

Ministry of Education and Science of Ukraine
Sumy National Agrarian University
Faculty of Food Technologies
Department of Food Technologies and Safety

Working Program (Syllabus) of the Educational Component

**OK 23 TECHNOLOGY OF MEAT, MEAT PRODUCTS,
AND FISH**

Specialty	181 "Food Technologies"
Educational Program	Food Technologies
Higher Education Level	First (Bachelor's)

Sumy -2026

Developer: Vasyl TISHCHENKO, Ph.D. in Agricultural Sciences, Associate Professor of the Department of Food Technologies and Safety

Reviewed and approved at the meeting of the Department of Food Technologies and Safety	Protocol No. 17 dated May 19, 2026.
	Head of the Department Maryna SAMILYK (прізвище, ініціали)

Agreed: Educational Program Guarantor:

Doctor of Philosophy, Associate Professor _____ Olena KOSHEL

Dean of the Faculty where the educational program is implemented:

_____ Nataliia BOLGOVA

Review of the working program provided by:

Ph.D. in Technical Sciences, Assoc. Prof. _____ Oksana MELNYK

Ph.D., Assoc. Prof. _____ Tetiana SYNENKO

Methodologist of the Department of Educational Quality, Licensing, and Accreditation:
_____ (_____) (signature) (Full Name)

Registered in the electronic database: Date: _____ 2026

SNAU, 2026 year

1. GENERAL INFORMATION ABOUT THE EDUCATIONAL COMPONENT

1	Name of the Educational Component (EC)	OK 23 Technology of meat, meat products, and fish					
2	Faculty/Department	Food Technologies / Food Technologies and Safety					
3	EC Status	Mandatory					
4	Program/Specialty (programs) of which the EC is a part (to be completed for mandatory ECs)	"Food Technologies" / 181 "Food Technologies"					
5	NQF Level	First (Bachelor's) level of higher education					
6	Semester and duration of study	3rd year, 6th semester; 2nd year, 4th semester (for shortened-term programs), (15 weeks)					
7	Number of ECTS credits	5 credits					
8	Total hours and their distribution	Contact hours (full-time study)			Contact hours (part-time study)/		
		Lectures	Laboratory sessions	Independent work	Lectures	Laboratory sessions	Independent work
		30	44	76		2	148
9	Language of instruction	English					
10	Instructor/Coordinator of the educational component	Vasyl Ivanovych Tyshchenko, Associate Professor, Candidate of Agricultural Sciences					
11	Contact information	tischenko_1958@ukr.net					
12	General description of the educational component	The course aims to equip higher education students with theoretical and practical knowledge regarding the technology of meat and meat products, as well as the processing of fish raw materials.					
13	Objective of the educational component	The aim of the course is to equip students with a system of up-to-date knowledge regarding meat and fish product technologies, enabling the effective application of technological processes and optimal processing parameters within the food technology sector.					
14	Prerequisites for studying the educational component; connection with other educational components of the educational program.	1. The educational component is based on knowledge from the following disciplines: (OC 8) Theoretical Foundations of Food Production; (OC 10) Food Product Control Methods; and (OC 14) Food Production Processes and Equipment. 2. The educational component serves as a foundation for the "Food Technologies" educational-scientific program, specifically for: OC 29 "Design of Food Enterprises and Restaurant Facilities," OC 30 "Pre-graduation Internship," and OC 31 "Preparation and Defense of the Qualification Thesis." There are no restrictions.					

