

**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 201 “Agronomy”**

**Field of study 20 “Agricultural Science and Food”**

**Qualification: Doctor of Philosophy (PhD) in Agronomy**

**Sumy 2019**

**LETTER OF AGREEMENT**  
**Educational-Scientific Program “Agronomy”**  
*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 Biotechnology and Phytopharmacology Department	<b>A.A.Podhaietkyi</b>
<b>Project team members:</b>	
Doctor of Agricultural Sciences, Professor, Head of Plant Growing Department	<b>V.I.Trotsenko</b>
Doctor of Agricultural Sciences, Professor of Landscape Design and Forestry Department	<b>A.V.Melnyk</b>
Doctor of Agricultural Sciences, Professor of the Department of Agriculture, Soil Science and Agrochemistry	<b>O.V.Kharchenko</b>
Doctor of Agricultural Sciences, Professor of Selection and Seed Production Department	<b>N.S.Kozhushko</b>
Candidate of Agricultural Sciences, Associate Professor of Selection and Seed Production Department	<b>V.I.Onychko</b>

## **PREAMBLE**

The Educational-Scientific Program (ESP) for the preparation of third-level higher education applicants (adjuncts) in speciality 201 “Agronomy” contains the ECTS credits required to obtain an appropriate higher education degree: a list of competencies; normative content of adjuncts’ training, formulated in terms of learning outcomes; forms of third-level higher education applicants’ attestation; requirements for the availability of the internal quality assurance system for higher education.

ESP for training third-level higher education specialists was developed in accordance with the Law of Ukraine “On Higher Education” dated July 1, 2014, the Decrees 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 №1187, "On Approval of the License Conditions for Conducting Educational Activities of Educational Institutions" dated December 20, 2015, taking into account the draft of higher education standard of Ukraine for the third level of higher education (Ph.D.) developed by the scientific and methodical subcommittee.

The educational-scientific program in speciality 201 “Agronomy” is developed by the working (project) group consisting of:

<b>№</b>	<b>Full name</b>	<b>Position</b>	<b>Scientific Degree, Academic Degree (if any)</b>
1	Podhaietskyi Anatolii Adamovych	Head of Biotechnology and Phytopharmacology Department, Professor	Doctor of Agricultural Sciences, Professor
2	Trotsenko Volodymyr Ivanovych	Head of Plant Growing Department, Professor	Doctor of Agricultural Sciences, Professor
3	Melnyk Andrii Vasyliovych	Professor of Landscape Design and Forestry Department	Doctor of Agricultural Sciences, Professor
4	Kharchenko Oleh Vasyliovych	Head of the Department of Agriculture, Soil Science and Agrochemistry, Professor	Doctor of Agricultural Sciences, Professor
5	Kozhushko Nelli Semenivna	Professor of Selection and Seed Production Department	Doctor of Agricultural Sciences, Professor
6	Onychko Viktor Ivanovych	Head of Selection and Seeds Production Department, Associate Professor	Candidate of Agricultural Sciences, Associate Professor

The program is approved: at the meeting of the graduate departments: selection and seeds, biotechnology and phytopharmacology, plant growing, agriculture, soil science and agrochemistry (Minutes №19, March 18, 2019); the Academic Council of the Faculty of Agrotechnologies and Natural Resources Management (Minutes № 8 21.03.2019); approved by the Scientific and Methodological Council (Minutes №10 25.03.2019).

Reviews and comments of external stakeholders:

Director of the Department of  
Agro-industrial Development of  
Sumy Regional State Administration

O.M.Maslak

Managing Director of TOV  
“VorozhbaLatInvest”

