

MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE
SUMY NATIONAL AGRICULTURAL UNIVERSITY

EDUCATIONAL SCIENTIFIC PROGRAM
"FOOD TECHNOLOGIES"

LEVEL OF HIGHER EDUCATION	<u>Third (educational and scientific)</u> (name of higher education level)
DEGREE OF HIGHER EDUCATION	<u>Doctor of Philosophy</u> (name of higher education degree)
FIELD OF KNOWLEDGE	<u>18 "Production and technology"</u> (code and name of the field of knowledge)
SPECIALTY	<u>181 Food technologies</u> (code and name of the specialty)

«APPROVED»

Academic Council Sumy NAU

28.03.2022

Protocol № 11

Chairman of the Academic Council Rector

Academician of NAAS of Ukraine V.I.Ladyka

The education program is implemented from
01.07.2022






Rector

Academician of NAAS of Ukraine V.I.Ladyka

(order № 205K from «30» 06 2022)

LETTER OF APPROVAL
educational scientific program
181 Food Technology

Level of higher education - third (educational and scientific)

Project group consisting of:	
Project team leader:	
Candidate of Technical Sciences, Associate Professor of Food Technology	 _____ O.Y. Melnyk
Project team members:	
Doctor of Technical Sciences, Head of the Department of Food Technology	 _____ F.V. Pertsevoy
Doctor of Technical Sciences, Professor of the Department of Food Technology	 _____ I.K. Mazurenko
Candidate of Technical Sciences, Associate Professor of the Department of Engineering Technologies of Food Production	 _____ C.M. Sabadash
graduate student of the Department of Food Technology	 _____ S.P. Bokovets

PREFACE

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

Melnyk Oksana Yuriyivna - project team leader, candidate of technical sciences, associate professor of the department of food technology;

Pertsevoy Fedir Vsevolodovich - doctor of technical sciences, professor, head of the department of food technology;

Mazurenko Igor Konstantinovich - doctor of technical sciences, professor of the department of food technology;

Stepanova Tetyana Mykhailivna - candidate of technical sciences, associate professor of food technology;

Sabadash Sergiy Mikhailovych - candidate of technical sciences, associate professor of the department of engineering technologies of food production;

Bokovets Serhii Petrovich – graduate student of the department of food technology.

I. EDUCATIONAL COMPONENT OF THE EDUCATIONAL AND SCIENTIFIC PROGRAM

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

1. General information	
Full name of the institution of higher education	Sumy National Agrarian University
Level of higher education	The third (educational and scientific) level
Degree of higher education	Doctor of Philosophy (Philosophy Doctor degree)
Field of knowledge	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
The official name of the educational and scientific program	Food technology
Qualification in the diploma	Degree of higher education - Doctor of Philosophy Specialty - 181 "Food technologies" Educational program "Food Technology"
Type of diploma and scope of the program	Doctor of Philosophy single, first scientific degree, 4 academic years, 60 ECTS credits of the educational component of the educational scientific program
Restrictions on forms of education	Missing
Availability of accreditation	Accredited
Program cycle/level	NRC of Ukraine - level 8, FQ-EHEA - the third cycle, EQF-LLL - level 8
Prerequisites	Availability of higher education of the second (master's) level of specialty 181 "Food technologies" , (educational and qualification level of a specialist in specialties: 7.05170112 "Food Technology", 7.05170108 "Technology of storage, preservation and processing of milk" and 7.05170104 "Technology of storage, preservation and processing of meat"). Requirements to entrants are determined by the

	Rules of admission to the educational and scientific program PhD Doctor of Philosophy
Language (s) of instruction	Ukrainian, English
Term of the educational program	Until 2026 (launched in 2016).
Internet address of the permanent placement of the description of the educational program	https://science.snau.edu.ua/aspirantura/
2. The purpose of the educational program	
Training of highly qualified specialists in the field of food technologies, able to solve 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. deep rethinking of existing and 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 18 Production and technologies in the specialty 181 Food technologies
Object of study	Theoretical and methodological, scientific and applied bases of food technologies; principles of optimization of 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-technical and scientific-pedagogical activity.
Learning objectives	Formation of professional, research and educational competencies necessary for innovative professional, research and educational activities and the introduction of modern technologies in the specialty "Food Technology". Creating conditions for applicants to achieve the ability to independently conduct research at an internationally recognized level; support for graduate students as highly qualified teachers, scientists and experts in food technology.

