PROJECT

MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE
SUMY NATIONAL AGRARIAN UNIVERSITY

APPROVE
Rector of Sumy National Agrarian University, Academician of NASU, Doctor of Agricultural Sciences, Professor
_____ V. Ladyka
____ _____ 2022

EDUCATIONAL AND SCIENTIFIC PROGRAM

third (educational and scientific) level of higher education in specialty

181 "FOOD TECHNOLOGIES"

Field of knowledge 18 "Production and technology"

Qualification: Doctor of Philosophy in the field of "Production and Technology" with a specialization in "Food Technology"

Reviewed and approved
at the meeting of the Academic Council of Sumy National Agrarian University
Protocol of _____ 2022 No. __

Chairman of the Academic Council
_____ V. Ladyka

Sumy – 2022

LETTER OF AGREEMENT

educational and scientific program

"Food Technologies"

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

The project team consists of:	
Project team leader:	
Candidate of Technical Sciences, Associate Professor, Head of the Technologies of Nutrition Department	_____ **O.Yu. Melnyk**
Project team members:	
Doctor of Technical Sciences, Professor of the Technologies of Nutrition Department	_____ **F.V. Pertsevoy**
Doctor of Technical Sciences, Professor of the Technologies of Nutrition Department	_____**I.K. Mazurenko**
Candidate of Technical Sciences, Associate Professor of the Department of Engineering Technologies of Food Production	_____**S.M. Sabadash**
Postgraduate student of the Technologies of Nutrition Department	_____**S.P. Bokovets**

PREFACE

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

Melnyk Oksana – Project group leader, Candidate of Technical Sciences, Associate Professor of the Technologies of Nutrition Department;

Pertsevoy Fedir – Doctor of Technical Sciences, Professor, Head of the Technologies of Nutrition Department;

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

Sabadash Serhiy - Candidate of Technical Sciences, Associate Professor of the Department of Engineering Technologies of Food Production;

Bokovets Serhiy – 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"

1. General information	
Full name of higher education institution	Sumy National Agrarian University
Level of higher education	Third (educational and scientific) level
Higher education degree	Doctor of Philosophy (Philosophy Doctor degree)
Discipline	18 Production and technology
Specialty	181 Food Technology
Full title of the qualification in the original language	Doctor of Philosophy in Production and Technology in the specialty "Food Technology" Doctor of Philosophy of Food Technology
Official name of the educational and scientific program	Food technology
Qualification in diploma	Higher education degree– Doctor of Philosophy Specialty– 181 “Food Technology” Educational program "Food Technology"
Diploma type and program scope	Doctor of Philosophy diploma, single, first academic degree, 4 academic years, 60 ECTS credits of the educational component of the educational and scientific program
Restrictions on forms of education	Missing
Availability of accreditation	Accredited
Program cycle/level	NQF of Ukraine – level 8, FQ-EHEA – third cycle, EQF-LLL – Level 8
Prerequisites	Availability of higher education of the second (master's) level, (educational and qualification level of a specialist in the specialties: 7.05170112 "Food Technologies",7.05170108 "Technologies of storage, preservation and processing of milk" and 7.05170104 "Technologies of storage, preservation and processing of meat"). Requirementsfor applicants are determined by the Rules for Admission to the PhD Doctor of Philosophy Educational and Scientific Program
Language(s) of instruction	Ukrainian, English

Duration of the educational program	By 2023 (started in 2016).
Internet address of permanent placement of the educational program description	https://science.snau.edu.ua/aspirantura/
2. Purpose of the educational program	
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	
Subject area (field of knowledge, specialty)	Research, educational, and professional activities in the field of 18 Production and technology by specialty 181 Food technology
Object of study	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.
Learning objectives	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.
The main focus of the educational program	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 outfundamental 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.
Theoretical content of the subject area	In-depth comprehensive study of fundamental and applied sciences in the specialty "Food Technology".
Program features	***Educational component of the program.*** 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 technologies, in particular nutrition technologies, which forms an updated theoretical and applied basis for conducting scientific research. ***Scientific component of the program.*** 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. 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.
Methods, techniques and technologies	Mastering the methodology of scientific research and experimental technology adequate for solving the scientific tasks in food technology.
4. Eligibility of graduates of the educational program to employment and further education	
Employment eligibility	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): 2310.2 university and higher education teachers; 2320 teacher at a vocational educational institution; 2320 teacher at a vocational school and other areas of activity by specialty.
Further training	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 administrative, scientific, research, pedagogical or other activities. In-service training to improve scientific and practical competencies. It is possible to pursue further training at the doctoral level in areas related to the field of food technology without any problems.
5. Teaching and assessment	
Approaches to teaching and learning	Approaches to teaching and learning: - active learning (interactive learning methods that provide a person-centered approach and the development of systemic, creative and strategic thinking; collaborative learning in interdisciplinary groups; "flipped classroom" - learning by teaching (pedagogical practice); - learning through research (including participation in performing budget and contract research work, participation in research projects); Personalized Learning: individual consultations with academic supervisors; selective professional disciplines).
Evaluation system	***Educational component of the program.*** The system of assessing knowledge in the disciplines of the educational and scientific program consists of current and final control. *Current control* knowledge of postgraduate students is conducted orally (survey based on the results of the processed material). *Final control* Knowledge assessment in the form of an exam/test is conducted in written form, followed by an oral interview. 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.