M.O.Shtukin

Director of Sumy Regional  
State Expert Centre of  
Plant Varieties

M.M.Sakhoshko

**Profile of educational program  
Speciality 201 “Agronomy”**

<b>1. General information</b>	
<b>Full name of higher education institution and structural unit</b>	Sumy National Agrarian University
<b>Higher education level</b>	Third (educational-scientific) level
<b>Higher education degree</b>	Doctor of Philosophy (Philosophy Doctor degree)
<b>Field of study</b>	20 Agricultural Science and Food
<b>Speciality</b>	201 Agronomy
<b>Official name of educational program</b>	“Agronomy”
<b>Educational qualification</b>	Doctor of Philosophy in Agronomy
<b>Qualification in the diploma</b>	Higher education level – Doctor of Philosophy Speciality – 201 “Agronomy” Educational program “Agronomy”
<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>	No restrictions
<b>Availability of accreditation</b>	Not accredited
<b>Cycle/level</b>	NQF of Ukraine – level 9, FQ-EHEA – third cycle, EQF LLL – level 8
<b>Prerequisites</b>	Higher education of second (Master) level, (educational qualification level of specialist) in speciality 201 “Agronomy”. Requirements for applicants are determined by the Rules for admission on education-scientific PhD program
<b>Language of instruction</b>	Ukrainian, English
<b>Extension of the educational program</b>	By 2023 p. (started in 2016).
<b>The link for the educational – professional program</b>	<a href="https://agro.snau.edu.ua/aspirantura/">https://agro.snau.edu.ua/aspirantura/</a>
<b>2. The purpose and goals of educational program</b>	
Training of highly qualified specialists, capable to solve complex problems in the field of agronomy in professional and/or research and innovation activity, to carry out scientific and pedagogical activity.	
<b>3. Characteristics of educational program</b>	
<b>Subject area description</b>	Field of study 20 “Agricultural Science and Food” Speciality 201 “Agronomy”

<b>Orientation of the Program</b>	The educational and scientific program is focused on obtaining by the applicant of the third level of higher education professional-scientific knowledge, skills, other competences for successful professional and scientific activity.
<b>Object of study</b>	<i>Object of study</i> are algorithms for monitoring, control and management of harmful organisms in agrobiocenoses with 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>Learning goals</b>	Development of professional, scientific and educational competencies necessary for innovative professional, scientific and educational activity and introduction of modern technologies in speciality 201 "Agronomy". Creating conditions for the applicants to be able to carry out their own scientific research at an internationally recognized level; the support of graduate students as highly qualified teachers, scientists and experts in agronomy.
<b>Focus of the program: general/special</b>	<p>The educational-scientific program is formed as the optimal combination of academic and professional requirements, which allows graduate students to form the ability to justify problems solving in the field of "Agricultural Science and Food" in the speciality 201 "Agronomy", to plan and conduct research using modern research methodology, critically analyse research projects, collaborate with other researchers, including an interdisciplinary team, and transfer professional knowledge.</p> <p>The educational program is aimed at providing theoretical, practical and scientific training of highly qualified staff with fundamental knowledge for performing professional research and innovation tasks in the field of agronomy, capable to independent scientific and production activities at higher education institutions of different accreditation levels, research institutions and agricultural enterprises.</p>
<b>Theoretical content of the subject area</b>	In-depth study of fundamental and applied sciences in speciality 201 "Agronomy".
<b>Features of the program</b>	<i>Educational component of the program.</i> The program suggests 57 ECTS credits, of which 42 ECTS credits - for all cycles of compulsory subjects (philosophy of science, plant in experimentation, modern information technologies in scientific activity, theory of business communication, methodology of scientific research, modelling and planning of a scientific experiment, management of scientific projects, registration of intellectual property rights, organization and