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 students to form the ability to justify the solution of problems in industry "Production and technology" in the specialty "Food Technology", plan and implement basic and applied research on the creation and improvement of food technology, using modern research
	methodology, critically analyze research projects, collaborate with other researchers, including working in an interdisciplinary team, transfer professional knowledge.
Theoretical content of the subject area	In-depth comprehensive study of basic and applied sciences, specialty "Food Technology".
Features of the program	<p><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 technologies, in particular food technologies, which forms an updated theoretical and applied basis for research.</p> <p><i>Scientific component of the program.</i> The scientific component of the educational and scientific program involves the implementation of their own research under the guidance of one or two supervisors with the appropriate design 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 research work of the graduate student and is an integral part of the curriculum.</p> <p>The peculiarity of the scientific component of the educational and scientific program of training doctors of philosophy in the specialty 181 - Food Technology is that some components of their own research graduate students will be able to perform during practical classes in the disciplines of professional training.</p>
Methods, techniques and technologies	Mastering the methodology of scientific research and experimental technology, adequate to solve scientific problems in food technology.
4. Suitability of graduates of the educational program to employment and further training	

<p>Suitability for employment</p>	<p>Positions in research groups, research laboratories, profile departments, departments in higher educational institutions, profile institutes, commercial research organizations, enterprises and organizations of various activities and forms of ownership in management positions. The specialist is able to perform the specified professional work for (DK 003: 2010): 2310.2 teachers of universities and higher educational institutions; 2320 teacher of a professional educational institution; 2320 teacher of vocational school and other areas of activity in the specialty.</p>
<p>Further training</p>	<p>Training for development and self-improvement in scientific and professional spheres of activity in the specialty 181 Food technologies, as well as other related fields of scientific knowledge, training at the 10th (scientific) level of the NQF of Ukraine in the field of 20 Agricultural sciences and food; educational programs, research grants and scholarships (including abroad) that contain additional educational components. Various forms of lifelong learning (both in Ukraine and abroad) to improve skills and improve administrative, scientific, research, teaching or other activities. Training during professional activity to improve scientific and practical competencies. Possible further training at the doctoral level in areas close to the field of food technology is possible.</p>
<p>5. Teaching and assessment</p>	
<p>Approaches to teaching and learning</p>	<p>Approaches to teaching and learning: - active learning (interactive teaching methods that provide a person-centered approach and development of systematic, creative and strategic thinking; joint learning in interdisciplinary groups; "inverted class" - learning by teaching (pedagogical practice); - training through research (including participation in budget and economic contract research, participation in research projects); personalized Learning: individual consultations with supervisors; elective professional disciplines).</p>

<p>Evaluation system</p>	<p><i>Educational component of the program.</i> The system of assessment of knowledge in the disciplines of educational and scientific program consists of current and final control.</p> <p><i>Current control</i> postgraduate knowledge is conducted orally (survey on the results of the processed material).</p> <p><i>Final control</i> knowledge in the form of an exam / test is conducted in writing, followed by an oral interview.</p> <p>Within disciplines that provide professional training, positive assessments of current and final control can be issued automatically if the graduate student has prepared and published scientific articles in collections that are part of professional publications and / or publications that are included in international scientometric databases. The number of articles and their topics are agreed with the supervisor.</p>
	<p><i>Scientific component of the program.</i> Assessment of scientific activity of postgraduate students (applicants) is carried out on the basis of quantitative and qualitative indicators characterizing preparation of scientific works, participation in conferences, preparation of separate parts of the dissertation according to the approved individual plan of scientific work of the postgraduate student (applicant). Reports of graduate students (applicants), based on the results of the individual plan, are approved annually at a meeting of departments and the academic council of the institute (faculty) with a recommendation to continue (or terminate) postgraduate studies.</p>

