

**Ministry of Education and Science of Ukraine**  
**Sumy National Agrarian University**  
Biological and technological faculty  
Department of Animal Genetics, Breeding and Biotechnology

**Work program (syllabus) of the educational component**  
**Aquaculture processing technology**  
(required )

It is implemented within the educational program Technologies in Aquaculture

by specialty **204 Technology of production and processing of animal husbandry products**

in the second (master's) levels of higher education

Sumy - 2024

Developer:  **Tetiana KUCHKOVA**, assistant of the Department of Animal Genetics, Breeding and Biotechnology

Considered, approved and approved at the meeting of the department Animal genetics, breeding and biotechnology	protocol from <u>24.06.2024</u> . No. <u>18</u>
	Head department <u></u> <b>Olga BORDUNOVA</b>

**Agreed:**

Guarantor of the educational program  **Viktoriia VECHORKA**  
(signature) (surname)

Dean of the faculty where the educational program is implemented  **Viktoriia VECHORKA**  
(signature) (surname)

Review of the work program (attached) provided:

(surname)

(surname)

Methodist of the Education Quality Department, licensing and accreditation  (M. Baranik)  
(signature) (surname)

Registered in the electronic database: date: 14.08 2024.

## Information on revision of the work program (syllabus):

The academic year in which the changes are made	The number of the annex to the work program with a description of the changes	The changes were reviewed and approved		
		Date and number of the protocol of the meeting of the department	Head of Department	Guarantor of the educational program

## 1. GENERAL INFORMATION ABOUT THE EDUCATIONAL COMPONENT

1.	The name is OK	<b>Aquaculture processing technology</b>					
	Faculty/department	Biological and technological/					
2.	The status is OK	Mandatory					
3.	Program/Specialty (programs), the component of which is OK	204 Technology of production and processing of livestock products					
4.	OC can be offered for ( <i>for selective OCs</i> )	-					
5.	NRK level	7th level					
6.	Semester and duration of study	2 semester, 15 weeks					
7.	Number of ECTS credits	5					
8.	The total number of hours and their distribution	Contact work (class)					
		Lectures		Laboratory		Independent work	
		daytime	extramural	daytime	extramural	daytime	extramural
		30	-	30	-	90	-
9.	Language of education	Ukrainian					
10.	Teacher/Coordinator of the educational component	Tetiana KUCHKOVA					
11.	Contact Information	Assistant of the Department of Animal Genetics, Breeding and Biotechnology E-mail: Kuchkova1992@ukr.net consultations: 316g, every Tuesday 14 <sup>00</sup> -15 <sup>00</sup>					
12.	General description of the educational component	Fish processing technology is one of the oldest ways of processing and preserving raw materials. Mastering this discipline contributes to the training of specialists capable of solving complex specialized problems and the practical foundations of the technology of storage, preservation and processing of fish and other hydrobionts, determination of quality and safety indicators of various types of products. The main topics for the study of the educational component are the characteristics of water bodies as raw materials, cold processing of products from hydrobionts, technological techniques and methods of salting, smoking, drying and curing, technology of canned fish, technology of fish roe, technology of culinary products, technology of fodder, technical, medical products and biologically active substances. As a result of studying the educational component, the student will be able to determine the organoleptic indicators of fish raw materials and the mass composition of fish, calculate the thermophysical indicators of frozen fish, the duration of freezing and thawing of fish, balance the consumption of salt, spices and other materials for salting, smoking, drying hydrobionts, apply methods of processing raw materials in the production of canned goods and preserves, to determine their quality and defects, to evaluate the					

		appearance and coarseness of grinding feed flour, to use modern technologies in the production of fats and vitamins.
13.	The purpose of the educational component	Formation in students of a system of scientific knowledge, abilities and skills regarding traditional and innovative technologies of canning, storage and rational use of raw materials for obtaining high-quality food products, fodder, medical, technical products from hydrobionts, input quality control of raw materials, parameters of the technological process and the quality of the finished product output, determination of physico-chemical, organoleptic indicators of raw materials and changes during storage of finished products.
14.	Prerequisites for studying OK, connection with other educational components of OP	
15.	Policy of academic integrity	<p>The policy of academic integrity at SNAU is governed by the Code of Academic Integrity  <a href="http://docs.snau.edu.ua/documents/education/quality/kodeks_akadem_dobrochesnosti.pdf">http://docs.snau.edu.ua/documents/education/quality/kodeks_akadem_dobrochesnosti.pdf</a></p> <p>In accordance with it, the requirements for the student to observe academic integrity during the study of the educational component are as follows:  to be responsible for one's duties, to fulfill the tasks prescribed by the educational program on time and in good faith; to be present at all classes; perform independent work; honestly and responsibly prepare for current, modular and final control; submit for assessment only self-made work.</p> <p>It is unacceptable for a student to:  show a disrespectful and incorrect attitude towards the teacher; being late for classes and missing them without valid reasons; during the educational process, use hints, other people's work, telephones; provide and receive assistance from third parties during current, modular and final control; receive or offer a bribe for receiving any benefits in educational activities.</p> <p>For violating the rules of academic integrity, students may be held liable for the following forms of responsibility:  - repeated assessment (test, exam, credit, etc.);  - repeated completion of the training course;  - warning;</p>
16.	Link to the course in the Moodle system	<a href="https://oldcdn2.snau.edu.ua/moodle/course/view.php?ID=2330">https://oldcdn2.snau.edu.ua/moodle/course/view.php?ID=2330</a>