	Scientific component of the program. 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 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 institute (faculty) with a recommendation to continue (or terminate) postgraduate studies.
Form for monitoring the progress of postgraduate studies (graduate student)	***Educational component of the program.*** The final control of the applicant's academic performance is carried out in the form of: - exam - based on the results of studying the mandatory subjects of the educational program of the cyclegeneral 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); - credit – based on the results of studying all other educational components provided for by the curriculum. ***Scientific component of the program.*** 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".
6. Software competencies	

Integral competence (IC)	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.
General competencies (GC)	GC 1. Ability for abstract thinking, analysis and synthesis. GC 2. Ability to communicate in a foreign language. GC 3. Ability to use information and communication technologies. GC 4. Ability to conduct research at the appropriate level. GC 5. Ability to search, process and analyze information from various sources. GC 6. Ability to generate new ideas (creativity). GC 7.Ability to work in an international context. GC 8. Ability to develop and manage projects. GC 9. The ability to act based on ethical considerations (motives).
Special (professional) competencies (SC)	SC 1. The ability to identify, pose and solve problems, organize, plan, implement scientific research of a fundamental and/or applied nature; analyze, evaluate and compare various theories, concepts and approaches in the subject area of scientific research; draw appropriate conclusions, provide suggestions and recommendations. SC 2. Ability to orally and in writing present and discuss the results of scientific research and/or innovative developments in Ukrainian and foreign languages, to deeply understand scientific texts in the field of research presented in a foreign language. SC 3. Ability to apply modern information technologies, databases and other electronic resources, specialized software in scientific and educational activities. SC 4. Ability to develop regulatory, technical and patent documentation for the results of scientific and practical developments in the chosen direction; ability to perform calculations to confirm the economic efficiency of decisions made as a result of their implementation in practice. SC 5. Ability to analyze the scientific and technical level and development trends of world and domestic food science, generate new ideas for solving existing complex problems in the field of food technology. SC 6. Ability to apply knowledge of modern theories of nutrition, food combinatorics to create food products with new properties;

	SC 7. Ability to apply knowledge to establish patterns of losses during the implementation of a technological process, when conducting technological calculations; ability to use in practice knowledge of the principles of resource and energy conservation when developing or improving food technology. SC 8. Ability to optimize processes in food technology and design product formulations using mathematical modeling equipment and modern software. SC 9. Ability to develop and implement technological solutions to ensure and maintain the quality and safety of food raw materials and food products during the technological process and during storage. SC 10.Ability to engage in scientific and pedagogical activity in the specialty, mastery of modern teaching methodologies and scientific and methodological terminology in the educational sphere, means of personal and professional self-expression. SC 11.The ability to conduct marketing research on the food market, assess the competitiveness of scientific projects and the financial risks of their implementation.
7. Program learning outcomes	
	1. Have advanced conceptual and methodological knowledge in food technology and at the border of subject areas, as well as research skills sufficient to conduct scientific and applied research at the level of the latest world achievements in the relevant field, obtain new knowledge and/or implement innovations.
	2. To deeply understand the general principles and methods of food science, as well as the methodology of scientific research, to apply them in their own research in the field of food technology and in teaching practice.
	3. Have thorough knowledge of the subject area, analyze the scientific and technical level of global and domestic food science, generate new ideas, and formulate the goal of one's own scientific research as a component of the general civilizational process.
	4. Know and understand the philosophical methodology of scientific knowledge and the psychological and pedagogical aspects of professional and scientific activity.
	5. Know a foreign language at the level necessary for oral and written presentation of scientific research results, conducting professional scientific dialogue, and fully understanding foreign scientific texts.
	6. Have systematic knowledge of modern methods of conducting research in the field of food technology.
	7. Have in-depth knowledge in the chosen area of scientific research in food technology.