15	Academic Integrity Policy	Compliance is ensured in accordance with the Code of Academic Integrity and the requirements set forth in the "Regulation on Academic Integrity of Sumy National Agrarian University." (https://snau.edu.ua/viddil-zabezpechennya-yakosti-osviti/zabezpechennya-yakosti-osviti/akademichna-dobrochesnist)
16	Electronic resourceLink to the course materials on the Moodle platform	https://cdn.snau.edu.ua/moodle/course/view.php?id=4635
17	Keywords	Technology, meat products, fish, technological process, product calculation

2. LEARNING OUTCOMES OF THE EDUCATIONAL COMPONENT AND THEIR LINK TO PROGRAMME LEARNING OUTCOMES

Learning outcomes for the educational component: Upon completion of the educational component, the student is expected to be able to...	Program learning outcomes that the educational component aims to achieve					How RND is assessed
	PRN 1	PRN 5	PRN 11	PRN 14	PRN 24	
DNR 1. Navigate the key trends and issues of a fundamental and applied nature in the field of food technologies.	+					Preparation of lecture notes and laboratory work materials; Completion of modular tests; Completion of independent work; Oral defense of laboratory assignments; Final multiple-choice test (modular assessment)
DNR 2. Apply knowledge regarding the scientific principles of processing technologies, as well as the patterns of physicochemical, biochemical, and microbiological transformations of meat and fish raw materials during technological processing .		+				
DNR 3. Apply knowledge regarding the scientific principles of processing technologies, as well as the patterns of physicochemical, biochemical, and microbiological transformations of meat and fish raw materials during technological processing			+			
DNR 4. Increase the production efficiency of meat and fish products using resource-saving technologies, and monitor demand for the manufactured products.				+		
DNR 5Perform technological and technical calculations to account for material resources in the production of meat and fish products, and conduct economic cost calculations for the effective market launch of the					+	

manufactured products.						
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3. CONTENT OF THE EDUCATIONAL COMPONENT (COURSE PROGRAM))

Topic. List of issues to be addressed within the topic.	Allocation within the total time budget			Recommended reading
	Classroom work		SRS	
	Lecture	Laboratory session		
Module 1				
Lecture 1. Introductory lecture. 1.Subject matter and methods of the discipline. 2.Key components of the course. 3.Characteristics of Ukraine’s meat processing industry.	2		2	[1], [1], [3], [4],
Laboratory Session No. 1 1.Study of types of meat processing enterprises and types of technological processes. 2.Familiarization with livestock transportation conditions and acceptance procedures. 3.Study of settlement procedures with livestock suppliers. 4.Analysis of veterinary and sanitary requirements.		4/2	-/2	
Topics for independent study 1.Sanitary and hygienic requirements for buildings, premises, and facilities at fish and meat processing enterprises. 2. Regulatory documentation for the procurement of raw materials			9/9	
Lecture 2. Technology of livestock slaughter and primary processing. 1.Slaughter and stunning methods and techniques. Carcass bleeding technique. 2.Technological process of evisceration. 3.Carcass splitting and assessment of market quality. 4.Specifics of pig slaughter using the skinning (flaying) method. 5.Specifics of slaughtering land-based and waterfowl poultry.	4/2		-/2	1], [3], [4], [5], [6], [9], [10]
Laboratory Work 2. 1.Selection and analysis of technological schemes for the primary processing of livestock and poultry. 2.Calculation of slaughter product yields.		6/2	-/4	
Topics for independent study 1.Rabbit slaughter and meat production. 2.Flexible automated livestock processing system.			9/9	

