МИНИСТЕРСТВО ВЫСШЕГО ОБРАЗОВАНИЯ И НАУКИ РОССИЙСКОЙ ФЕДЕРАЦИИ
Федеральное государственное автономное образовательное учреждение высшего образования
Дальневосточный федеральный университет
(ДВФУ)

ШКОЛА БИОМЕДИЦИНЫ

«СОГЛАСОВАНО»	«УТВЕРЖДАЮ»
Руководитель ОП	Директор Департамента пищевых наук и технологий
_____ Каленик Т.К.	_____ Ю.В. Приходько
(подпись) (Ф.И.О. рук. ОП)	(подпись) (Ф.И.О.)
«12» июля 2018 г.	«12» июля 2018 г.

УЧЕБНО-МЕТОДИЧЕСКИЙ КОМПЛЕКС ДИСЦИПЛИНЫ

«Production of specialized ingredients and food products / Производство специализированных ингредиентов и пищевой продукции»

Направление подготовки 19.04.01 Биотехнология
Образовательная программа «Agri-Food Biotechnology»
Форма подготовки очная

Школа биомедицины
Департамент пищевых наук и технологий
Курс _2, семестр 4 __
Лекции –_9__ час
Практические занятия –_27_ час
Лабораторные работы –_-_ час
Самостоятельная работа – _36_ час
Всего часов –_108 час
Всего часов аудиторной нагрузки – _72_ час
Контрольные работы – не предусмотрены
Зачет – _4_ семестр
Экзамен – _-_ семестр

Учебно-методический комплекс составлен в соответствии с требованиями образовательного стандарта, самостоятельно устанавливаемого ДВФУ, утвержденного приказом ректора ДВФУ ректора от 07.07.2015 № 12-13-1282.

УМКД обсужден на заседании Департамента пищевых наук и технологий Школы биомедицины ДВФУ протокол № 1 от «11» июля 2018 г.
Директор Департамента пищевых наук и технологий Ю.В. Приходько
Составитель: Сенотрусова Т.А.

ANNOTATION
of the educational complex of discipline
«Production of specialized ingredients and food products / Производство специализированных ингредиентов и пищевой продукции»
Direction of preparation: 19.04.01 Biotechnology
Educational program: "Agri-Food Biotechnology"

The educational-methodical complex of the discipline «Production of specialized ingredients and food products / Производство специализированных ингредиентов и пищевой продукции» was developed for students of the _2_ course in 04/19/01 "Biotechnology" master's program "Agri-Food Biotechnology" in accordance with the requirements of OS HE for this direction and regulations on educational-methodical complexes of disciplines of educational programs of higher professional education (approved by order of the rector of the FEFU dated 04.17.2012 No. 12-13-87).

The discipline «Production of specialized ingredients and food products / Производство специализированных ингредиентов и пищевой продукции» is included in the variable part of the curriculum.

The total complexity of mastering the discipline is __108__ hours. The curriculum includes lecture classes (__9__ hours), practical classes (_27_ hours), independent work of the student (__36__ hours). The discipline is implemented on the _2__ course in the __4__ semester.

The content of the discipline covers a range of issues of creating specialty foods. The main characteristics of the functional ingredients used in biotechnology for special products, the enrichment of products with biologically active additives, probiotic microflora, its vital products, the possibility of expanding the range of special food products through the creation of combined products are considered.

The discipline “«Production of specialized ingredients and food products / Производство специализированных ингредиентов и пищевой продукции»” is logically and meaningfully connected with such courses as “Chemistry”, “Biotechnological features of the production of plant products”, “Biotechnological features of the production of animal products”. Mastering the discipline is closely

connected with the study of disciplines: “Fundamentals of food biotechnology”, “Microbiology”.

The discipline is aimed at the formation of professional competencies.

Educational complex includes:

- the work program of the discipline;
- educational and methodological support of students' independent work (Appendix 1);
- appraisal fund (appendix 2)

Директор Департамента
пищевых наук и технологий _____Ю.В. Приходько

МИНИСТЕРСТВО ВЫСШЕГО ОБРАЗОВАНИЯ И НАУКИ РОССИЙСКОЙ ФЕДЕРАЦИИ
Федеральное государственное автономное образовательное учреждение высшего образования
«Дальневосточный федеральный университет»
(ДВФУ)

ШКОЛА БИОМЕДИЦИНЫ

«СОГЛАСОВАНО»
Руководитель ОП

_____ Каленик Т.К.
(подпись) (Ф.И.О. рук. ОП)

«12» июля 2018 г.