	8. Understand the impact of technical solutions in the societal, economic and social context.
	9. Plan and carry out experimental and/or theoretical research in interdisciplinary areas of nutrition using modern tools, critically analyze the results of one's own research and the results of other researchers in the context of the entire complex of modern knowledge on the problem under study.
	10. 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.
	11. To freely present and discuss research results, scientific and applied problems in the field of food technology in the state and foreign languages, to competently reflect research results in scientific publications in leading international scientific journals.
	12. Develop and implement scientific and/or innovative engineering projects that provide an opportunity to rethink existing and create new holistic knowledge and/or professional practice and solve scientific and technological problems in food technology while adhering to the norms of academic ethics and taking into account social, economic, environmental and legal aspects.
	13. Develop and implement innovative technological solutions, tools and methods of technical sciences to solve existing problems and further develop food technologies.
	14. Plan and implement the educational process based on modern methodological principles, apply active teaching methods, use various strategies of pedagogical interaction, methods of communicative influence, dialogical pedagogical communication, and demonstrate leadership and self-regulation skills based on self-knowledge.
	15. 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.
	16. Develop grant proposals, technical documentation, and industry recommendations in the field of food production.
	17. Ability to communicate in business, scientific and professional language, apply different speech styles, methods and techniques of communication, demonstrate a wide scientific and professional vocabulary.
	18. Ability to apply modern information and communication tools and technologies to ensure effective scientific and professional communications.
	19. Ability to independently conduct scientific research and make decisions.
	20. The ability to formulate one's own conclusions, suggestions, and recommendations.
	21. The ability to defend the results of research, to be aware of and bear personal responsibility for them, the ability to present the results obtained, including in the form of a dissertation.

8. Forms of certification of higher education applicants	
Forms of certification of higher education applicants	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.
Requirements for qualifying work	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 specialty 181 "Food Technology".
Requirementspublic protection	The defense of the dissertation is held in public at a meeting of a specialized 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.
9. Resource provision for the implementation of the educational program	
Human resources	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.
Materially-technical software	Availability of educational and scientific laboratories, including interdepartmental ones: laboratory of innovative food technologies, laboratory of meat processing technology, laboratory of the department of food technology based on the State Agricultural University, 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.
Informational-methodical software	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.
9. Academic mobility	
National Credit mobility	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.
International credit mobility	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).
Teaching foreign languages higher education applicants education	The education of third-level higher education applicants is conducted 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