	<p>methodology of practical classes, methods and organization of thesis preparation and writing, foreign language for professional purposes, methodology of preparing scientific works in foreign language, pedagogical practice); 15 more ECTS credits are provided for the disciplines of the cycle of special (professional) training (at the graduate student's choice).</p> <p><b>Scientific component of the program.</b> The scientific component of the educational-scientific program involves carrying out one's own 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> <p>The peculiarity of the scientific component of the educational program of training doctors of philosophy in the specialty 201 Agronomy is that certain parts of their own scientific research can be performed by post-graduate students in the course of study of professional training disciplines.</p>
<p><b>Methods, techniques and technologies</b></p>	<p>Mastering the research methodology and technology of experiment, adequate to solve the set scientific problems in agronomy.</p>
<p><b>4. Employment and further education</b></p>	
<p><b>Employment</b></p>	<p>Graduates have ample opportunity for career development depending on their personal interests, including: scientific, teaching, expert, managerial, administrative activities in the field of "Agricultural Science and Food" in the speciality 201 Agronomy</p> <p>The level of preparation allows developing a professional career based on strategic thinking and in-depth knowledge of agronomy.</p> <p>Specialist able to perform the specified professional work for (DK 003: 2010):</p> <p>1221 heads of production units in agriculture, forestry and water management, fish farming, fisheries and nature conservation;</p> <p>1237 heads of scientific-research departments and departments of scientific-technical preparation of production and other executives;</p> <p>2213 professionals in agronomy, aquaculture, zoo-engineering, forestry, melioration and nature conservation;</p> <p>2310 teachers of universities and higher education institutions,</p> <p>and other areas of speciality.</p>

<b>Further education</b>	Training for the development and self-improvement in the scientific and professional spheres of activity, as well as other related branches of scientific knowledge: preparation at the 10th (scientific) level of NQF of Ukraine in the field of agronomy; educational programs, research grants and scholarships (including overseas) that contain additional educational components. Various forms of lifelong learning (both in Ukraine and abroad) to improve skills and management, administrative, scientific, research, pedagogical or other activities.
<b>5. Training and assessment</b>	
<b>Approaches to teaching and learning</b>	<p>Approaches to teaching and learning:</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 budgetary and contractual research works, participation in research projects);</li> <li>- Personalized Learning: individual consultations with scientific leaders; selective professional disciplines.</li> </ul>
<b>Assessment system</b>	<p><b><i>Educational component of the program.</i></b></p> <p>The assessment system of the obtained results in the disciplines of the educational and scientific program consists of current and final control.</p> <p><i>Current control</i> of knowledge is conducted orally (recitation based on the results of the learned material).</p> <p><i>Final control</i> of knowledge is conducted in the form of written and oral examinations, credit tests.</p> <p>Current and final controls of the disciplines of professional training cycle take into account the scientific articles prepared by the applicant and published in the professional publications collections and/or publications included in the international scientometric bases.</p> <p><b><i>Scientific component of the program.</i></b> Evaluation of scientific activities of applicants is carried out in accordance with 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 assessment;</li> <li>- recommendations of the scientific advisor;</li> <li>- midterm postgraduate assessment in the form of an annual report on the implementation of the individual plan;</li> </ul>



	- preparation and presentation of the dissertation.
<b>Form of control of graduate student's academic progress</b>	<p><b><i>Educational component of the program.</i></b></p> <p>The final control of the applicant's academic progress is carried out in the form of:</p> <p>exam - the results of studying the compulsory disciplines of the educational program of the general scientific training cycle (Philosophy of science, Plant in the experiment), the cycle of research training (registration of intellectual property rights, Teaching methodology, Project management), the cycle of language training (English in professional are, Ukrainian language, Methodology of preparing scientific works in foreign language), as well as examinations on the results in study of professional training disciplines;</p> <p>- credit test - on the results of study of all other educational components provided by the curriculum.</p> <p><b><i>Scientific component of the program.</i></b></p> <p>The scientific component of the ESP involves the disciplines of the cycles of general training, special (professional), research training, special (professional) language training, practical training (compulsory and selective) and pedagogical practice, which together with the educational part of the program and scientific research under the research advisor guidance, preparation and public defense of the dissertation in the specialized scientific council ensures obtaining the educational level of "Doctor of Philosophy" in the speciality 201 "Agronomy".</p>
<b>6. Program competencies</b>	
<b>Integral competence</b>	Ability to solve complex scientific problems, including decision-making on the selection of data and research methods for the study of agronomic sciences (according to specialization) on various spatio-temporal scales using a complex of interdisciplinary data in the context of global informatization.
<b>General competence (GC)</b>	<ol style="list-style-type: none"> <li>1. Ability to master modern knowledge, to self-improve and form a systematic scientific outlook.</li> <li>2. Ability to critical analyses and evaluation of modern scientific achievements, synthesis of holistic knowledge, complex problem solving.</li> <li>3. Ability to think creatively, identify, receive, systematize, synthesize and analyse information from various sources with the use of modern information technologies in scientific activity.</li> <li>4. Ability to plan and carry out integrated research at the modern level using the latest information and communication technologies and adhering to the parameters of safe activity</li> </ol>

