

**PROJECT**

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

**EDUCATIONAL AND SCIENTIFIC PROGRAM**  
**"FOOD TECHNOLOGIES"**

**HIGHER EDUCATION LEVEL** Third(educational and scientific) level  
(name of higher education level)

**HIGHER EDUCATION DEGREE** Doctor of Philosophy  
(name of higher education degree)

**DISCIPLINE** 18 Production and technology  
(code and name of the field of knowledge)

**SPECIALTY** 181 Food Technology  
(code and name of specialty)

**"APPROVED"**

Academic Council of Sumy National University of  
Science and Technology

" \_\_\_\_ " \_\_\_\_\_ 2024

(Protocol No. \_\_\_\_\_)

**Chairman of the Academic Council** \_\_\_\_\_  
**Volodymyr LADYKA**

The educational and professional program has been put  
into effect since " \_\_\_\_ " \_\_\_\_\_ 2024.

**Acting Rector** \_\_\_\_\_ **Volodymyr LADYKA**

(order \_\_\_\_\_ No. \_\_\_\_\_ dated  
" \_\_\_\_ " \_\_\_\_\_ 2024)

**Sumy – 2024**

**LETTER OF AGREEMENT**  
**educational and scientific program**  
**"Food Technologies"**

*Level of higher education –third (educational and scientific)*

Vice-Rector for Scientific and International Activities		<b>Yuriy DANKO</b>
Dean of the Faculty of Food Technologies		<b>Nataliia BOLHOVA</b>
<b>The project team consists of:</b>		
<b>Project team leader, guarantor of the educational and scientific program:</b>		
Candidate of Technical Sciences, Head of the Technologies of Nutrition Department		<b>Oksana MELNYK</b>
<b>Project team members:</b>		
Doctor of Technical Sciences, Professor of the Technologies of Nutrition Department		<b>Fedor PERTSEVOY</b>
Doctor of Technical Sciences, Professor of the Technologies of Nutrition Department		<b>Ihor MAZURENKO</b>
Doctor of Technical Sciences, Head of the Department of Technology and Food Safety		<b>Marina SAMILIK</b>
Candidate of Technical Sciences, Associate Professor of the Department of Technology and Food Safety		<b>Yulia NAZARENKO</b>
postgraduate student of the Technologies of Nutrition Department		<b>Olga SEREDA</b>



## PREFACE

Developed by the project group of specialty 181 "Food Technologies" Sumy National Agrarian University consisting of:

**Melnyk Oksana Yuriivna** – Project team leader, Candidate of Technical Sciences, Head of the Technologies of Nutrition Department;

**Pertsevoy Fedor Vsevolodovich** – Doctor of Technical Sciences, Professor of the Technologies of Nutrition Department;

**Mazurenko Ihor Konstantinovich** - Doctor of Technical Sciences, Professor of the Technologies of Nutrition Department;

**Samilyk Maryna Mykhailivna** - **doctor** Technical Sciences, Head of the Department of Technology and Food Safety;

**Nazarenko Yulia Valentynivna** -Candidate of Technical Sciences, Associate Professor of the Department of Technology and Food Safety;

**Sereda Olga Grygorivna** –Postgraduate student of the Technologies of Nutrition Department.

# I. EDUCATIONAL COMPONENT OF THE EDUCATIONAL AND SCIENTIFIC PROGRAM

## 1. Profile of the educational and scientific program in the specialty 181 "Food Technologies"

<b>1. General information</b>	
<b>Full name of higher education institution</b>	Sumy National Agrarian University
<b>Level of higher education</b>	Third (educational and scientific) level
<b>Higher education degree</b>	Doctor of Philosophy (Philosophy Doctor degree)
<b>Discipline</b>	18 Production and technology
<b>Specialty</b>	181 Food Technology
<b>Full title of the qualification in the original language</b>	Doctor of Philosophy in Production and Technology in the specialty "Food Technology" Doctor of Philosophy of Food Technology
<b>Official name of the educational and scientific program</b>	Food technology
<b>Qualification in diploma</b>	Higher education degree– Doctor of Philosophy Specialty– 181 “Food Technology” Educational program "Food Technology"
<b>Diploma type and program scope</b>	Doctor of Philosophy diploma, single, first academic degree, 4 academic years, 60 ECTS credits of the educational component of the educational and scientific program
<b>Restrictions on forms of education</b>	Missing
<b>Availability of accreditation</b>	Accredited TITLE No. 0638. Date of issue 11.17.2020 Valid until 11.18.2025.
<b>Program cycle/level</b>	NQF of Ukraine – level 8, FQ-EHEA – third cycle, EQF-LLL – Level 8
<b>Prerequisites</b>	Availability of higher education at the second (master's) level. Requirements for applicants are determined by the Rules for Admission to the PhD Doctor of Philosophy Educational and Scientific Program
<b>Language(s) of instruction</b>	Ukrainian, English
<b>Duration of the educational program</b>	By 2026 (started in 2016).
<b>Internet address of permanent placement of the educational program description</b>	<a href="https://science.snau.edu.ua/aspirantura/">https://science.snau.edu.ua/aspirantura/</a>
<b>2. Purpose of the educational program</b>	