«УТВЕРЖДАЮ»
Директор Департамента
пищевых наук и технологий

_____ Ю.В. Приходько
(подпись) (Ф.И.О.)

«12» июля 2018 г.

РАБОЧАЯ ПРОГРАММА УЧЕБНОЙ ДИСЦИПЛИНЫ

«Production of specialized ingredients and food products / Производство специализированных ингредиентов и пищевой продукции»

Направление подготовки 19.04.01 Биотехнология

магистерская программа «Agri-Food Biotechnology»

Форма подготовки очная

курс __2_____ семестр __4_____
лекции __9__ час.
практические занятия___27____час.
лабораторные работы___-____час.
в том числе с использованием МАО лек.__4___/пр.___8__/лаб.__-___ час.
всего часов аудиторной нагрузки___36_____ час.
в том числе с использованием МАО __12__ час.
самостоятельная работа ___72____ час.
в том числе на подготовку к экзамену ___-___ час.
курсовая работа / курсовой проект ____-_____ семестр
зачет _____4_____ семестр
экзамен_____-_____семестр

Рабочая программа составлена в соответствии с требованиями образовательного стандарта, самостоятельно устанавливаемого ДВФУ, утвержденного приказом ректора от 07.07.2015 № 12-13-1282

Рабочая программа обсуждена на заседании Департамента пищевых наук и технологий Школы биомедицины ДВФУ протокол № 1 от «11» июля 2018 г.

Директор Департамента __Приходько Ю.В.___
Составитель (ли): Сенотрусова Т.А.

Оборотная сторона титульного листа РПУД

I. Рабочая программа пересмотрена на заседании Департамента:

Протокол от «_____» _____ 20___ г. № _____

Директор Департамента _____ __ Ю.В. Приходько ___
(подпись) (И.О. Фамилия)

II. Рабочая программа пересмотрена на заседании Департамента:

Протокол от «_____» _____ 20___ г. № _____

Директор Департамента _____ __ Ю.В. Приходько ___
(подпись) (И.О. Фамилия)

ABSTRACT

Master's degree in 19.04.01 «Biotechnology»

Master's Program «Agri-Food Biotechnology**»**

Course title: «Production of specialized ingredients and food products / Производство специализированных ингредиентов и пищевой продукции»

Variable part of Block, 3 credits

At the beginning of the course a student should be able to:

• the ability to use modern methods and technologies (including information) in professional activities (OC-5)

• hold the basic methods and techniques of experimental research in the professional field; ability to carry out standard and certification tests of raw materials, finished products and production processes (PC-9)

• possession of experimental design, processing and presentation of the results (PC-10)

• the ability to participate in the development of technological projects in the group of authors (PC-12)

• the ability to develop and implement normative documents on standardization, certification of food products (PC-16).

Learning outcomes:

PC-11 ability to provide technological discipline, sanitary and hygienic mode of operation of the enterprise, the content of technological equipment in proper technical condition;

PC-14 ability to use standard and develop new methods of engineering calculations of technological parameters and equipment of biotechnological production;

PC-17 readiness to conduct pilot technology development and process scaling;

PC-18 ability to develop and scientifically substantiate optimal integrated certification schemes for biotechnological products;

PC-19 ability to analyze the performance of the process for compliance with the initial scientific developments.

Course description: The content of the discipline covers a range of issues of creating food for special purposes. The main characteristics of functional ingredients used in biotechnology for special purpose products, the issues of enrichment of products with biologically active additives, probiotic microflora, products of its vital activity, the possibility of expanding the range of special food products by creating combined products are considered.

Main course literature:

1. Food ingredients in the creation of modern food / [ed. V. A. Tutellan, A. P. Nechaev]. Moscow: DeLi Plus, 2014. - 519 p. (2 copies). http://lib.dvfu.ru:8080/lib/item?id=chamo:732001&theme=FEFU

2. Technology products for therapeutic and prophylactic purposes on a dairy basis: a textbook for universities / N. A. Tikhomirova. St. Petersburg: Trinity Bridge, 2010. (5 copies). - 447 p. http://lib.dvfu.ru:8080/lib/item?id=chamo:358444&theme=FEFU

3. Biotechnology of combined food products based on dairy and microbiological raw materials: method. directions to the lab. works for students special. 240902 "Food Biotechnology" of all forms of training / comp. N.V. Situn, E.S. Fishchenko. Dairy Biotechnology, Vladivostok: Publishing House of the Pacific University of Economics, 2009. - 96 p. (8 copies). http://lib.dvfu.ru:8080/lib/item?id=chamo:357087&theme=FEFU

4. Biotechnology: a textbook for universities / S.M. Klunova, T.A. Yegorova, E.A. Zhivukhina, Moscow: Academy, 2010. - 256 p. (5 copies.) Http://lib.dvfu.ru:8080/lib/item?id=chamo:416005&theme=FEFU

Form of final knowledge control: credit.