	<p>based on a holistic systematic scientific outlook with the knowledge in the field of history and philosophy of science.</p> <ol style="list-style-type: none"> <li>5. Ability to generate new ideas and make well-argued decisions to achieve goals.</li> <li>6. Ability to develop and manage research projects, to initiate investigating in the field of research and innovation, to evaluate 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 specialists and experts of different levels in other fields of study.</li> <li>10. Ability to adhere to the rules of scientific ethics, copyright and related intellectual property rights.</li> <li>11. Ability to prepare scholarly texts, present, discuss and debate scientific results of their scientific work in state and foreign languages, to an extent sufficient for full understanding, demonstrating a culture of scientific oral and written language.</li> <li>12. Ability to speak state and foreign languages (professional), to freely perceive, process and reproduce information in a volume sufficient for a full understanding of general and professional topics, demonstrating the culture of scientific oral and written speech.</li> <li>13. Ability to participate in scientific discussions, critical dialogues at the national 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. 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 and time needed for implementation, which involves a deep rethinking of existing and creation of new holistic knowledge and / or professional practice.</li> <li>2. Ability to conduct integrated research in the field of agro-industry and agronomy.</li> <li>3. Ability to get information on the current state and tendencies of the development of world and domestic agro-</li> </ol>

technologies of crops cultivation.

4. Ability to formalize professional applied problems in the field of agro-industrial testing, to algorithmize them.
5. Ability to establish the natural prerequisites for the application of specific modifications and methods of research, the choice of rational methods of field and laboratory work and the assessment of the required accuracy of measurements and quality of the final constructions, which must be confirmed by the example of own research.
6. Ability to plan, coordinate and implement educational programs within the specialty.
7. Ability to analyze, systematize and summarize the results of experiments and research; to draw conclusions from the obtained research, to apply them in the scientific and practical sphere.
8. Ability to process the obtained experimental data, establish analytical and statistical dependencies between them and the studied parameters based on the use of standard mathematical packages of information processing.
9. Ability to develop a system of experimental research for practical confirmation of theoretical assumptions and to implement it in the agro-technological process.
10. Ability to generate new knowledge through original research, the quality of which can be recognized nationally and internationally.
11. Ability to participate in critical dialogue, scientific discussions at the international level, to defend their own position, to entrepreneurship and to take initiative in implementing the results of the dissertation research.
12. Ability to use the regulatory framework and organize work in accordance with sectoral requirements of life safety and labour protection.
13. To know and to observe the standards of scientific ethics and academic integrity.

### **7. Program training outcomes**

A PhD candidate must:

- 1) possess modern advanced conceptual and methodological knowledge when performing research and/or professional activities and at the edge of fields of study.
- 2) have thorough knowledge of the subject area and understanding of the profession, knowledge of the works of leading domestic and foreign scientists, fundamental works in the field of the research, formulate the purpose of their own scientific research as a component of the civilization process.
- 3) know the principles of financial support for research work, structure of estimates for its implementation, preparation of the request for funding, preparation of reporting documentation.