Training of highly qualified specialists in the field of food technology, capable of solving complex problems in the field of professional and/or research and innovation activities in the field of scientific and technical development of food production, by conducting research aimed at obtaining new scientific fundamental and applied knowledge, which involves a deep rethinking of existing and the creation of new holistic knowledge and/or professional practice.

### 3. Characteristics of the educational program

<b>Subject area (field of knowledge, specialty)</b>	Research, educational, and professional activities in the field of 18 Production and technology by specialty 181 Food technology
<b>Object of study</b>	Theoretical and methodological, scientific and applied foundations of food technologies; principles of optimizing technological processes to ensure a high level of quality and safety of food products, environmental safety and resource conservation of production; patterns of innovative development of food enterprises and food technologies; methodological principles of scientific, scientific and technical and scientific and pedagogical activities.
<b>Learning objectives</b>	Formation of professional, research and educational competencies necessary for innovative professional, research and educational activities and the implementation of modern technologies in the specialty "Food Technologies". Creation of conditions for applicants to achieve the ability to independently conduct scientific research at an internationally recognized level; support for postgraduate students as highly qualified teachers, scientists and experts in food technologies.
<b>The main focus of the educational program</b>	The educational and scientific program is formed as an optimal combination of academic and professional requirements, which allows postgraduate students to develop the ability to justify problem solving in "Production and Technology" branch with a specialization in "Food Technology", to plan and carry out fundamental and applied scientific research on the creation and improvement of food technologies, using modern research methodology, critically analyze research projects, collaborate with other researchers, including working in an interdisciplinary team, and transfer professional knowledge.
<b>Theoretical content of the subject area</b>	In-depth comprehensive study of fundamental and applied sciences in the specialty "Food Technology".
<b>Program features</b>	<i>Educational component of the program.</i> The educational component of the educational and scientific program covers a wide range of modern innovative vectors of development of the theory and practice of food

	<p>technologies, in particular nutrition technologies, which forms an updated theoretical and applied basis for conducting scientific research.</p> <p><b><i>Scientific component of the program.</i></b> The scientific component of the educational and scientific program involves conducting one's own scientific research under the guidance of one or two scientific supervisors with the appropriate preparation of the results in the form of a dissertation. This component of the program is not measured by ECTS credits, but is drawn up separately in the form of an individual plan of scientific work of the postgraduate student and is an integral part of the curriculum.</p> <p>A feature of the scientific component of the educational and scientific program for the preparation of Doctors of Philosophy in specialty 181 - Food Technology is that graduate students will be able to perform certain components of their own scientific research during practical classes in professional training disciplines.</p>
<b>Methods, techniques and technologies</b>	Mastering the methodology of scientific research and experimental technology adequate for solving the scientific tasks in food technology.
<b>4. Eligibility of graduates of the educational program to employment and further education</b>	
<b>Employment eligibility</b>	<p>Positions in research groups, scientific laboratories, specialized departments, departments in higher educational institutions, specialized institutes, commercial research organizations, at enterprises and organizations of various types of activity and forms of ownership in managerial positions. The specialist is able to perform the specified professional work according to (DK 003:2010):</p> <p>2310.2 university and higher education teachers;</p> <p>2320 teacher at a vocational educational institution;</p> <p>2320 teacher at a vocational school</p> <p>and other areas of activity by specialty.</p>
<b>Further training</b>	<p>Training for development and self-improvement in scientific and professional fields of activity in specialty 181 Food Technology, as well as other related fields of scientific knowledge, training at the 10th (scientific) level of the National Qualifications Framework of Ukraine in the field of 20 Agrarian Sciences and Food; educational programs, research grants and scholarships (including abroad) containing additional educational components. Various forms of lifelong learning (both in Ukraine and abroad) for advanced training and improvement of managerial and</p>