ANNOTATION

The discipline «Production of specialized ingredients and food products / Производство специализированных ингредиентов и пищевой продукции» is included in the variable part of the professional (special) cycle of the discipline section for choosing the main educational program of the magistracy 04/19/01 "Biotechnology".

The total complexity of mastering the discipline is 3 credits, 108 hours. The curriculum includes lecture classes (9 hours), practical work (27 hours), independent work of the student (72 hours). The discipline is implemented in the 2nd year in the 4th semester.

The working curriculum of the discipline «Production of specialized ingredients and food products / Производство специализированных ингредиентов и пищевой продукции» of a special cycle is compiled in accordance with the OS of the FEFU for masters in the direction of 04/19/01 "Biotechnology", profile "Agri-Food Biotechnology". Designed for full-time students.

The content of the discipline covers a range of issues of creating specialty foods. The main characteristics of the functional ingredients used in biotechnology for special products, the enrichment of products with biologically active additives, probiotic microflora, its vital products, the possibility of expanding the range of special food products through the creation of combined products are considered.

The implementation of this program involves the widespread use of students' knowledge gained in the study of previous disciplines.

The discipline “«Production of specialized ingredients and food products / Производство специализированных ингредиентов и пищевой продукции»” is logically and meaningfully connected with such courses as “Chemistry”, “Biotechnological features of the production of plant products”, “Biotechnological features of the production of animal products”. Mastering the discipline is closely related to the study of disciplines: “Fundamentals of food biotechnology”,

“Microbiology”, “Organization and conduct of the technological process at the enterprises of the industry”.

The purpose of mastering the discipline «Production of specialized ingredients and food products / Производство специализированных ингредиентов и пищевой продукции» is to deepen and expand the fundamental and professional knowledge of the master necessary for the production, technological, design and research activities in the field of technology of specialized food products.

Objectives of the discipline are:

- expansion and deepening of knowledge about the scientific foundations and processes for the production of specialized products, about the principles of creating new formulations of specialized products; about the main characteristics of the composition and properties of specialized food products, about modern methods of monitoring technological operations, the quality of raw materials, semi-finished products and finished products;

- consolidation of skills on the principles of constructing process flow diagrams, requirements for the quality of raw materials and products, conducting material calculations and choosing rational conditions for carrying out technological operations.

As a result of mastering the discipline, the student must:

know - the technology of specialized food products, biochemical characteristics of production; organization of incoming quality control of raw materials and auxiliary materials, production control of biotechnological processes, parameters of technological processes and quality control of finished products; the principles of the main biochemical processes in the production of specialized food products, to know the problems and prospects of the industry with a view to their further use to ensure the production of high-quality products**;**

be able to - independently study educational and scientific literature on the technology of specialized food products; choose rational conditions for carrying out technological processes; determine the main characteristics of the composition

and properties of products; substantiate the consumption rates of raw materials and auxiliary materials in the production process; substantiate the specialized properties of products; develop regulatory and technical documentation, technical regulations, etc .; to master new types of technological equipment when changing the schemes of technological processes, to master new instrumentation techniques and new research methods; put the acquired knowledge into practice when solving professional problems;

own - methods of managing biotechnological processes of specialized food production.

To successfully study the discipline "«Production of specialized ingredients and food products / Производство специализированных ингредиентов и пищевой продукции»", the following preliminary competencies should be formed for students:

- the ability to use modern methods and technologies (including information) in professional activities (OK-5)
- knowledge of the basic methods and techniques for conducting experimental research in their professional field; ability to conduct standard and certification tests of raw materials, finished products and technological processes (PK-9)
- mastery of the planning of the experiment, processing and presentation of the results (PK-10)
- the ability to develop and implement regulatory documentation for standardization, certification of food products (PK-16).