## 2. LEARNING RESULTS UNDER THE EDUCATIONAL COMPONENT AND THEIR RELATIONSHIP WITH PROGRAM LEARNING OUTCOMES

<b>Study results for OK:</b> After studying the educational component, the student is expected to be able to...	Program learning outcomes, to be achieved by the OK (indicate the number according to the numbering given in the OP)		How LR is estimated
	LO 12	LO 13	
LR 1. To determine the organoleptic indicators of fish raw materials and the mass composition of fish.	x	X	Individual task, intermediate certification, final exam
LR 2. Calculate thermophysical indicators of frozen fish, duration of freezing and thawing of fish. Balance the consumption of salt, spices and other materials for salting, smoking, and drying hydrobionts	x	X	Individual calculation work, final exam
LR 3. Apply methods of processing raw materials in the production of canned foods and preserves, determine quality and defects.	x	X	Presentation, final exam
LR 4. Classify caviar products made by different methods of salting.	x	X	Individual assignment, certification, final exam
LR 5. Use modern technologies for making culinary products from hydrobionts	x	X	Individual assignment, certification, final exam
LR 6. To evaluate fodder flour according to appearance and grinding size, to apply modern technologies in the production of fats and vitamins.	x	X	Individual task, final exam

## 3. CONTENTS OF THE EDUCATIONAL COMPONENT (COURSE PROGRAM)

Topic. List of issues to be considered within the topic	Distribution within the general time budget			Recommended Books
	Auditory work		Ind w.	
	Lk	Lb		
<b>Topic 1. Characteristics of fish raw materials</b> 1. Fish processing technology as an educational discipline. Its importance and place among other disciplines. 2. Technological value and nutritional composition of raw fish 3. Postmortem changes in fish tissues.	6	6	20	1,2,3,4,5,6,
<b>Topic 2. Production technology of various types of products from hydrobionts</b> 1. The main types of treatment of hydrobionts. 2. Cold processing of fish 3. Freezing raw fish. 4. The ambassador of fish is raw fish. 5. Production technology of smoked products 6. Technology of production of dried and cured fish	14	10	26	1,2,3,4,5,6,

7. Processing and production of crustaceans and molluscs and products from aquatic plant raw materials				
<b>Topic 3. Technology of canned fish and preserves</b> 1. Canned food production technology 2. Preservative production technology	4	6	16	1,2,3,4,5,6
<b>Topic 4. Technology of caviar production</b> 1. Processing of sturgeon roe. 2. Processing salmon roe	2	2	20	1,2,3,4,5,6
<b>Topic 5. Technology of culinary fish products</b> 1. Classification and characteristics of culinary products from hydrobionts 2. Technology of production of culinary products	2	2	20	1,2,3,4,5,6
<b>Topic 6. Technology of production of fodder, medical, technical products and biologically active substances</b> 1. Production of medical fats: obtaining raw fat, its purification, filtration and vitaminization. 2. Production of vitamin preparations, fodder flour.	2	4	20	1,2,3,4,5,6
<b>In total</b>	<b>30</b>	<b>30</b>	<b>90</b>	

#### 4. TEACHING AND LEARNING METHODS

LR	Teaching methods (work to be carried out by the teacher <u>during classroom classes</u> , consultations)	Number of hours	Learning methods (what types of learning activities should be performed by the <u>student independently</u> )	Number of hours
LR 1	Lecture, laboratory work	12	Elaboration of the synopsis, literary sources, performance of individual work	20
LR 2	Lecture, performance of laboratory work	28	Elaboration of the synopsis, literary sources, performance of individual work	26
LR 3	Lecture, laboratory work	12	Elaboration of the synopsis, literary sources, presentation.	16
LR 4	Lecture, laboratory work	12	Elaboration of the synopsis, literary sources, performance of individual work.	20
LR 5	Lecture, laboratory work	12	Elaboration of the synopsis, literary sources, performance of individual work	20
LR 6	Lecture, laboratory work	12	Elaboration of the synopsis, literary sources, performance of individual work	20