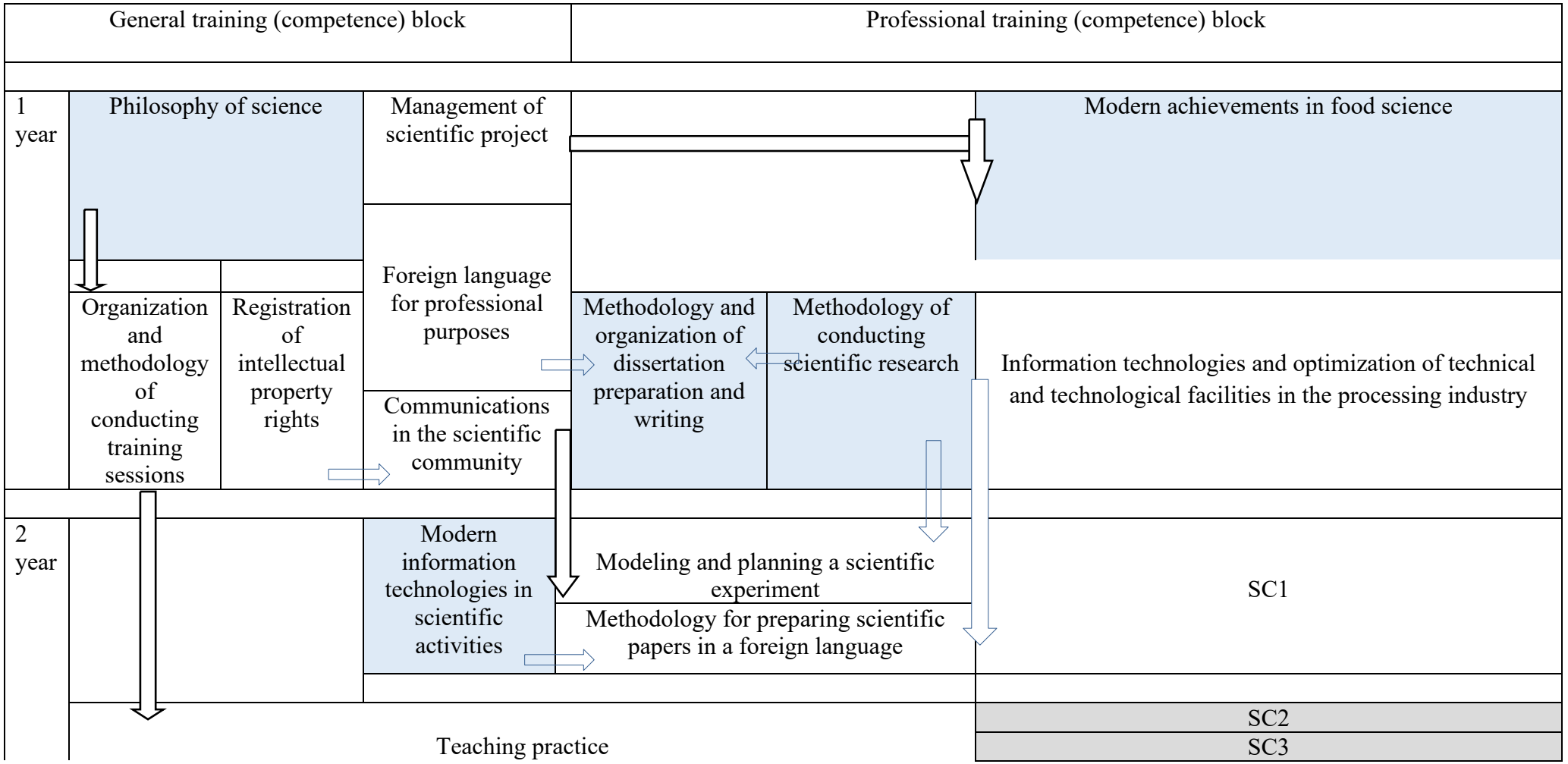
No. n/a	Components of the educational program (courses, course projects (papers), internships, qualification work)	Keel number of credits	Semesters								Summary form. Control
			1	2	3	4	5	6	7	8	
1	2	3	4	5	6	7	8	9	10	11	12
1. Compulsory academic subjects											
MC. 1	Philosophy of science	4.0	x								exam
MC. 2	Modern information technologies in scientific activities	3.0			x						exam
MC. 3	Communications in the scientific community	3.0		x							test
MC. 4	Methodology of scientific research	3.0		x							test
MC. 5	Modern achievements of food science	3.0	x								exam
MC. 6	Modeling and planning a scientific experiment	3.0			x						test
MC. 7	Registration of intellectual property rights	3.0		x							test

MC. 8	Organization and methodology of conducting training sessions	3.0		x							exam
MC. 9	Methodology and organization of dissertation preparation and writing	3.0		x							exam
MC. 10	Management of scientific project	3.0	x								exam
MC. 11	Foreign language for professional purposes	4.0	x	x							test/ exam
MC. 12	Methodology for preparing scientific papers in a foreign language	3.0			x						exam
MC. 13	Teaching practice	4.0				x					test
MC 14.	Information technologies and optimization of technical and technological facilities in the processing industry	3.0		x							exam
Together for all cycles of the main part of the plan		**45.0**									
2. Elective courses											
SC.1	Specialized unit	5.0			x						exam
SC.2	Specialized unit	5.0				x					exam
SC.3	Specialized unit	5.0				x					exam
Total by cycle of special (professional) training (at the choice of the postgraduate student)		**15.0**									
Together by elective disciplines		**15.0**									
Together by cycles of the normative and variable parts		**60.0**									

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.