As a result of studying this discipline, students form the following professional competencies (elements of competencies):

Code and wording of competency	**Competency Stages**	
PK-11 with the ability to provide technological discipline, sanitary and hygienic operation of the enterprise, the	Knows	technological discipline, sanitary-hygienic mode of operation of the enterprise, the maintenance of technological equipment in proper technical condition
	Is able	provide technological discipline, sanitary-hygienic operation of the enterprise, the maintenance of technological equipment in proper technical condition

maintenance of technological equipment in proper technical condition	Owns	skills to ensure technological discipline, sanitary-hygienic mode of operation of the enterprise, the maintenance of technological equipment in proper technical condition
PK-14 with the ability to use standard and develop new methods of engineering calculations of technological parameters and equipment of biotechnological industries	Knows	standard and new methods of engineering calculations of technological parameters and equipment of biotechnological industries
	Is able	use standard and develop new methods of engineering calculations of technological parameters and equipment of biotechnological industries
	Owns	skills of using standard and developing new methods of engineering calculations of technological parameters and equipment of biotechnological industries
PK-17 readiness for experimental development of technology and process scaling	Knows	pilot development of technology and process scaling
	Is able	to carry out pilot industrial testing of technology and scaling of processes
	Owns	skills for pilot development of technology and process scaling
PK-18 with the ability to develop and scientifically substantiate schemes for the optimal integrated certification of biotechnological products	Knows	optimal integrated certification schemes for biotechnological products
	Is able	to develop and scientifically substantiate schemes for the optimal integrated certification of biotechnological products
	Owns	skills of development and scientific substantiation of schemes for the optimal integrated certification of biotechnological products
PK-19 with the ability to analyze technological process indicators for compliance with initial scientific developments	Knows	analysis of technological process indicators for compliance with initial scientific developments
	Is able	analyze the performance of the technological process for compliance with the original scientific developments
	Owns	skills in analyzing technological process indicators for compliance with initial scientific developments

To form the above competencies within the discipline "«Production of specialized ingredients and food products / Производство специализированных ингредиентов и пищевой продукции»", the following methods of active / interactive training are used: lecture-discussion, round table, method of analysis of specific examples.

I. STRUCTURE AND CONTENT OF THE THEORETICAL PART OF THE COURSE

Section I. Specialized food products (9 hours)

Topic 1. Types of food (3 hours)

Therapeutic nutrition. Therapeutic nutrition. Preventative nutrition. Specialized nutrition. Human nutrition and health. The role of nutrition in maintaining health. Functions and biological effects of food.

Topic 2. Functional ingredients used in biotechnology specialized food products (2 hours)

Microflora, which forms probiotic properties in biotechnology of specialized nutrition products. Ingredients, food and dietary supplements used in the technology of combined specialized products.

Topic 3. Lecture-discussion (MAO): Specialized nutrition for various population groups (4 hours)

During the lecture-discussion, the teacher gives individual examples in the form of situations or briefly formulated problems, respectively, students analyze and discuss specific situations and material. The teacher, when presenting the lecture material, uses the students' answers to their questions and organizes a free exchange of views in the intervals between logical sections.

Questions of the lecture: nutrition of people of intellectual work and students; food products for pregnant and lactating women; baby food, food for children and adolescents; food for athletes; nutrition features of the elderly; herodietic nutrition; other groups of special products; development of special products; identification and examination of specialty products.

II. STRUCTURE AND CONTENT OF THE PRACTICAL PART OF THE COURSE

Practical classes (27 hours)

Lesson 1. "Determination of vitamin C in objects of plant and animal origin" (4 hours)

Points for discussion:

1. The content of ascorbic acid in foods and plants.

2. The safety of vitamin C in foods during cooking.

3. A simplified method for the determination of ascorbic acid in fortified milk.

4. Determination of vitamin C in plant objects.

5. Report design.

Lesson 2. The method of analysis of specific examples (MAO) on the topic: “Studying the process of membraneless osmosis” (8 hours)

Points for discussion:

1. The study of the process of membraneless osmosis using pectins.

2. Advantages of the membraneless osmosis process over traditional technologies.

3. Determination of the composition of skim milk; separation of skim milk into two phases; a study of the composition of natural casein concentrate; a study of the case-free phase composition; analysis of the results obtained and calculation of the degree of transition of solids to the beskazeyin phase.