- 4) know the procedure for establishing information value and quality of literature and repository sources.
- 5) know the principles and forms of carrying out the educational-scientific process in modern conditions, its scientific, educational-methodical and normative providing, working out of scientific and informational sources when preparing for classes, application of active teaching methods.
- 6) be able to critically analyse, evaluate and synthesize new scientific provisions and ideas.
- 7) initiate, organize, and conduct integrated investigations in research and innovative activities.
- 8) formulate a scientific problem in view of 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 field of agronomy.
- 9) analyse scientific works, identifying debatable and under-researched issues, monitor scientific sources of information regarding a problem that is being investigated to establish their informational value through comparative analysis with other sources.
- 10) conduct professional interpretation of the received materials on the basis of modern software using existing theoretical models, to create own object-theories.
- 11) communicate freely in dialogue with the broad scientific community and the public in the relevant field of scientific and / or professional activity.
- 12) represent the results of scientific researches in scientific articles published both in professional domestic publications and in publications that are included in international scientometric bases.
- 13) professionally present the results of their research at national and international scientific conferences, seminars, use foreign language in scientific, educational and innovative activities.
- 14) use modern information and communication technologies in communication, information exchange, collection, analysis, processing, interpretation of sources.
- 15) Be able to work with different sources, process, analyze and systematize information, identify inconsistencies and unresolved problems or parts of them, formulate working hypotheses Ability to work with modern bibliographic and abstract databases, use citation rules and references to used sources, track the latest developments in agricultural production and agronomy.
- 16) conduct research in accordance with the requirements of health and labour safety.
- 17) have the ability to act socially consciously and responsibly on the basis of ethical motives, to make informed decisions.
- 18) be responsible for the novelty of research and expert decision making, motivating personnel and moving toward a common goal.
- 19) be able to make informed decisions, develop and self-improve, be responsible for the reliability and novelty of their own research and decision-making, be able to motivate personnel to move toward a common goal.
- 20) formulate a scientific problem in view of the value orientations 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 Agronomy.

21) present research results in the form of a dissertation, defend the results of a dissertation research.	
<b>8. Forms of attestation of applicants for higher education</b>	
<b>Forms of attestation of applicants for higher education</b>	Attestation is carried out by way 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 of the doctor of philosophy involves solving an actual theoretical and/or experimental (practical) problem in the field of agronomy and testifies to the ability of the applicant to conduct independent scientific research, formulate new complex ideas and substantiate them. The dissertation is the result of the individual scientific work of the graduate student having the status of an intellectual product on the rights of the manuscript and suggests the solution of the actual scientific task in the speciality 201 "Agronomy".
<b>Requirements to the public defence</b>	The dissertation is defended in public at a meeting of a specialized academic council. An obligatory prerequisite for admission to the dissertation 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 staff members of Sumy NAU, providing further 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.
<b>Technical support and educational facilities</b>	The logistic support of the Faculty of Agrotechnology and Natural Resource Management of Sumy NAU allows training of third-level higher education applicants and meets the regulatory requirements. The peculiarities of ESP are laboratory research conducted at the university's powerful laboratories - "Educational and scientific PCR laboratory" within the framework of the Erasmus+KA2 project, "Electron microscopy", "Laboratory of ecological agriculture and nature management", "Educational and scientific laboratory of vegiculture and potato farming ».
<b>Information and training support</b>	The educational process of training higher education applicants is provided with sufficient methodological and