	<p>administrative, scientific, research, pedagogical or other activities.</p> <p>In-service training to improve scientific and practical competencies.</p> <p>It is possible to pursue further training at the doctoral level in areas related to the field of food technology without any problems.</p>
<b>5. Teaching 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 the development of systemic, creative and strategic thinking; collaborative learning in interdisciplinary groups; “flipped classroom”;</li> <li>- learning by teaching (pedagogical practice);</li> <li>- learning through research (including participation in performing budget and contract research work, participation in research projects);</li> </ul> <p>Personalized Learning: individual consultations with academic supervisors; selective professional disciplines).</p>
<b>Evaluation system</b>	<p><b><i>Educational component of the program.</i></b> The system of assessing knowledge in the disciplines of the educational and scientific program consists of current and final control.</p> <p><i>Current control</i> knowledge of postgraduate students is conducted orally (survey based on the results of the processed material).</p> <p><i>Final control</i> knowledge assessment in the form of an exam/test is conducted in written form, followed by an oral interview.</p> <p>Within the disciplines that provide professional training, positive marks in the current and final control may be awarded automatically if the postgraduate student has prepared and published scientific articles in collections that are included in professional publications and/or publications that are included in international scientometric databases. The number of articles and their topics are agreed with the scientific supervisor.</p> <p><b><i>Scientific component of the program.</i></b> The assessment of the scientific activity of postgraduate students (applicants) is carried out on the basis of quantitative and qualitative indicators characterizing the preparation of scientific works, participation in conferences, preparation of individual parts of the dissertation in accordance with the approved individual plan of scientific work of the postgraduate student (applicant). The reports of</p>



	<p>postgraduate students (applicants), based on the results of the implementation of the individual plan, are approved annually at a meeting of the departments and the academic council of the faculty with a recommendation to continue (or terminate) postgraduate studies.</p>
<p><b>Form for monitoring the progress of postgraduate studies (graduate student)</b></p>	<p><b><i>Educational component of the program.</i></b></p> <p>The final control of the applicant's academic performance is carried out in the form of:</p> <ul style="list-style-type: none"> <li>- exam - based on the results of studying the mandatory subjects of the educational program of the cycle general scientific training (philosophy of science, management of scientific projects), research training cycle (registration of intellectual property rights, organization and methodology of conducting training sessions, organization of preparation of scientific publications, management of scientific projects), language training cycle (foreign language for professional purposes, methodology for preparing scientific papers in a foreign language), as well as exams based on the results of studying professional training disciplines (modern achievements in food science, methodology and organization of preparing and writing a dissertation / management of laboratory activities);</li> <li>- credit – based on the results of studying all other educational components provided for by the curriculum.</li> </ul> <p><b><i>Scientific component of the program.</i></b></p> <p>The scientific component of the ONP provides for the disciplines of cycles of general scientific training, special (professional), research training, language special (professional) and practical training (mandatory and elective) and pedagogical practice, which, together with the educational part of the program and scientific research with the participation of a scientific supervisor, preparation and public defense of a dissertation in a specialized academic council, ensures obtaining the educational level "Doctor of Philosophy" in specialty 181 "Food Technologies".</p>
<p><b>6. Software competencies</b></p>	
<p><b>Integral competence (IC)</b></p>	<p>The ability to solve complex problems in the field of professional and/or research and innovation activities in the field of food technology, which involves a deep rethinking of existing and the creation of new holistic knowledge and/or professional practice.</p>

<b>General competencies (GC)</b>	<p>GC1. Ability for abstract thinking, analysis and synthesis.</p> <p>GC2. Ability to work in an international context.</p> <p>GC3. Ability to solve complex problems in food technology based on systematic scientific and general cultural world view from compliance principles professional ethics and academic virtue.</p> <p>GC4. Ability to generate new ideas (creativity).</p>
<b>Special (professional) competencies (FC)</b>	<p>PC 1. Ability perform original research, reach scientific results, what form new ones knowledge in sphere food technologies and/or tangential to them interdisciplinary directions</p> <p>PC2. Ability to initiate elaborate i implement complex innovative projects in the field of food production products and tangential to her interdisciplinary projects, detect leadership under time of day implementation.</p> <p>PC3. Ability to apply modern methodologies, methods and tools experimental i theoretical research, digital technology, computer methods modeling, base data and other electronic resources, specialized software software in scientific and educational activity in sphere food technologies.</p> <p>PC4. The ability to critically analyze and evaluate modern state i trends development food technologies.</p> <p>PC5. Ability detect, put and to solve tasks research character, evaluate and provide quality performed works in food industry.</p> <p>PC6. The ability to carry out scientific and pedagogical activities in institutions higher education</p> <p>PC7. The ability to apply knowledge to establish patterns of losses when implementing a technological process; the ability to use in practice the knowledge of the principles of resource and energy saving in the development or improvement of food technology.</p> <p>PC8. The ability to optimize processes in food technology and design the recipe composition of products using mathematical modeling and modern software.</p>
<b>7. Program learning outcomes</b>	
	<p>PLO1. Freely present and discuss research results, scientific and applied problems in the field of food technology with specialists and non-specialists in the state and foreign languages, competently reflect research results in scientific publications while adhering to the principles of professional ethics and academic integrity.</p> <p>PLO2. Formulate and test hypotheses; use appropriate evidence to substantiate conclusions, in particular, the results of theoretical analysis, experimental studies and mathematical and/or computer modeling, and available literature data.</p>