Lesson 3. "The study of physico-chemical quality indicators of fortified dry milk-vegetable mixtures for baby food" (2 hours)

Points for discussion:

1. The development of methods for determining the physicochemical parameters of fortified milk-vegetable mixtures for baby food: mass fraction of moisture, fat and vitamin C, titratable acidity, solubility index.

2. The range of dry milk-vegetable mixtures, the technology for the production of dry milk-vegetable mixtures, the standardized physicochemical parameters of dry milk-vegetable mixtures.

3. Determination of the mass fraction of moisture, mass fraction of fat, mass fraction of vitamin C, titratable acidity, solubility index of dry milk-vegetable mixtures.

Lesson 4. "The effect of heat treatment on the structural components of the parenchymal tissue of vegetables and the content of vitamin C" (2 hours)

Points for discussion:

1. The study of the tissue structure of raw and boiled vegetables, the establishment of the influence of various technological factors on the accumulation of reducing sugars during heat treatment and on the content of ascorbic acid in raw and boiled vegetables.

2. Familiarization with the changes in some structural elements of cells that occur during the heat treatment of products

3. Determination of the amount of reducing sugars obtained by heat treatment and the content of vitamin C in raw and heat-treated vegetables and stored in a hot state; generalization of results and conclusions.

Lesson 5. "Technological basis for the production of canned meat for baby food" (4 hours)

Points for discussion:

1. Mastering the technology for the production of canned meat. The study of the requirements for the quality of canned meat.

2. The basic principles of the production of canned meat for baby food.

3. Analysis of the influence of technological factors on the quality of canned meat; calculation of the nutritional value of canned food; drawing up technological schemes for the production of canned food; experimental determination of the mass fraction of moisture, fat and protein in manufactured canned food, comparison with theoretical data.

Lesson 6. Round table (MAO) on the topic: "Technological basis for the production of canned fish for baby food" (4 hours)

Points for discussion:

1. Mastering the technology for the production of canned fish. The study of the requirements for the quality of canned fish.

2. Familiarization with the basic principles of the production of canned fish for baby food; analysis of the influence of technological factors on the quality of canned fish. Innovation in production.

3. Drawing up technological schemes for the production of canned food; experimental determination of the mass fraction of moisture, fat and protein in canned food, comparison with theoretical data, calculation of the nutritional value of canned food.

To participate in the discussion of the topic of the round table, students should be familiar with the basics of the production of specialized products, the concepts of enrichment of products, functional ingredients; requirements for raw materials and food components.

The round table is aimed at consolidating the knowledge gained by students, as well as the ability to conduct a discussion.

During the round table, students draw up technological schemes.

Lesson 7. "Calculation of the biological value and fatty acid composition of products for gerodietetic nutrition" (3 hours)

Points for discussion:

1. The development of calculation methods for determining the mass fraction of protein, based on its amino acid composition and mass fraction of fat, based on its fatty acid composition.

2. Acquaintance with calculation methods for determining the biological value of products for gerodietetic nutrition.

3. Calculation of the amino acid and fatty acid composition of products for baby food; comparing the data with an “ideal” protein and an “ideal” fat.

III. TRAINING AND METHODOLOGICAL SUPPORT OF STUDENTS'S INDEPENDENT WORK

Educational and methodological support for students' independent work in the discipline «Production of specialized ingredients and food products / Производство специализированных ингредиентов и пищевой продукции» is presented in Appendix 1 and includes:

a schedule of independent work on the discipline, including approximate norms of time to complete each task;

characteristics of tasks for independent work of students and guidelines for their implementation;

requirements for the presentation and presentation of the results of independent work;

criteria for evaluating the performance of independent work.

IV. CONTROL OF ACHIEVING COURSE OBJECTIVES

№	Supervised sections / topics of discipline	Codes and stages of formation of competencies		Evaluation Tools	
				current control	intermediate certification
1	Section I. Specialized Food	PK-11; PK-14; PK 17; PK-18; PK-19	knows the technological discipline, sanitary-hygienic mode of operation of the enterprise, the maintenance of technological equipment in proper technical condition; standard and new methods of engineering calculations of technological parameters and equipment of biotechnological industries; pilot development of technology and process scaling; optimal integrated certification schemes for biotechnological products; analysis of technological process indicators for compliance with initial scientific developments	UO-1 - interview, UO-2 - colloquium, PR-4 – abstract	Exam Questions 1-76 Pr-1 - final test
			Able to provide technological discipline, sanitary-hygienic mode of operation of the enterprise, the maintenance of technological equipment in proper technical condition; use standard and develop new methods of engineering calculations of technological parameters and equipment of biotechnological industries; to carry out pilot industrial testing of technology and scaling of processes; to develop and scientifically substantiate schemes for the optimal integrated certification of biotechnological products; analyze the performance of the technological process for compliance with the original scientific developments		
			owns the skills to ensure technological discipline, sanitary-hygienic mode of operation of the enterprise, the maintenance of		