	<p>informational materials with regard to regulatory needs. In addition, information and educational support for all participants of the educational process is provided through the University's website <a href="https://science.snau.edu.ua/aspirantura/">https://science.snau.edu.ua/aspirantura/</a>, which contains information about educational programs, educational and scientific activities, structural units, contacts, repository, research libraries and reading rooms, etc.</p> <p>All the resources of 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 ordinary and electronic reading rooms of SNAU library are provided with wireless Internet access. Applicants have free access to Sumy NAU repository (<a href="http://repo.snau.edu.ua/">http://repo.snau.edu.ua/</a>) and Sumy Higher Education Scientific Libraries Fund, National Library of Ukraine named after V.I.Vernadskyi and others. According to MES decree №1213 dated 06.11.2018 "On Access to Electronic Scientific Databases to Higher Education Establishments and Scientific Institutions under MES management", Sumy National Agrarian University has been granted access to international scientific databases Scopus and Web of Science.</p>
<b>10. Academic mobility</b>	
<b>National credit mobility</b>	On the basis of bilateral agreements between Sumy NAU and the universities of Ukraine agreements on academic mobility are concluded for teaching 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 Sumy National Agrarian University website: <a href="https://snau.edu.ua/mizhnarodni-proekti/">https://snau.edu.ua/mizhnarodni-proekti/</a>
<b>Training of foreign higher education applicants</b>	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 conducted under general conditions with additional language training, scientific and pedagogical staff 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	Form of assessment
1	2	3	4
<b>Required components of ESP</b>			
<b>OK 1.</b>	Philosophy of science	3	Exam
<b>OK 2.</b>	Contemporary computer technologies in science	3	Credit
<b>OK 3.</b>	Communications in scientific area	3	Credit
<b>OK 4.</b>	Methodology of conducting scientific researches	3	Credit
<b>OK 5.</b>	The plant in the experiment	3	Exam
<b>OK 6.</b>	Modeling and planning scientific experiment	3	Credit
<b>OK 7.</b>	Registration of intellectual property rights	3	Exam
<b>OK 8.</b>	Teaching methodology	3	Exam
<b>OK 9.</b>	Ukrainian language	3	Exam
<b>OK 10.</b>	Project management	3	Exam
<b>OK 11.</b>	English in professional area	3	Exam
<b>OK 12.</b>	Methodology for preparing scientific papers in a foreign	3	Exam
<b>OK 13.</b>	Practice in Teaching & learning	6	Exam
<b>Total:</b>		<b>42</b>	
<b>Selective components of the EP.</b>			
<b>VK 1.</b>	Selective components	3	Exam
<b>VK 2.</b>	Selective components	4	Credit
<b>VK 3.</b>	Selective components	4	Exam
<b>VK 4.</b>	Selective components	4	Credit
<b>Total:</b>		<b>15</b>	
<b>TOTAL SCOPE OF THE EDUCATION PROGRAM</b>		<b>57</b>	

*Note: here and further - \* changes in the curriculum for the preparation of third-level higher education foreign students*

## 2.2. Structural-logical scheme of EP

Higher education applicants are eligible to choose disciplines within the relevant educational program and work curriculum, to the extent of at least 25 percent of the total ECTS credits provided for this level of higher education.

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

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



#### 4. List of legislative documents the standard project of the third level (educational-scientific) of higher education is based on (Speciality 201 Agronomy)

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**  
**Podhaietskyi Anatolii Adamovych**

Table 1

**Matrix of compliance of the designated ESP competencies with the NQF descriptors**

Classification of competences for the NQF	Knowledge	Skills	Communication	Autonomy and responsibility
General competencies				
GC 1. Ability to learn, master modern knowledge, self-improve and form a systematic scientific outlook.	*	*		
GC 2. Ability of critical analyses and evaluation of modern scientific achievements, synthesis of holistic knowledge, complex problem solving	*	*		*
GC 3. Ability to think creatively, identify, receive, systematize, synthesize and analyse information from various sources with the use of modern information technologies in scientific activity.	*		*	
GC 4. Ability to plan and carry out integrated research at the modern level using the latest information and communication technologies and adhering to the parameters of safe activity based on a holistic systematic scientific outlook with the knowledge in the field of history and philosophy of science.	*	*	*	
GC 5. Ability to generate new ideas and make well-argued decisions to achieve goals.	*	*		*
GC 6. Ability to develop and manage research projects, to initiate investigating in the field of research and innovation, to evaluate the needs of research funding, to carry out the registration of 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 perform activities while maintaining the natural and cultural heritage, to work effectively in a team, to communicate with specialists and experts of different levels in other fields of study.		*	*	
GC 10. Ability to adhere to the rules of scientific ethics, copyright and related intellectual property rights.	*		*	*
GC 11. Ability to prepare scholarly texts, present, discuss and debate scientific results of their scientific work in state and foreign languages, to an extent sufficient for full understanding, demonstrating a culture of scientific oral and written language.	*	*	*	*
GC 12. Ability to speak state and foreign languages (professional), to freely perceive, process and reproduce information in a volume sufficient for a full understanding of general and professional topics, demonstrating the culture of scientific oral and written speech.	*	*	*	
GC 13. 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) competences</b>				
SC1. 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 and time needed for implementation, which involves a deep rethinking of existing and creation of new holistic knowledge and / or professional practice.	*			*
SC2. Ability to conduct integrated research in the field of agro-industry and agronomy.	*	*		
SC3. Ability to get information on the current state and tendencies of the development of world and domestic agro-technologies of crops cultivation.	*	*	*	
SC4. 4. Ability to formalize professional applied problems in the field of agro-industrial testing, to algorithmize them.	*	*		
SC5. Ability to establish the natural prerequisites for the application of specific modifications and methods of research, the choice of rational methods of field and laboratory work and the assessment of the required accuracy of measurements and quality of the final constructions, which must be confirmed by the example of own research.	*	*		
SC6. Ability to plan, coordinate and implement educational programs within the specialty.	*			
SC7. Ability to analyze, systematize and summarize the results of experiments and research; to draw conclusions from the obtained research, to apply them in the scientific and practical sphere.	*	*		
SC8. Ability to process the obtained experimental data, establish analytical and statistical dependencies between them and the studied parameters based on the use of standard mathematical packages of information processing.	*	*		
SC9. Ability to develop a system of experimental research for practical confirmation of theoretical assumptions and to implement it in the agro-technological process.	*	*		
SC10. Ability to generate new knowledge through original research, the quality of which can be recognized nationally and internationally.	*			*
SC11. Ability to participate in critical dialogue, scientific discussions at the international level, to defend their own position, to entrepreneurship and to take initiative in implementing the results of the dissertation research.	*	*	*	
SC12. Ability to use the regulatory framework and organize work in accordance with sectoral requirements of life safety and labour protection.	*			
SC13. To know and to observe the standards of scientific ethics and academic integrity.	*			*