	PLO3. Use modern tools and technologies for searching, processing and analyzing information on food technology problems, in particular, statistical methods for analyzing large-scale and/or complex data, specialized databases and information systems.
	PLO4. Plan, organize and carry out experimental and/or theoretical research in the field of food technology using modern tools and equipment, information technology and software.
	PLO5. Have advanced conceptual and methodological knowledge, demonstrate research skills in the field of food technology and at the border of subject areas, sufficient to conduct scientific and applied research in order to obtain new knowledge and/or implement innovations at the level of modern world achievements in science and technology.
	PLO6. Develop and implement scientific and/or innovative engineering projects that provide an opportunity to solve significant scientific and applied problems in the field of food production, taking into account social, economic, environmental and legal aspects.
	PLO7. Critically analyze the results of one's own research in the field of food technology and the results of other researchers in the context of the entire complex of modern knowledge on the problem under study, and ensure the protection of intellectual property.
	PLO8. Develop and teach special disciplines in food technology in higher education institutions, provide educational and methodological support for the educational process.
	PLO9. Solve complex tasks related to the effective storage and processing of food raw materials into food products in order to ensure their quality and safety, in accordance with current legislation.
	PLO10. Know and understand the philosophical methodology of scientific knowledge and the psychological and pedagogical aspects of professional and scientific activity. Plan and implement the educational process based on modern methodological principles, demonstrate leadership and self-regulation skills based on self-knowledge.
	PLO11. Forecast, plan and implement in practice the production of food products, optimize the parameters of technological processes in accordance with the implementation of the principles of resource conservation and environmental safety.
	PLO12. Develop grant proposals, technical documentation and industry recommendations in the field of food production, formulate own author's conclusions, proposals and recommendations.
<b>8. Forms of certification of higher education applicants</b>	
<b>Forms of certification of higher education applicants</b>	Certification is carried out in the form of a public presentation of research results in the form of a PhD dissertation, provided that the graduate student completes his individual curriculum.

<b>Requirements for qualifying work</b>	The dissertation work of the Doctor of Philosophy involves solving a relevant theoretical and/or experimental (practical) problem in the field of food technology and demonstrates the applicant's ability to conduct independent scientific research, formulate new complex ideas and substantiate them. The dissertation is the result of independent scientific work of a postgraduate student, which has the status of an intellectual product in the form of a manuscript and offers a solution to a relevant scientific problem in the field of food technology or on its border with other specialties.
<b>Requirements public protection</b>	The defense of the dissertation is held in public at a one-time meeting of the Academic Council. A mandatory prerequisite for admission to the defense of the dissertation is the approval of the research results and main conclusions at scientific conferences and their publication in professional scientific publications, in accordance with current requirements.
<b>9. Resource provision for the implementation of the educational program</b>	
<b>Human resources</b>	The scientific and pedagogical staff meets the requirements of the current legislation of Ukraine. Scientific and pedagogical workers involved in the implementation of the educational program are employees of Sumy NAU, advanced training and internships of scientific and pedagogical workers are provided at least once every five years. 100% of scientific and pedagogical workers involved in teaching disciplines have scientific degrees and academic titles.
<b>Materially-technical software</b>	Availability of educational and scientific laboratories, including interdepartmental ones: laboratory of innovative food technologies, laboratory of the Department of Food Technology based on a catering plant, educational and scientific laboratory of technological control of food products, laboratory of food production equipment, interdepartmental scientific and practical laboratory of chemical and microbiological research of food products, educational and scientific laboratory of processing of plant raw materials, educational and scientific laboratory of craft technologies and gastronomic innovations.
<b>Informational-methodical software</b>	Use of the collection of scientific libraries of higher education institutions Sumy, the National Library of Ukraine named after V.I. Vernadsky, Internet resources and author's developments of scientific and pedagogical staff of the faculty and SNAU.