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.
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
3. Development of educational programs: methodological recommendations -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.
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
General competencies				
GC 1. Ability for abstract thinking, analysis and synthesis.	•		•	
GC 2. Ability to search, process and analyze information from various sources, to critical analysis and evaluation of modern scientific achievements, synthesis of holistic knowledge, and comprehensive problem solving.	•	•		
GC 3. Ability to generate new ideas and make informed decisions to achieve set goals.	•	•		•
GC 4. Ability to participate in the work of domestic and international research teams and work in an international context.	•		•	
GC 5. Ability to develop and manage scientific projects, initiate research organizations in the field of scientific research and innovation activities, assess the needs for financing scientific research, and register intellectual property rights.	•		•	•
GC 6. Ability to plan and carry out comprehensive research at a modern level using the latest information and communication technologies and adhering to the parameters of safe activities based on a holistic systemic scientific worldview using knowledge in the field of history and philosophy of science.	•	•		
GC 7.The ability to show initiative, take responsibility, motivate people, and move towards a common goal.			•	•
GC 8. Ability to prepare scientific texts, present, discuss, debate and scientific polemics regarding the results of one's scientific work in the state and foreign languages in a volume sufficient for full understanding, demonstrating the culture of scientific oral and written speech.	•	•	•	
GC 9. Ability to comply with the norms of scientific ethics, copyright and related intellectual property rights.	•			•
Special (professional, subject) competencies				
SC 1. The ability to identify, pose and solve problems, organize, plan, implement scientific research of a fundamental and/or applied nature; analyze, evaluate and compare various theories, concepts and approaches in the subject area of	•	•		•

scientific research; draw appropriate conclusions, provide suggestions and recommendations.				
SC 2. Ability to orally and in writing present and discuss the results of scientific research and/or innovative developments in Ukrainian and foreign languages, to deeply understand scientific texts in the field of research presented in a foreign language.	•	•	•	
SC 3. Ability to apply modern information technologies, databases and other electronic resources, specialized software in scientific and educational activities.	•	•		
SC 4. Ability to develop regulatory, technical and patent documentation for the results of scientific and practical developments in the chosen direction; ability to perform calculations to confirm the economic efficiency of decisions made as a result of their implementation in practice.	•	•		•
SC 5. Ability to analyze the scientific and technical level and development trends of world and domestic food science, generate new ideas for solving existing complex problems in the field of food technology.	•		•	•
SC 6. Ability to apply knowledge of modern theories of nutrition, food combinatorics to create food products with new properties;	•	•		
SC 7. Ability to apply knowledge to establish patterns of losses during the implementation of a technological process, when conducting technological calculations; ability to use in practice knowledge of the principles of resource and energy conservation when developing or improving food technology.	•	•		
SC 8. Ability to optimize processes in food technology and design product formulations using mathematical modeling equipment and modern software.	•	•		
SC 9. Ability to develop and implement technological solutions to ensure and maintain the quality and safety of food raw materials and food products during the technological process and during storage.	•	•		•
SC 10. Ability to engage in scientific and pedagogical activity in the specialty, mastery of modern teaching methodologies and scientific and methodological terminology in the educational sphere, means of personal and professional self-expression.		•	•	

SC 11. The ability to conduct marketing research on the food market, assess the competitiveness of scientific projects and the financial risks of their implementation.	•	•	•	•

Table 2

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

Program results teaching	Integral competence	Competencies																			
		General competencies									Special (professional) competencies										
	IR 1	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9	10	11
PLO 1	+	+	+		+								+		+						
PLO 2	+	+	+	+	+		+				+		+		+		+			+	
PLO 3	+		+	+	+	+		+			+				+						
PLO 4	+	+					+													+	
PLO 5	+								+			+			+						
PLO 6	+						+				+		+								
PLO 7	+															+	+	+	+		
PLO 8	+				+									+			+		+		
PLO 9	+				+		+				+				+						
PLO 10	+														+			+	+		
PLO 11	+				+				+			+									
PLO 12	+					+		+		+				+	+		+	+	+		+
PLO 13	+															+	+	+	+		
PLO 14	+							+					+							+	
PLO 15	+		+											+		+	+	+	+		
PLO 16	+			+		+				+				+		+	+	+	+		
PLO 17	+								+			+									
PLO 18	+		+				+						+								
PLO 19	+			+			+	+			+										
PLO 20	+								+		+			+							
PLO 21	+							+		+						+		+			

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	PLO13	PLO14	PLO15	PLO16	PLO17	PLO18	PLO19	PLO20	PLO21
MC1				+																	
MC2																		+			
MC3														+			+	+			
MC4	+	+				+	+		+												
MC5	+	+	+				+														
MC6	+					+	+		+										+		
MC7													+			+				+	
MC8														+			+				
MC9											+	+			+		+		+	+	+
MC10												+								+	+
MC11					+						+						+				
MC12					+						+						+	+			
MC13				+										+			+				
MC14		+				+									+				+		