014-rus.pdf>.
9. National Glossary 2014-  
[http://ihed.org.ua/images/biblioteka/glossariy\\_Visha\\_osvita\\_2014\\_tempus-office.pdf](http://ihed.org.ua/images/biblioteka/glossariy_Visha_osvita_2014_tempus-office.pdf).
10. Standards and Recommendations for Quality Assurance in the European Higher Education Area, ESG 2015 -  
[http://www.britishcouncil.org.ua/sites/default/files/standards-andguidelines\\_for\\_qa\\_in\\_the\\_ehea\\_2015.pdf](http://www.britishcouncil.org.ua/sites/default/files/standards-andguidelines_for_qa_in_the_ehea_2015.pdf).
11. Development of educational programs: guidelines -  
[http://ihed.org.ua/images/biblioteka/rozroblennya\\_osv\\_program\\_2014\\_tempus-office.pdf](http://ihed.org.ua/images/biblioteka/rozroblennya_osv_program_2014_tempus-office.pdf).
12. Development of the quality assurance system of higher education in Ukraine: information and analytical review -  
[http://ihed.org.ua/images/biblioteka/Rozvitok\\_sisitemi\\_zabesp\\_yakosti\\_VO\\_UA\\_2015.pdf](http://ihed.org.ua/images/biblioteka/Rozvitok_sisitemi_zabesp_yakosti_VO_UA_2015.pdf).
13. ISCED 2011 - <http://www.uis.unesco.org/education/documents/isced-2011-en.pdf>.
14. ISCED-F (ISCED-D) 2013 - <http://www.uis.unesco.org/Education/Documents/isced-fields-of-education-training-2013.pdf>.
15. TUNING (to get acquainted with special (professional) competences and examples of standards - <http://www.unideusto.org/tuningeu/>.
16. Rashkevich Yu.M. The Bologna Process and the New Higher Education Paradigm - file: /// D: /Users/Dell/Downloads/BolonskyiProcessNewParadigmHE.pdf.
17. 2015 European Credit Transfer-Cumulative System: User Guide (English translation) -  
<http://erasmusplus.org.ua/erasmus/ka3-pidtrymka-reform/natsionalna-komanda-ekspertiv-here/materiali-here.html>.
18. The UK Quality Code for Higher Education, Subject Benchmark Statements. -  
[Http://www.qaa.ac.uk/assuring-standards-and-quality/the-quality-code/subject-benchmark-statements](http://www.qaa.ac.uk/assuring-standards-and-quality/the-quality-code/subject-benchmark-statements).

**Project Team Leader**  
(*guarantor of educational-scientific program*):

**Doctor of Agricultural Sciences,**  
**Professor**  
**Vlasenko Vladimir Anatolievich**



**Matrix of compliance of the designated EP competencies with the SC descriptors**

Classification of competences for the NQF	Knowledge	Skills	Communication	Autonomy and responsibility
<b>General competence (GC)</b>				
GC 1. The ability to learn, master modern knowledge, self-improve and form a systematic scientific outlook.	*	*		
GC 2. Ability to critically analyze and evaluate modern scientific achievements, synthesis of holistic knowledge, complex problem solving	*	*		*
GC 3. Ability to abstract creative thinking, identify, receive, systematize, synthesize and analyze information from various sources with the use of modern information technologies in scientific activity.	*		*	
GC 4. Ability to plan and conduct complex, up-to-date research using up-to-date information and communication technologies and adherence to secure activity based on a holistic systemic scientific worldview with knowledge of the history and philosophy of science.	*	*	*	
GC 5. Ability to generate new ideas and make informed decisions to achieve goals.	*	*		*
GC 6. Ability to develop and manage research projects, to initiate research organizations in the field of research and innovation, to evaluate the needs of research funding, to register intellectual property rights.	*		*	*
GC 7. Ability to participate in the work of national and international research teams to solve scientific and scientific-educational tasks.	*		*	
GC 8. Ability to take initiative, take responsibility, motivate people and move toward a common goal.			*	*
GC 9. Ability to engage in activities that preserve natural and cultural heritage, work effectively in teams, communicate with professionals and experts from different levels of other fields of knowledge.		*	*	
GC 10. Ability to comply with the rules of scientific ethics, copyright and related intellectual property rights.	*		*	*
GC 11. Ability to prepare scholarly texts, present, discuss, discuss and debate scientific findings about the results of their scientific work	*	*	*	*
GC12. Ability to speak both national and foreign languages (professional), freely receive, process and reproduce information in a volume sufficient to fully understand general and professional	*	*	*	