<b>9. Academic mobility</b>	
<b>National Credit mobility</b>	National individual academic mobility is implemented within the framework of agreements on the establishment of scientific and educational relations to meet the needs of the development of education and science with the Kharkiv State University of Food and Trade, the National University of Food Technologies, and the Odessa National Academy of Food Technologies.
<b>International credit mobility</b>	Possible, based on bilateral contracts between Sumy NAU and higher educational institutions of foreign partner countries, in particular, cooperation agreements with the Weihenstephan University of Applied Sciences (Germany), Warsaw University of Natural Sciences (Poland), Xi'an University of Technology, Henan Institute of Science and Technology (PRC).
<b>Teaching foreign languages higher education applicants education</b>	According to the "Rules for Admission to Sumy NAU", education of higher education applicants from other countries of the world is carried out in Ukrainian and English. Education of third-level higher education applicants is carried out on general terms with additional language training.

## 1.2. List of components of the educational and scientific program and their logical sequence

### 1.2.1. List of components of the ESP

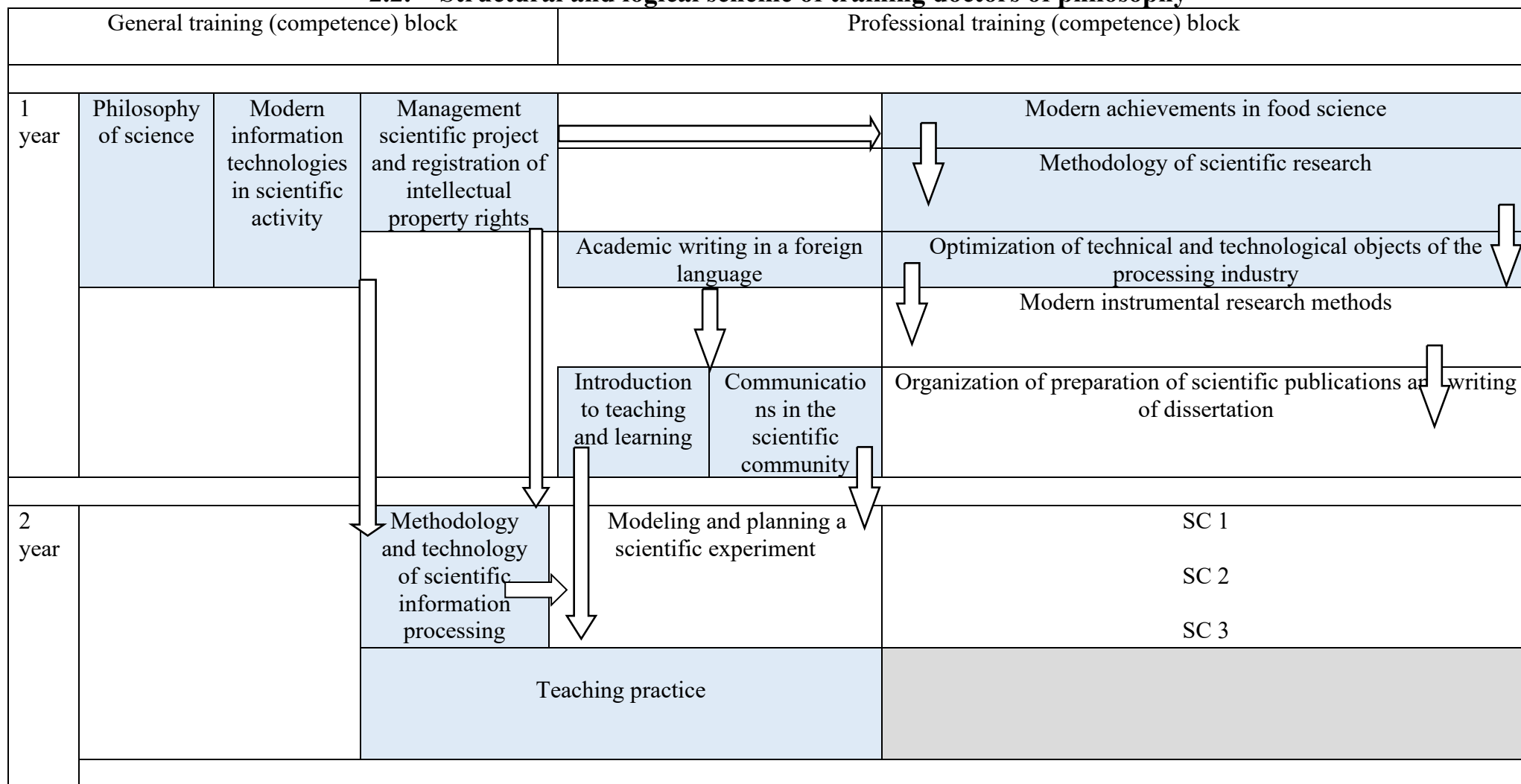
No. n/a	Components of the educational program (courses, course projects (papers), internships, qualification work)	Keel number of credits	Semesters								Summary form. Control
			1	2	3	4	5	6	7	8	
1	2	3	4	5	6	7	8	9	10	11	12
<b>1. Mandatory components of general training</b>											
MC. 1	Philosophy of science	3.0	x								exam
MC. 2	Modern information technologies in scientific activities	3.0	x								exam
MC. 3	Management scientific project and registration of intellectual property rights	4.0	x								exam
MC. 4	Academic writing in a foreign language	4.0	x	x							test/ exam
MC. 5	Communications in the scientific community	3.0		x							test
MC. 6	Organization of preparation of scientific publications and writing of dissertation	3.0		x							exam