<p>Form of monitoring the success of postgraduate studies (applicant)</p>	<p><i>Educational component of the program.</i></p> <p>Final control of the applicant's learning success is carried out in the form of:</p> <ul style="list-style-type: none"> - exam - based on the results of studying the mandatory disciplines of the educational program of the cycle general scientific training (philosophy of science, management of scientific projects), cycle of research training (registration of intellectual property rights, organization and methods of training, organization of preparation of scientific publications, management of scientific projects), language training cycle (foreign language for professional purposes, methods of preparation of scientific papers in a foreign language), as well as exams based on the results of studying disciplines of professional training (modern achievements of food science, methods and organization of preparation and dissertation writing / laboratory management); - credit - based on the results of studying all other educational components provided by the curriculum. <p><i>Scientific component of the program.</i></p> <p>The scientific component of the SNP includes disciplines of cycles of general scientific training, special (professional), research training, language special (professional) and practical training (compulsory and elective) and pedagogical practice, which together with the educational part of the program and research with the participation of the supervisor, preparation and public defense of the dissertation in the specialized academic council provides obtaining the educational level "Doctor of Philosophy" in the specialty 181 "Food Technology".</p>
<p>6. Program competencies</p>	
<p>Integral competence (IC)</p>	<p>Ability to solve complex problems in the field of professional and / or research and innovation 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>
<p>General competencies (GC)</p>	<p>GC1. Ability to abstract thinking, analysis and synthesis. GC2. Ability to work in an international context. GC3. Ability to solve complex problems in food technology on the basis of a systematic scientific and general cultural worldview in compliance with the principles of professional ethics and academic integrity. GC4. Ability to generate new ideas (creativity).</p>

<p>Special (professional) competencies (PC)</p>	<p>PC1. Ability to perform original research, achieve scientific results that form new knowledge in the field of food technology and / or related interdisciplinary areas.</p> <p>PC2. Ability to initiate, develop and implement complex innovative projects in the field of food production and related interdisciplinary projects, to show leadership in their implementation.</p> <p>PC3. Ability to apply modern methodologies, methods and tools of experimental and theoretical research, digital technologies, computer modeling methods, databases and other electronic resources, specialized software in scientific and educational activities in the field of food technology.</p> <p>PC4. Ability to critically analyze and evaluate the current state and trends in food technology.</p> <p>PC5. Ability to identify, set and solve research tasks, evaluate and ensure the quality of work performed in the food industry.</p> <p>PC6. Ability to carry out scientific and pedagogical activities in higher education institutions.</p> <p>PC7. Ability to apply knowledge to establish patterns of losses in the implementation of the technological process, when conducting technological calculations; ability to use in practice knowledge of the principles of resource and energy saving in the development or improvement of food technology.</p> <p>PC8. Ability to optimize processes in food technology and design the prescription composition of products using the apparatus of mathematical modeling and modern software.</p>
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7. Program learning outcomes