## 5. EVALUATION BY THE EDUCATIONAL COMPONENT

### 5.1. Summative assessment

5.1.1. To assess the expected learning outcomes, it is provided

No	Methods of summative assessment	Points / Weight in the overall assessment	Compilation date
1.	Topic 1. Presentation, report	10 points / 10%	1 semester, 3 week
2.	Intermediate certification: control test.	15 points / 15%	1 semester, 8 week
3.	Topic 2. Individual calculation work	10 points / 10%	1 semester, 8 week
4.	Topic 3. Final testing on the topic	10 points / 10%	1 semester, 11 week
5.	Topic 4. Final testing on the topic	5 points / 5%	1 semester, 12 week
6.	Topic 5. Presentation, report	10 points / 10%	1 semester, 13 week
7.	Topic 6. Final testing on the topic	10 points/ 10%	1 semester, 15 week
8.	The exam is a multiple choice test	30 points / 30%	1 semester, examination period

### 5.1.2. Evaluation criteria

Component	Unsatisfactorily	Satisfactorily	Fine	Perfectly
	<i>&lt;5 points</i>	<i>5-6 points</i>	<i>7-8 points</i>	<i>9-10 points</i>
Topic 1. Presentation, report	Task requirements not met	Most of the requirements have been met, but there are no separate calculations, no analysis of the received data	All requirements of the task have been fulfilled	All the requirements of the task have been fulfilled, the mass composition of several types of fish has been determined, comparison calculations with the normative value have been made, and ways of reducing the loss during fish processing have been proposed.
	<i>&lt;9 points</i>	<i>9-11 points</i>	<i>12-13 points</i>	<i>14-15 points</i>
Intermediate certification 7th semester	Fewer than 6 correct answers to a test question	6-9 correct answers to the test questions	10-12 correct answers to the test questions	13-15 correct answers to the test questions
	<i>&lt;5 points</i>	<i>5-6 points</i>	<i>7-8 points</i>	<i>9-10 points</i>



Topic 2. Individual calculation work	Task requirements not met	Most of the requirements have been met, but some questions are incompletely disclosed, the student does not fully master the material	All requirements of the task have been met, fluency in the material has been demonstrated	All the requirements of the task were fulfilled, a high level of knowledge in this topic was demonstrated, and modern technologies for manufacturing products from hydrobionts were used.
Topic 3. Final testing on the topic	<i>&lt;5 points</i>	<i>5-6 points</i>	<i>7-8 points</i>	<i>9-10 points</i>
	Task requirements not met	Most of the requirements have been fulfilled, but the situation has not been analyzed, wrong solutions have been chosen	The requirements of the task are partially fulfilled	All the requirements of the task were fulfilled, the obtained results were interpreted, proposals were made to improve the raw materials for the production of canned goods and improve the control system regarding their safety.
Topic 4. Final testing on the topic	<i>&lt;1 point</i>	<i>2-3 points</i>	<i>4 points</i>	<i>5 points</i>
	Fewer than 5 correct answers to test questions	6-7 correct answers to the test questions	8 correct answers to the test questions	10 correct answers to the test questions
Topic 5. Presentation, report	<i>&lt;5 points</i>	<i>5-6 points</i>	<i>7-8 points</i>	<i>9-10 points</i>
	Task requirements not met	Most of the requirements have been met, but some issues have not been fully resolved	All requirements of the task have been fulfilled	All the requirements of the task were fulfilled, a high level of knowledge in this topic was demonstrated, and the latest methods of culinary processing of hydrobionts were proposed
Topic 6. Final testing on the topic	<i>&lt;5 points</i>	<i>5-6 points</i>	<i>7-8 points</i>	<i>9-10 points</i>
	Fewer than 6 correct answers to a test question	6-7 correct answers to the test questions	8 correct answers to the test questions	9-10 correct answers to the test questions
Exam	<i>&lt;18 points</i>	<i>18-22 points</i>	<i>22-27 points</i>	<i>27-30 points</i>

## 5.2. Formative assessment

To assess the current progress in learning and understand the directions for further improvement is provided

No	Elements of formative assessment	Date
1.	Oral survey after studying the topics	In the next laboratory session after the presentation of the material on the topic
2.	Verbal feedback from the teacher while working on an individual task during classes	During the semester
3.	Verbal feedback from the teacher after completing an individual task	At the next class after the student has completed the assignment
4.	Verbal feedback from the teacher and students after the task presentation	Immediately after the end of the presentation