Lecture 3. Properties, composition, and nutritional value of meat and other slaughter products. 1.Composition and nutritional value of meat depending on breed, sex, age, and other factors. 2.Physical properties of meat. 3.Autolytic processes during maturation and their impact on nutritional value and physicochemical/technological properties.	4/2		-/4	[1], [2], [3], [4], [5], [6], [8], [9]
Laboratory Session No. 3. 1.Study of the relationship between tissues, composition, and nutritional value of meat. 2.Familiarization with the classification, composition, and processing technology of by-products. 3.Study of the processing technology for intestinal raw materials and the creation of process flow charts. 4.Study of processing technologies and utilization methods for the blood and hides of slaughtered animals, and the creation of corresponding process flow charts.		6/2	-/4	
Topics for independent study 1.General characteristics of endocrine, enzymatic, and specialized raw materials; requirements for their extraction, collection, and preservation. 2.Preservation techniques: purpose and essence of the process. Preservation methods and their evaluation. 3.Utilization pathways for endocrine, enzymatic, and specialized raw materials.			9/9	
Lecture 4. Refrigeration processing of meat and meat products. 1.Purpose of refrigeration processing. 2.Methods of meat refrigeration and storage; their evaluation. 3.Effect of low temperatures on microflora development. 4.Classification of meat based on thermal processing and storage conditions.	4/			[1], [3], [4], [5], [6], [9]
Laboratory Session No. 4. 1.Study of meat and meat product chilling technologies. Selection and analysis of process flow diagrams. 2.Study of meat and meat product freezing technologies. Selection and analysis of process flow diagrams. 3.Study of thawing technologies and parameters. Selection and analysis of process flow diagrams.		6/2		
Topics for independent study 1.Preparation for freezing and the arrangement of products to be frozen. Chamber turnover. 2.Storage of frozen meat and other slaughter products. 3.Changes in meat during freezing (technological and economic). 4.The degree of reversibility of meat properties upon			9/9	

thawing and its dependence on changes occurring during freezing and storage.				
Total for the module	14 /4	22/8	37/61	
Module 2				
Lecture 5. Production technology for sausages and beef and pork products. 1.Technology for boiled sausages, frankfurters, *sardelki* (short, thick sausages), liver sausages, pâtés, and meat jellies (aspics). 2.Technology for semi-smoked and cooked-smoked sausages. 3. Specifics of raw-cured sausage technology. 4.Technology for whole-muscle meat products.	10 /2			/[1] [1], [3], [4], [5], [6], [9], [11], [12],
Laboratory Work No. 5. 1. Selection and analysis of manufacturing process schemes. sausage products. 2.Product calculations regarding the material balance, processing equipment, production floor space, workforce size, and energy consumption for sausage production. 3.Selection and analysis of production flowcharts for beef and pork products. 4.Performance of product calculations regarding the material balance, processing equipment, production floor space, workforce size, and energy consumption for the production of beef and pork products.		6/2		
Topics for independent study. 1.Specifics of using auxiliary materials in meat product processing. 2.Methods and parameters of heat treatment for meat products. 3.Defects that may arise from deviations in the technological process.			10/10	
Lecture 6. Technology of canned meat products. 1.Assortment and classification. 2.Requirements for raw materials and packaging. 3.Key technological operations in the production of specific types of canned products (natural meat, meat-and-vegetable, pâté, and offal-based). 4.Technological features of specialized canned products.	4/2		-/2	[1], [3], [4], [5], [6], [9]
Laboratory Session No. 6. 1.Selection and analysis of processing flowcharts for canned meat products across various assortment groups. 2.Calculations regarding material balance, processing equipment, production floor space, workforce size, and energy consumption for the production of canned meat products across various assortment groups.		6/2	-/4	
Topics for independent study. 1.Packaging containers and associated requirements. 2.Methods and parameters of heat treatment for meat products. 3.Defects that may			10/10	

arise from deviations in the technological process.				
Lecture 7. Technology for the production of sausage and culinary meat products, meat semi-finished products and pre-packaged meat, and poultry semi-finished products. 1. Technology for the production of sausage and culinary meat products. 2. Technology for the production of meat semi-finished products and pre-packaged meat. 3. Technology for the production of poultry semi-finished products.	4/-		-/4	
Laboratory Session No. 7. 1. Selection and analysis of process flow diagrams for the production of poultry-based sausage and culinary products. 2. Calculations regarding material balance, processing equipment, production floor space, workforce size, and energy consumption for the production of poultry-based sausage and culinary products. 3. Selection and analysis of process flow diagrams for the production of meat semi-finished products and pre-packaged meat. 4. Calculations regarding material balance, processing equipment, production floor space, workforce size, and energy consumption for the production of meat semi-finished products and pre-packaged meat. 5. Selection and analysis of process flow diagrams for the production of poultry semi-finished products. 6. Calculations of product output, material balance, process equipment, production floor area, workforce size, and energy consumption for the production of poultry semi-finished products		6/2	-/4	
Topics for independent study. 1. Production technology for composite poultry-based products. 2. Specifics of using mechanically separated poultry meat (MSPM) in meat product manufacturing. 3. Principles of combining meat raw materials with protein components, isolates, and structures of plant and animal origin; their composition and functional properties.			9/9	
Lecture 8. Technology of processing aquatic organisms. 1. Nutritional value and culinary properties of aquatic organisms. 2. Species-specific characteristics. 3. Raw material procurement procedures and veterinary-sanitary requirements.	4/-			[4], [6], [7]
Laboratory Session No. 8 1. Study of fish product range and classification, and the specifics of processing technologies. 2. Study of chilling, freezing, and salting technologies. Analysis of		4/2		