MC. 7	Introduction to teaching and learning	3.0		x							exam
MC. 8	Methodology of scientific research	3.0	x								test
MC. 9	Modern achievements in food science	3.0	x								exam
MC. 10	Modeling and planning a scientific experiment	3.0			x						test
MC. 11	Modern instrumental research methods	3.0		x							exam
MC. 12	Methodology and technology of scientific information processing	3.0			x						test
MC. 13	Optimization of technical and technological objects of the processing industry	3.0		x							exam
OK 14.	Teaching practice	4.0				x					test
<b>Together for all cycles of the main part of the plan</b>		<b>45.0</b>									
<b>2. Elective courses</b>											
SC.1	Specialized unit	5.0			x						exam
SC.2	Specialized unit	5.0			x						exam
SC.3	Specialized unit	5.0			x						exam
<b>Total by cycle of special (professional) training (at the choice of the postgraduate student)</b>		<b>15.0</b>									
<b>Together by elective disciplines</b>		<b>15.0</b>									
<b>Together by cycles of the normative and variable parts</b>		<b>60.0</b>									

### 1.2.2. Structural and logical diagram of the ESP

Higher education students have the right to choose academic disciplines within the limits provided for by the relevant educational program and working curriculum, in an amount that is not less than 25 percent of the total number of ECTS credits provided for this level of higher education.

## 2.2. Structural and logical scheme of training doctors of philosophy



## **II. SCIENTIFIC COMPONENT OF THE EDUCATIONAL AND SCIENTIFIC PROGRAM**

The scientific component of the educational and scientific program involves the postgraduate student conducting his own scientific research under the guidance of one or two scientific supervisors and presenting its results in the form of a dissertation. The scientific component of the educational and scientific program is presented in the form of an individual plan of scientific work.

A dissertation for the degree of Doctor of Philosophy is an independent, comprehensive study that proposes a solution to a complex problem in the field of food technology, in particular food production technology, which involves a deep rethinking of existing and the creation of new holistic knowledge and/or professional practice.

The dissertation must not contain academic plagiarism or falsification. The dissertation must be posted on the website of the higher education institution (scientific institution). The volume of the main text of the dissertation must be 4.0-5.5 author's pages. The dissertation must meet other requirements established by law.

An integral part of the scientific component of the educational and scientific program is the preparation and publication of scientific articles (the number of which is provided for by relevant regulatory legal acts), monographs, scientific and methodological recommendations, abstracts of reports, speeches at scientific conferences, participation in scientific seminars, round tables, and symposiums.

Participation in the implementation of budgetary, economic contract and initiative research works (topics).

Implementation of research results into production and the educational process.

### **Research topics:**

1. Creation of new and improvement of existing food technologies.
2. Research of raw materials of animal, plant, aquatic and other origin, semi-finished products, culinary products, drinking water, food and dietary supplements as objects of technological processing into food products.
3. Scientific justification and development of innovative technologies for food products from raw materials of animal, plant, hydrobiont and other origin, semi-finished products and culinary products; food and dietary supplements.
4. Scientific justification, development and improvement of technologies for food products of special and functional purposes.
5. Establishing the mechanism and kinetic patterns of chemical, physical and biochemical phenomena that occur during the processing of raw materials of animal, plant, hydrobiont and other origin, semi-finished products and culinary products, as well as drinking water.



6. Development of food rations for individual population groups, taking into account age, gender, intensity and conditions of work, environmental conditions, type of diseases and other factors that affect human health and working capacity.

7. Scientific substantiation and development of technologies and technological modes of production and storage of bakery products, confectionery and pasta products, and food concentrates that ensure energy conservation, environmental safety, increasing the technical and technological level of production, reducing losses, preserving and improving the quality indicators of raw materials and finished products.

8. Establishing the mechanism and kinetic patterns of chemical, physical and biochemical phenomena that occur during the production and storage of bakery products, confectionery and pasta products, and food concentrates.