topics, demonstrating a culture of scientific verbal and written language.				
GC13. Ability to participate in scientific discussions, critical dialogues at the national and international levels, to defend their scientific position.		*	*	*
GC 14. Ability to plan and conduct training sessions using a competency based approach (learning outcomes based approach).	*	*	*	
<b>Special (professional) competence (SC)</b>				
SC 1. Ability to apply techniques for the identification and identification of harmful organisms, to conduct scientifically sound phytosanitary diagnostics in agrobiocenoses, and to control and manage the density of harmful organisms.		*	*	
SC 2. Ability to develop effective scientific models and technological schemes for determining regulatory objects in order to ensure compliance with phytosanitary measures in import-export products and the latest crop management systems.	*	*		
SC 3. Ability to identify patterns of development and spread of a complex of harmful organisms and to develop scientifically sound protective measures.	*	*		*
SC 4. Ability to develop mathematical models of seasonal and perennial dynamics of harmful organism numbers and to apply highly effective scientific methods of elimination of harmful organisms in time and space of Ukraine, EU and individual countries of the world.		*		
SC 5. Ability to develop technological schemes of effective control of a complex of harmful organisms on the basis of regular knowledge and skills in the field of entomology, phytopathology and herbology.	*	*		
SC 6. Ability to conduct laboratory studies, analyze the relationships of plants and pests with the development of a pest and population management methodology for species at the target and non-target agricultural sites.	*	*		*
SC 7. Ability to develop models of forecasting, complex economic thresholds of harmfulness of phytophages, scientifically-substantiated complex measures on protection and quarantine of plants for the enterprises, establishments, organizations of all forms of ownership, the activity of which is connected with the use of land, water objects, cultivation of plants agricultural and other purposes, their implementation, processing, storage and use in modern forms of land use.	*	*		
SC 8. Ability to formulate a scientific problem,	*			*

develop working hypotheses, determine relevance, purpose, tasks that need to be accomplished to achieve the goal, evaluate the resources needed and time to implement, which involves a deep rethinking of existing and creating new holistic knowledge and / or professional practice plant protection and quarantine.				
SC 9. Ability to analyze, systematize and summarize the results of scientific research, compare them with the results of other domestic and foreign scientists in the field of Plant Protection and Quarantine and related specialties of the industry, make informed and reliable conclusions, create databases and use Internet resources.	*			*
SC 10. Ability to find ways of possible use of the obtained results for the further development of science, improving the quality of the educational process and / or economic efficiency of the agro-industrial complex.			*	*
SC 11. The ability to carry out educational and pedagogical activities within the specialty "Plant Protection and Quarantine", using traditional and innovative methods, techniques, tools and more.		*	*	*
SC 12. Ability to prepare scientific texts, work with various sources, carry out, process, analyze and organize the information obtained. Ability to shape the structure of scientific work, incl. dissertation, to carry out its rubrication and content filling.	*	*		*
SC 13. Ability to introduce research-based results of dissertation by specialty into research institutions, production.		*	*	*
SC 14. The ability to cover the results of scientific research on plant protection and quarantine in domestic and foreign scientific publications.	*		*	*

**Matrix of correspondence of defined EP of learning outcomes and competencies**

Program training results	Integral competence	Competence																											
		General competence (GC)														Special (professional) competence (SC)													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	IC 1																												
PTR 1	*	*							*		*	*											*			*		*	
PTR 2	*	*					*					*	*										*		*				
PTR 3	*					*				*			*		*									*		*			
PTR 4	*		*	*		*										*				*			*						
PTR 5	*		*						*		*						*	*			*		*						
PTR 6	*			*					*		*													*	*				
PTR 7	*	*	*	*						*						*							*			*			
PTR 8	*						*		*			*				*				*						*			
PTR 9	*		*			*	*			*	*												*			*		*	
PTR 10	*	*			*	*	*		*																*				
PTR 11	*	*			*											*						*	*	*					
PTR12	*			*						*								*	*				*						
PTR 13	*				*	*	*		*				*			*									*				
PTR 14	*			*	*		*					*			*					*			*	*					
PTR 15	*						*			*	*					*						*			*			*	
PTR 16	*	*						*	*	*										*	*	*							
PTR 17	*			*			*	*					*									*		*					
PTR 18	*				*						*				*		*	*								*		*	
PTR 19	*						*										*	*					*			*		*	
PTR 20	*					*									*		*		*	*	*								
PTR21	*	*					*	*	*	*									*			*		*				*	
PTR 22	*		*		*					*		*													*		*	*	

**The Matrix of Software Assurance of Learning Outcomes (SALO) with the relevant components of an educational and scientific program**

	SALO 1	SALO 2	SALO 3	SALO 4	SALO 5	SALO 6	SALO 7	SALO 8	SALO 9	SALO 10	SALO 11	SALO 12	SALO 13	SALO 14	SALO 15	SALO 16	SALO 17	SALO 18	SALO 19	SALO 20	SALO 21	SALO 22
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						*							*				*				*	
SC 1			*				*	*	*										*			*
SC 2				*				*			*		*	*	*	*		*		*		*
SC 3				*				*			*	*	*	*	*	*		*		*		*
SC 4				*				*			*		*	*	*	*		*		*		*