	<p>1. Freely present and discuss with experts and non-specialists the results of research, scientific and applied problems in the field of food technology in state and foreign languages, qualified to reflect the results of research in scientific publications in accordance with the principles of professional ethics and academic integrity.</p> <p>2. Formulate and test hypotheses; use appropriate evidence to substantiate the conclusions, in particular, the results of theoretical analysis, experimental research and mathematical and / or computer modeling, available literature data.</p> <p>3. Use modern tools and technologies for searching, processing and analyzing information on food technology issues, in particular, statistical methods of data analysis of large volumes and / or complex structures, specialized databases and information systems.</p> <p>4. Plan, organize and perform experimental and / or theoretical research in the field of food technology using modern tools and equipment, information technology and software.</p>
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	<p>5. Have advanced conceptual and methodological knowledge, demonstrate research skills in the field of food technology and on the borders of subject areas, sufficient for scientific and applied research to gain new knowledge and / or innovate at the level of modern world science and technology.</p>
	<p>6. 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.</p>
	<p>7. Deeply understand the general principles and methods of food science, as well as the methodology of scientific research, apply them in their own research in the field of food technology and teaching practice..</p>
	<p>8. Have a thorough knowledge of the subject area, analyze the scientific and technical level of world and domestic food science, generate new ideas and formulate the purpose of their own research as part of the general civilization process.</p>
	<p>9. Solve complex problems of efficient storage and processing of food raw materials into food products in order to ensure their quality and safety, in accordance with current legislation.</p>
	<p>10. Know and understand the philosophical methodology of scientific knowledge and psychological and pedagogical aspects of professional and scientific activities. Plan and implement the educational process on the basis of modern methodological principles, demonstrate leadership and self-regulation skills based on self-knowledge.</p>
	<p>11. To forecast, plan and implement in practice the production of food products, to optimize the parameters of technological processes in accordance with the implementation of the principles of resource conservation and environmental safety.</p>
	<p>12. Develop grant proposals, technical documentation and industry recommendations in the field of food production, formulate their own author's conclusions, proposals and recommendations.</p>
<p>8. Forms of certification of applicants for higher education</p>	
<p>Forms of certification of applicants for higher education</p>	<p>Certification is carried out in the form of a public presentation of research results in the form of a dissertation of a doctor of philosophy, provided that the graduate student fulfills his individual curriculum.</p>

Requirements for qualification work	The dissertation of the Doctor of Philosophy involves solving a topical theoretical and / or experimental (practical) problem in the field of food technology and shows the ability of the applicant to conduct independent research, formulate new complex ideas and justify them. The dissertation is the result of independent scientific work of the graduate student, which has the status of an intellectual product on the rights of the manuscript and offers the solution of the actual scientific problem in the specialty 181 "Food Technologies".
Requirements public protection	The defense of the dissertation takes place in public at a meeting of the specialized academic council. Mandatory prerequisite for admission to the defense of the dissertation is the approbation of research results and main conclusions at scientific conferences and their publication in professional scientific journals, in accordance with current requirements.
9. Resource support for the implementation of the educational program	
Staffing	Scientific and pedagogical staff meets the requirements of current legislation of Ukraine. The 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	Provision of educational and scientific laboratories, including interdepartmental: laboratory of innovative food technologies, laboratory of meat processing technology, laboratory of the department of food technology on the basis of catering complex, laboratory of technological control of food, laboratory of food production equipment, interdepartmental scientific and practical laboratory of chemical and microbiological research of food.
Information and methodical software	Use of the fund of scientific libraries of the institution of higher education Sumy, 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	

MC. 9	Methods and organization of preparation and writing of the dissertation	3.0		x								exam
MC. 10	Management of scientific projects	3.0	x									exam
MC. 11	Foreign language for professional purposes	4.0	x	x								exam
MC. 12	Methods of preparation of scientific papers in a foreign language	3.0			x							exam
MC. 13	Pedagogical practice	4.0				x						test
MC. 14	Information technologies and optimization of technical and technological objects of the processing industry	3.0		x								exam
Together for all cycles of the main part of the plan		45.0										
2. Elective disciplines												
SC.1	Innovations in the industry / Innovative food ingredients in technology of food products	5.0			x							test
SC.2	Innovative engineering institutions restaurant industry / Engineering innovations	5.0				x						test
SC.3	Methods and technology of scientific information processing / Modern instrumental research methods	5.0				x						test
Total for the cycle of special (professional) training (at the student's choice)		15.0										
Together in elective disciplines		15.0										
Together on cycles of normative and variable parts		60.0										

1.2.2. Structural and logical scheme of of the educational program

Applicants for higher education have the right to choose disciplines within the limits provided by the relevant educational program and working curriculum, in the amount of 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

General training unit (competencies)		Block of professional training (competence)			
1 year	Philosophy of science	Organization and methods of training	Methodology of scientific research	Foreign language for professional purposes	Modern achievements of food science
			Methods and organization of preparation and writing of the dissertation	Communications in the scientific environment	Information technologies and optimization of technical and technological objects of the processing industry
2 years			Modern information technologies in scientific activity		
			Management of scientific projects		
			Modeling and planning of a scientific experiment	Methods of preparation of scientific papers in a foreign language	VK 1
					VK 2
				VK 3	
3 years		Pedagogical practice			

II. SCIENTIFIC COMPONENT OF THE EDUCATIONAL AND SCIENTIFIC PROGRAM

The scientific component of the educational and scientific program involves the graduate student's own research under the guidance of one or two supervisors and registration of its results in the form of a dissertation. The scientific component of the educational and scientific program is made out in the form of the individual plan of scientific work.