9. Scientific substantiation of new types of raw materials, development of a new range and technology for the production of bakery products, confectionery and pasta products, and food concentrates of improved quality.

10. Research into the patterns of functioning, modeling and optimization of technological processes for the production of bakery products, confectionery and pasta products, and food concentrates.

11. Research into the properties and quality of raw materials and bakery products, confectionery and pasta products, and food concentrates, and improving the assessment of their nutritional value.

12. Development of theoretical and practical foundations of promising methods and systems for quality and safety control of raw materials, semi-finished products and finished products at various stages of the technology of bakery products, confectionery and pasta products, and food concentrates.

13. Research on meat, dairy and other livestock products, fish and aquatic products and other aquaculture products as objects of technological processing into products for food, feed, technical or other purposes.

14. Development and improvement of methodological principles and scientific methods for research into the chemical composition and structure, assessment of the quality and safety of meat, dairy, fish raw materials, aquaculture products, as well as finished meat, dairy, fish and aquatic products.

15. Improving existing technological processes for processing meat, dairy, fish raw materials and aquaculture products in order to expand the range and improve the quality and safety of finished products, and reduce resource and energy costs for its production.

16. Scientific substantiation and development of innovative technologies for meat, dairy, fish and aquatic products.

17. Scientific substantiation and development of new methods for processing meat, dairy, fish raw materials and aquaculture products, as well as finished meat, dairy and fish products.

18. Scientific substantiation, development and improvement of technologies for meat, dairy and fish products of special, therapeutic and prophylactic, gerodietic or functional purposes, as well as pharmaceutical, chemical, protein and other preparations from meat, dairy, fish raw materials and aquaculture products.

19. Development of dye technology using recycled raw materials.

20. Development of technology for frozen semi-finished products using plant raw materials.
21. Using plant raw materials in the production of alternative snack products.
22. Comprehensive processing of food production waste and its use as secondary raw materials in the production of food products.

### **III. CERTIFICATION OF PRODUCERS**

Certification of persons who obtain a Doctor of Philosophy degree is carried out by a permanent or one-time specialized academic council of a higher education institution or scientific institution accredited by the National Agency for Quality Assurance in Higher Education, on the basis of a public defense of scientific achievements in the form of a dissertation. The applicant for a Doctor of Philosophy degree has the right to choose a specialized academic council.

A prerequisite for admission to the defense is the successful completion of the postgraduate student's individual curriculum.

## **List of regulatory documents on which the higher education standard is based**

1. Law of Ukraine "On Higher Education" dated 01.07.2014 No. 1556-VII.
2. Law of Ukraine «On the basic principles and requirements for the safety and quality of food products" dated 22. 07. 2014 No. 1602-VII
3. Methodological recommendations for the development of higher education standards //Baluba I. et al. Approved by the higher education sector of the Scientific and Methodological Council. – 29 p.
4. Resolution of the Cabinet of Ministers of Ukraine dated 23.11.2011 No. 1341 “On Approval of the National Qualifications Framework”.<http://zakon4.rada.gov.ua/laws/show/1341-2011-п>
5. Resolution of the Cabinet of Ministers of Ukraine dated 29.04.15 No. 266 “On approval of the list of fields of knowledge and specialties in which higher education applicants are trained”.
6. Order of the Ministry of Education and Science of Ukraine dated June 1, 2016 No. 600 “On approval and implementation of Methodological recommendations for the development of higher education standards”.
7. National Classifier of Ukraine: Classification of types of economic activity DK 009:2010, effective from 2012-01-01.
8. National Classifier of Ukraine: Classifier of professions DK 003:2010, valid from 2010-11-01.
9. Areas of education and professional training 2013 (MSCO-O 2013): Companion guide to the International Standard Classification of Education 2011. – UNESCO Institute of Statistics, 2014. – Access mode:<http://www.uis.unesco.org/Library/Documents/isced-f-2013-fields-of-education-training-2014-rus.pdf>.
10. DSTU ISO 22000:2007 Food safety management systems. Requirements for any organization in the food chain (ISO 22000:2005, IDT). – Kyiv: Derzhspozhyvstandart Ukrainy, 2007. – 30 p.
11. DSTU ISO 22005:2009 Traceability in feed and food chains. General principles and basic requirements for the development and implementation of a system (ISO 22005:2007, IDT). – Kyiv: Derzhspozhyvstandart Ukrainy, 2010. – 6 p.
12. Regulation (EC) No 178/2002 of the European Parliament and of the Council of 28 January 2002 laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety.
13. Regulation (EC) No. 882/2004 of the European Parliament and of the Council of 29.04.2004 "On official controls performed to ensure the verification of compliance with feed and food law, animal health and animal welfare rules".
14. Regulation (EC) No. 852/2004 of the European Parliament and of the Council of 29.04.2004 "On the hygiene of foodstuffs".