## 6. EDUCATIONAL RESOURCES (LITERATURE)

### 6.1. Main sources

1. Vasyukova, G. T. Fish processing at low-capacity food enterprises: training. manual / G. T. Vasyukova, L. P. Yushchenko. - Kyiv: Condor, 2011. - 96 p.
2. Mykytyuk, Petro Vasyliovych. Fish processing technology [Text] / P. V. Mykytyuk. - K.: [b.v.], 1999. - 128 p. - (Library of veterinary medicine; 9-12/1999).
3. Palamarchuk A.S., Kushnirenko N.M., Glushkov O.A. Quality control, safety and ecology in the industry (fish processing industry): Study guide for laboratory exercises. - Odesa: "Helvetyka" Publishing House, 2020. - 92 p.
4. Poltavchenko T. V. Technology of processing fish and hydrobionts: a textbook / T.M. V. Poltavchenko, V. Z. Salata, I. O. Parfeniuk. – Rivne: NUVHP, 2019. – 210 p.
- 5, Industrial technologies of meat, milk and fish processing: textbook/ edited by F. V. Pertsevov, O. H. Tereshkin, and P. V. Gurskyi. Kyiv: Firm INKOS, 2014. 340 p.
- 6, Technology of fish and seafood: textbook / T.K. Lebska, L.V. Bal-Prylypko, N.M. Slobodyanyuk, N.V. Golembovska, A.A. Menchynska, A.O. Ivanyuta - Kyiv: NUBiP of Ukraine, 2021. - 311 p.

### 6.2. Additional sources

1. The Law of Ukraine on Amendments to the Law of Ukraine "On the Quality and Safety of Food Products and Food Raw Materials". Official Gazette of Ukraine. 2002, No. 46. P. 7 - 14.
2. Law of Ukraine "On fish, other aquatic living resources and food products from them". Official Gazette of Ukraine. 2003, No. 10. P. 6 - 11.
4. DSTU 4378:2005. Ocean fishing fish is frozen. Specifications.
5. DSTU GOST 7442:2004. Granular caviar of sturgeon fish. Specifications
6. DSTU 2284:2010 Live fish. Specifications
7. DSTU 4453: 2005 Salted sardines. Specifications
8. DSTU 3403-96 Products of the fishing industry. Classification. Nomenclature of quality indicators (GOST 30455-97, IDT)
9. DSTU 8071:2015 Fish preserves. Spicy pickled small fish. Specifications
10. Slobodyanyuk N.M., Menchynska A.A., Golembovska N.V., Androschuk O.S., Tulub D.O. Fish processing technology. Methods of analysis: a study guide. K.: CPU "Comprint", 2018. 264 p.
11. Syrokhman I. In Commodity science of food products. K.: "Education", 2007. 342 p.
12. Dubinina, AA, Onyshchenko, VM, Yancheva, MO, Popova, TM, & Tomashevskaya, R. Ia. (2012). Commodity science of fish and fish products: teaching. manual. K.: Tsentru uchbovoi literatury.
13. Lovkis, ZV, & Bubyry, IV (2018). Investigation of the accumulation of phenols in freshwater fish during cold smoking. Food industry: science and technology, 11 (2), 95-101.
14. Puke, S., Galoburda, R. (2020). Factors affecting smoked fish quality: a review. Research for Rural Development, 35, 132-139. DOI:10.22616/rrd.26.2020.020

## Review of the work program (syllabus)

The parameter by which the work program (syllabus) of the educational component is evaluated by the guarantor or a member of the project group	Yeas	No	Comment
Learning outcomes for the educational component (DRN) correspond to the NRC	+		
The results of the study by the educational component (DRN) correspond to the prescribed PRN (for mandatory OKs)	+		
Learning outcomes by educational component provide an opportunity to measure and evaluate the level of their achievement	+		

Member of the OP project group

Rubtsov Igor  
(Name)

The parameter by which the work program (syllabus) of the educational component is evaluated by the teacher of the corresponding department	Yeas	No	Comment
General information about the educational component is sufficient	+		
Learning outcomes for the educational component (DRN) correspond to the NRC	+		
The results of training according to the educational component (DRN) provide an opportunity to measure and evaluate the level of their achievement	+		
Learning outcomes (LRE) refer to students' competencies, not the content of the discipline (contain knowledge, skills, abilities, and not the topics of the discipline's curriculum)	+		
The content of the OK is formed in accordance with the structural and logical scheme	+		
Educational activity (teaching and learning methods) enables students to achieve the expected learning outcomes (LEIs)	+		
The educational component involves learning through research that is appropriate and sufficient for the relevant level of higher education	+		
The assessment strategy within the educational component is in accordance with University/faculty policy	+		
The provided assessment methods make it possible to assess the degree of achievement of learning outcomes by educational component	+		
The workload of students is adequate to the volume of the educational component	+		
The recommended learning resources are sufficient to achieve the learning outcomes (LEOs)	+		
The literature is relevant	+		
The list of educational resources contains the software products necessary to achieve the DRN	+		

Reviewer (teacher of the department)

Kyselov O.  
(Name)