The dissertation for the degree of Doctor of Philosophy is an independent detailed research that offers a solution to a complex problem in the field of food technology, in particular food technology, which involves a deep rethinking of existing and creating new holistic knowledge and/or professional practice.

The dissertation should not contain academic plagiarism, falsification. The dissertation should be posted on the website of the institution of higher education (scientific institution). The volume of the main text of the dissertation should be 4.05.5 author's sheets. 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 by relevant regulations), monographs, scientific and methodological recommendations, abstracts, speeches at scientific conferences, participation in scientific seminars, round tables, symposia.

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

Implementation of research results in production and educational process.

Research topics:

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

6. Development of food rations for certain groups of the population taking into account age, sex, intensity and working conditions, ecological conditions, type of diseases and other factors influencing 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 and food concentrates that provide energy conservation, environmental safety, increase technical and technological level of production, reduce losses, preserve and improve the quality of raw materials and finished products.

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

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

10. Research of regularities of functioning, modeling and optimization of technological processes of production of bakery products, confectionery and pasta and food concentrates.

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

12. Development of theoretical and practical bases of perspective methods and systems of quality control and safety of raw materials, semi-finished products and finished products at different stages of technology of bakery products, confectionery and pasta and food concentrates.

13. Research of meat, dairy and other livestock products, fish products and products from aquatic organisms 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 of research of chemical composition and structure, assessment of quality and safety of meat, dairy, fish raw materials, aquaculture products, as well as finished meat, dairy, fish and aqua products.

15. Improving the existing technological processes of processing meat, dairy, fish raw materials and aquaculture products in the direction of expanding the range and improving the quality and safety of finished products, reducing resource and energy costs for its production.

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

17. Scientific substantiation and development of new methods of processing of 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 of meat, dairy and fish products of special, medical-prophylactic, heroic or functional purpose, as well as pharmaceutical, chemical, protein and other preparations from meat, dairy, fish raw materials and aquaculture products.

III. CERTIFICATION OF APPLICANTS

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

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

List of normative documents on which the standard of higher education is based

1. Law of Ukraine "On Higher Education" of 01.07.2014 № 1556-VII.
2. Law of Ukraine "On the basic principles and requirements for food safety and quality" from 22. 07. 2014 № 1602-VII
3. Methodical recommendations for the development of standards of higher education // 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 of 23.11.2011 № 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 № 266 "On approval of the list of branches of knowledge and specialties for which higher education students are trained".
6. Order of the Ministry of Education and Science of Ukraine dated 01.06.2016 №600 "On approval and implementation of Guidelines for the development of standards of higher education".
7. National Classifier of Ukraine: Classification of economic activities 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 Training 2013 (ISCED-O 2013): Accompanying Guide to the International Standard Classification of Education 2011. - UNESCO Institute for Statistics, 2014. - Access mode:
<http://www.uis.unesco.org/Library/Documents/isced-f-2013-fields-of-educationtraining-2014-rus.pdf>.
10. NSU ISO 22000: 2007 Food safety management systems. Requirements for any food chain organization (ISO 22000: 2005, IDT). - Kyiv: Derzhspozhyvstandart Ukrainy, 2007. - 30 p.
11. NSU ISO 22005: 2009 Traceability in feed and food chains. General principles and basic requirements for system development and implementation (ISO 22005: 2007, IDT). - Kyiv: Derzhspozhyvstandart Ukrainy, 2010. - 6 p.
12. Regulation (EU) of the European Parliament and of the Council of 28 January 2002 № 178/2002 laying down the general principles and requirements of food law establishes a European Food Safety Authority and establishes procedures for matters relating to food safety products.
13. Regulation (EU) of the European Parliament and of the Council of 29 April 2004 № 882/2004 "On official control measures applied to ensure the verification of compliance with feed and food law, animal health and animal welfare rules".