15. Regulation (EC) No. 854/2004 of the European Parliament and of the Council of 29.04.2004 laying down specific rules for the organisation of official controls on products of animal origin intended for human consumption.

### **Information sources**

1. 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).
2. Standards and Recommendations for Quality Assurance in the European Higher Education Area, ESG 2015. -  
[http://www.britishcouncil.org.ua/sites/default/files/standards-and-guidelines\\_for\\_qa\\_in\\_the\\_ehea\\_2015.pdf](http://www.britishcouncil.org.ua/sites/default/files/standards-and-guidelines_for_qa_in_the_ehea_2015.pdf)
3. Development of educational programs: methodological recommendations -  
[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).
4. 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).
5. ISCED 2011 -  
<http://www.uis.unesco.org/education/documents/isced-2011-en.pdf>.
6. ISCED-F (ISCED-G) 2013 -  
<http://www.uis.unesco.org/Education/Documents/isced-fields-of-education-training-2013.pdf>.
7. TUNING (to familiarize yourself with special (professional) competencies and examples of standards -  
<http://core-project.eu/documents/Tuning%20G%20Formulating%20Degree%20PR4.pdf>.
8. TUNING (to familiarize yourself with special (professional) competencies and examples of standards -  
<http://www.unideusto.org/tuningeu/>.
9. National Classifier of Ukraine: "Classifier of Professions" DK 003:2010 //Publishing house "Sotsinform". – Kyiv, 2010.

Table 1

**Matrix of correspondence of defined ESP competencies to NQF descriptors**

Classification competencies according to NQF	Knowledge	Skills	Communication	Autonomy and responsibility
<b>General competencies</b>				
GC1. Ability for abstract thinking, analysis and synthesis.	*		*	
GC2. Ability to work in an international context.	*	*	*	
GC3. Ability to solve complex problems in food technology based on a systematic scientific and general cultural outlook while adhering to the principles of professional ethics and academic integrity.		*	*	*
GC4. Ability to generate new ideas (creativity).	*	*		*
<b>Special (professional, subject) competencies</b>				
PC1. Ability perform original research, reach scientific results, what form new ones knowledge in sphere food technologies and/or tangential to them interdisciplinary directions	*	*		*
PC2. Ability to initiate elaborate i implement complex innovative projects in the field of food production products and tangential to her interdisciplinary projects, detect leadership under time of day implementation.		*	*	*
PC3. Ability to apply modern methodologies, methods and tools experimental i theoretical research, digital technology, computer methods modeling, base data and other electronic resources, specialized software software in scientific and educational activity in sphere food technologies.	*	*		
PC4. The ability to critically analyze and evaluate modern state i trends development food technologies.	*		*	*
PC5. Ability detect, put and to solve tasks research character, evaluate and provide quality performed works in food industry.	*	*		*

PC6. The ability to carry out scientific and pedagogical activities in institutions higher education		*	*	*
PC7. The ability to apply knowledge to establish patterns of losses when implementing a technological process, when conducting technological calculations; the ability to use in practice the knowledge of the principles of resource and energy saving in the development or improvement of food technology.	*	*		
PC8. The ability to optimize processes in food technology and design a recipe composition of products using mathematical modeling and modern software.	*	*		

Table 2

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

Program results teaching	Integral competence	Competencies											
		General competencies				Special (professional) competencies							
		1	2	3	4	1	2	3	4	5	6	7	8
	IC 1												
PLO 1	+	+	+										
PLO 2	+	+				+				+			
PLO 3	+			+				+					
PLO 4	+					+		+		+			
PLO 5	+					+		+		+			
PLO 6	+				+		+					+	
PLO 7	+	+							+	+			
PLO 8	+			+							+		
PLO 9	+			+			+					+	+
PLO 10	+						+				+		
PLO 11	+			+								+	+
PLO 12	+				+		+						

Table 3

**Matrix of ensuring program learning outcomes (PLO) with corresponding components  
educational and scientific program**

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11	PLO12
MC1	+									+		
MC2			+	+				+				+
MC3	+					+	+					+
MC4	+		+					+		+		+
MC5	+					+				+		
MC6	+			+			+					
MC7								+		+		
MC8				+	+		+					
MC9	+					+			+		+	
MC10		+	+	+	+							
MC11		+		+	+							
MC12	+	+	+									+
MC13			+						+		+	
MC14	+							+		+		