Table 2

**Matrix of correspondence of learning outcomes and competencies defined by ESP**

Program learning outcomes	Integral competence	Competencies																									
		General competencies														Special (professional) competencies											
		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
	IK 1																										
PRN 1	*	*							*			*	*										*				*
PRN 2	*	*						*				*	*										*			*	
PRN 3	*						*				*		*		*										*		*
PRN 4	*		*	*		*										*				*			*				
PRN 5	*			*					*		*						*	*				*		*			
PRN 6	*				*				*		*													*	*		
PRN 7	*	*	*	*						*						*							*			*	
PRN 8	*							*		*			*			*			*							*	
PRN 9	*					*	*				*	*											*			*	
PRN 10	*	*	*		*	*	*		*																*		
PRN 11	*	*	*		*											*						*	*	*			
PRN 12	*			*						*								*	*				*				
PRN 13	*					*	*	*		*			*			*									*		
PRN 14	*				*	*		*					*		*					*			*	*		*	
PRN 15	*							*			*	*				*							*			*	
PRN 16	*	*							*	*	*									*	*	*					
PRN 17	*				*			*	*					*									*		*		
PRN 18	*					*						*			*		*	*									*
PRN 19	*							*										*						*			*
PRN 20	*						*								*		*		*	*	*						
PRN 21	*	*						*	*	*	*									*			*		*		

Table 3

**Matrix of program learning outcomes (PLO) provided by correspondent components of educational-scientific program**

	PRN1	PRN 2	PRN 3	PRN 4	PRN 5	PRN 6	PRN 7	PRN 8	PRN 9	PRN 10	PRN 11	PRN 12	PRN 13	PRN 14	PRN 15	PRN 16	PRN 17	PRN 18	PRN 19	PRN 20	PRN 21
<b>EC 1</b>															*		*			*	
<b>EC 2</b>	*					*			*					*							*
<b>EC 3</b>								*					*		*				*		*
<b>EC 4</b>	*	*			*											*		*			
<b>EC 5</b>		*										*			*						
<b>EC 6</b>					*										*			*	*		
<b>EC 7</b>			*	*											*					*	
<b>EC 8</b>	*	*																			
<b>EC 9</b>				*				*	*												*
<b>EC 10</b>		*					*	*									*	*			
<b>EC 11</b>				*							*	*	*								
<b>EC 12</b>						*			*		*	*	*								
<b>EC 13</b>	*	*			*					*											
<b>SC 1</b>	*		*							*		*						*			*
<b>SC 2</b>	*	*	*		*				*					*							
<b>SC 3</b>						*	*				*	*	*						*		
<b>SC 4</b>	*									*			*			*		*		*	*