process flow charts. 3. Study of technologies for curing, drying, and smoking fish and other aquatic organisms. Preparation of process flow charts. 4. Calculation of raw material and auxiliary material requirements. Preparation of the material balance.				
Topics for independent study 1. Classification and product range of fish preserves (semi-preserved fish products). 2. Classification and product range of canned fish.			10/10	
Total for Module 2	16 / 4	22 / 8	39/66	
Grand Total	30 / 8	44 / 16	76/126	

4. TEACHING AND LEARNING METHODS

Code	Teaching methods	Number of hours	Learning methods	Number of hours
DNR 1. Navigate the key trends and fundamental and applied issues in the field of food technology.	Problem-based lectures (these address issues related to the material presented by the lecturer, who focuses students' attention on the key aspects of the topic under discussion). The lecture format includes: presentation of theoretical material; overview lectures utilizing visual aids and summary outlines; and visualization-based lectures employing multimedia technologies.	30 / 0	Laboratory sessions are conducted as group classes involving the completion of individual tasks and small-group work. Depending on the specific activity, various interactive teaching methods are employed, such as discussions, case study analyses, dialogues, debates, and the case method. Individual assignments (independent study of designated topics and sections, and presentation of the material)	44 / 2
DNR 2. Apply knowledge regarding the scientific principles of processing technologies, as well as the patterns of physicochemical, biochemical, and microbiological transformations of meat and fish raw materials during processing.				76 / 126
DNR 3. Apply specialized professional knowledge when assessing the quality of meat and fish raw materials using modern analytical methods, in order to obtain finished products that meet regulatory requirements.				
DNR 4. Increase the efficiency of meat and fish product manufacturing using resource-saving technologies, and monitor				

demand for the produced goods.				
DNR 5. Perform technological and technical calculations to account for material resources in the production of meat and fish products, and conduct economic cost calculations for the effective market launch of the manufactured products.				

5. ASSESSMENT OF THE EDUCATIONAL COMPONENT

5.1. Summative assessment

5.1.1. To assess the expected learning outcomes, the following is provided:

№	Summative assessment methods	Points / Weight in the overall score	Date of preparation
Module 1 (50 points):			
1.	Intermediate testing "Module 1" (multiple choice test)	<i>20 points / 20%</i>	7 week
2.	Completion of laboratory assignments (4 labs, 5 points each)	<i>20 points / 20%</i>	At every class
3.	Completion of the calculation assignment	<i>10 points / 10%</i>	4-6 week
Module 2 (50 points):			
4.	Intermediate testing "Module 1" (multiple choice test)	<i>20 points / 20%</i>	15 week
5.	Completion of laboratory assignments (4 labs, 5 points each)	<i>20 points / 20%</i>	At every class
6.	Completion of the calculation assignment	<i>10 points / 10%</i>	9 - 11 week

5.2. Formative assessment:

To assess ongoing learning progress and identify areas for further improvement, the following is provided:

№	Elements of formative assessment	Date of preparation
1	Oral questioning after covering all topics, during laboratory sessions,	during laboratory work.
2	Feedback in the form of a discussion on testing "Module 1"	7 week
3	Feedback in the form of a discussion on testing "Module 2"	15 week
4	Feedback in the form of a discussion of completed calculation assignments	9 - 11 week

The final assessment for students takes the form of a pass/fail test, with a maximum of 100 points awarded for the educational component (based on the SNAU grading scale). A student is barred from the final assessment if the number of missed and un-made-up classes during the semester exceeds 20% of the course's total volume. Failure to complete the required work (module tests and assessments) or an unsatisfactory result on the final test (0–34 points) constitutes grounds for retaking the course.