14. Regulation (EU) of the European Parliament and of the Council of 29 April 2004 № 852/2004 "On the hygiene of foodstuffs".

15. Regulation (EU) of the European Parliament and of the Council of 29 April 2004 № 854/2004 laying down special rules for the organization 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_tempusoffice.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-andguidelines_for_qa_in_the_ehea_2015.pdf
3. Development of educational programs: methodical recommendations
http://ihed.org.ua/images/biblioteka/rozroblennya_osv_program_2014_tempusoffice.pdf.
4. Development of the quality assurance system of higher education in Ukraine: information-analytical review
http://ihed.org.ua/images/biblioteka/Rozvitok_sisitemi_zabesp_yakosti_VO_UA_2015.pdf.
5. ISCED (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-educationtraining-2013.pdf>.
7. TUNING (for acquaintance with special (professional) competences and examples of standards -
<http://coreproject.eu/documents/Tuning%20G%20Formulating%20Degree%20PR4.pdf>.
8. TUNING (for acquaintance with special (professional) competences and examples of standards -<http://www.unideusto.org/tuningeu/>.
9. National Classifier of Ukraine: "Classifier of Professions" DK 003: 2010 //Sotsinform Publishing House. - Kyiv, 2010.

Table 1

Matrix of compliance of the competencies defined by the educational and scientific program with the descriptors of the national qualifications framework

Classification competencies for the NQF	Knowledge	Skills	Communication	Autonomy and responsibility
General competencies				
GC 1. Ability to abstract thinking, analysis and synthesis.	•		•	
GC 2. Ability to work in an international context.	•	•	•	
GC 3. Ability to solve complex problems in food technology on the basis of a systematic scientific and general cultural worldview in compliance with the principles of professional ethics and academic integrity.		•	•	•
GC 4. Ability to generate new ideas (creativity).	•	•		•
Special (professional, subject) competencies				
PC 1. Ability to perform original research, to achieve scientific results that form new knowledge in the field of food technology and / or related interdisciplinary areas.	•	•		•
PC 2. Ability to initiate, develop and implement complex innovative projects in the field of food production and related interdisciplinary projects, to show leadership in their implementation.		•	•	•
PC 3. Ability to apply modern methodologies, methods and tools of experimental and theoretical research, digital technologies, computer modeling methods, databases and other electronic resources, specialized software in scientific and educational activities in the field of food technology.	•	•		
PC 4. Ability to critically analyze and evaluate the current state and trends in food technology.	•		•	•
PC 5. Ability to identify, set and solve research tasks, evaluate and ensure the quality of work performed in the food industry.	•	•		•
PC 6. Ability to carry out scientific and pedagogical activities in higher education institutions.		•	•	•

<p>PC 7. Ability to apply knowledge to establish patterns of losses in the implementation of the technological process, when conducting technological calculations; ability to use in practice knowledge of the principles of resource and energy saving in the development or improvement of food technology.</p>	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • 		
<p>PC 8. Ability to optimize processes in food technology and design the prescription composition of products using the apparatus of mathematical modeling and modern software.</p>	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • 		

Table 2

Matrix of correspondence of learning outcomes and competencies determined by the educational-scientific program

Program learning outcomes	Integral competence	Competences											
		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 for providing program learning outcomes (PLO) with appropriate components educational
and scientific program**

	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8	PLO 9	PLO 10	PLO 11	PLO 12
MC1	+	+								+		
MC2			+					+				+
MC3	+											+
MC4			+	+	+		+					
MC5	+					+	+	+	+		+	
MC6		+	+	+	+							
MC7	+											+
MC8							+			+		
MC9	+	+		+				+				
MC10						+		+				+
MC11	+							+				
MC12	+				+						+	
MC13						+	+			+		
MC14			+						+		+	
SC1						+		+	+		+	
SC2						+			+			

SC3		+	+				+					
SC3	+			+	+		+					