6. LEARNING RESOURCES (LITERATURE)

Primary sources.

1. Fish and Seafood Technology. Textbook / T.K. Lebska, L.V. Bal-Prylypko, N.M. Slobodianiuk et al. Kyiv: FOP Yamchynskyi O.V., 2021. 311 p.
2. Meat Storage, Preservation, and Processing Technology: Textbook / L.V. Bal-Prylypko, M.S. Nikolaienko, N.M. Slobodianiuk, V.M. Israelian, S.H. Danylenko, M.M. Hudzenko. Kyiv: NUBiP of Ukraine, 2022. 360 p.
3. Vinnikova L.H., Povarova N.M., Synytsia O.V. Fundamentals of Poultry Farming and Poultry Processing. Kyiv: "Osvita Ukrainy", 2020. 216 p.
4. Palamarchuk A.S., Kushnirenko N.M., Hlushkov O.A. Quality Control, Safety, and Ecology in the Industry (Fish Processing Sector): Study Guide for Laboratory Classes. Odesa: "Helvetica" Publishing House, 2020. 92 p.
5. Technology of Meat, Meat Products, and Fish [Electronic resource]: methodological guidelines for laboratory work / compiled by V. I. Tyshchenko. – Sumy, 2024. – 83 p.
6. Technology of Meat, Meat Products, and Fish [Electronic resource]: methodological guidelines for independent study / compiled by V. I. Tyshchenko. – Sumy, 2024. – 49 p.

Additional sources.

7. Design of Meat Industry Enterprises: A Study Guide for Higher Education Students / V. I. Tyshchenko, V. V. Sokolenko, M. M. Samilyk, N. V. Bozhko. Sumy, 2021. 240 p.
8. Pasichnyi V. M., Bozhko S. B., Tyshchenko V. I., Bozhko N. V. Functional-technological properties of model forcemeats for craft semi-smoked sausages containing lamb and plant-based fillers. Scientific Works of NUFT. 2024. Vol. 30. No. 5. pp. 141–156. <https://doi.org/10.24263/2225-2924-2024-30-5-14>
9. Pasichnyi V., Shevchenko O., Tischenko V., Bozhko N., Marynin A., Strashynskyi I., Matsuk Y. Substantiating the feasibility of using hemp seed protein in cooked sausage technology. Eastern-European Journal of Enterprise Technologies. 2024. No. 4(11), 130), 56–66. <https://doi.org/10.15587/1729-4061.2024.310668>.
10. Bozhko N. V., Tyshchenko V. I., Pasichnyi V. M. Study of the consumer and biological value of meat-containing minced semi-finished products. Scientific Works of NUFT. 2020. Vol. 26, Issue 1. Pp. 134-141.
11. Bozhko N. V., Tischenko V. I., Stepanova T. M. Development of meat-containing semi-finished products with pike meat and hemp seed protein. Journal of Chemistry & Technologies. 2024. No. 32(1). Pp. 198-209. <https://doi.org/10.15421/jchemtech.v32i1.296208>.
12. Pasichnyi V. M., Bozhko S. B., Tyshchenko V. I., Samilyk M. M., Bozhko N. V. Study of consumer and functional-technological indicators of semi-smoked lamb sausages produced using turkey mechanically deboned meat and hemp seed protein. Scientific Works of NUFT. 2022. Vol. 28, No. 6. Pp. 115-124.

Software

1. Set of test assignments. 2. Lecture outline/notes. 3. Course page on the Moodle platform.