			technological equipment in proper technical condition; skills of using standard and developing new methods of engineering calculations of technological parameters and equipment of biotechnological industries; skills for pilot development of technology and scaling processes; skills in the development and scientific justification of schemes for the optimal integrated certification of biotechnological products; skills in analyzing technological process indicators for compliance with initial scientific developments		

Typical control tasks, methodological materials that determine the procedures for assessing knowledge, skills and (or) experience, as well as the criteria and indicators necessary for assessing knowledge, skills, and characterizing the stages of formation of competencies in the process of developing an educational program are presented in the Appendix 2.

V. LIST OF TRAINING LITERATURE AND INFORMATION AND METHODOLOGICAL SUPPORT OF DISCIPLINE

Main literature

(electronic and print editions)

1. Food ingredients in the creation of modern food / [ed. V.A. Tutelyan, A.P. Nechaev]. Moscow: DeLi Plus, 2014 .-- 519 p. (2 copies). http://lib.dvfu.ru:8080/lib/item?id=chamo:732001&theme=FEFU

2. Technology of products of therapeutic and prophylactic use on a milk basis: a textbook for universities / N. A. Tikhomirova. St. Petersburg: Trinity Bridge, 2010. (5 copies).447 p. http://lib.dvfu.ru:8080/lib/item?id=chamohaps58444&theme=FEFU

3. Biotechnology of combined foods based on dairy and microbiological raw materials: method. directions to the lab. works for students special. 240902 "Food biotechnology" of all forms of education / comp. N.V. Xitun, E.S. Fishchenko. Biotechnology of dairy production, Vladivostok: Publishing House of the Pacific Economic University, 2009. - 96 p. (8 copies). http://lib.dvfu.ru:8080/lib/item?id=chamo:357087&theme=FEFU

4. Biotechnology: a textbook for high schools / S.M. Klunova, T.A. Egorova, E.A. Zhivukhina, Moscow: Academy, 2010 .-- 256 p. (5 copies) http://lib.dvfu.ru:8080/lib/item?id=chamo:416005&theme=FEFU

Additional literature

(electronic and print editions)

1. Food biotechnology products from raw materials of plant origin: Textbook. / O.A. Neverova, A.Yu. Prosekov et al. - M.: SIC INFRA-M, 2014 .-- 318 p.: 60x90 1/16 ISBN 978-5-16-005309-7. http://znanium.com/go.php?id=363762

2. Basic principles of processing raw materials of plant, animal, microbiological origin and fish: method. directions for students special. 240902 "Food biotechnology" of all forms of education / comp. E.V. Makarova, Vladivostok: Publishing House of the Pacific Economic University, 2009. - 80 p. (10 copies) http://lib.dvfu.ru:8080/lib/item?id=chamo:356130&theme=FEFU

Regulations

1. GOST 13207-85. Food ration for lifeboats and rafts of sea vessels. Technical specifications

2. GOST 30625-98. Liquid and pasty dairy products for baby food. General specifications.

3. GOST 30626-98. Dry milk products for baby food. General specifications.

4. GOST 30650-99. Canned poultry for baby food. General specifications.

5. GOST R 51172-98. Concentrates are food. Treatment and preventive cereals for baby food. Technical conditions

6. GOST R 51187-98. Semi-finished meat products chopped, dumplings, minced meat for baby food. General specifications.

7. GOST R 51770-2001. Canned meat products for nutrition of young children. General specifications

8. GOST R 52198-03. Canned meat and vegetable products for nutrition of young children. Technical conditions

9. GOST R 52199-03. Canned meat (class A). Baby meat puree. Technical conditions

10. GOST R 52306-05 Poultry meat (carcasses of chickens, broiler chickens and their cut parts) for baby food. Technical specifications

11. GOST R 52479-05. Cooked meat sausages for baby food. General specifications

VI. METHODOLOGICAL INSTRUCTIONS FOR THE DEVELOPMENT OF THE DISCIPLINE

The theoretical part of the discipline "«Production of specialized ingredients and food products / Производство специализированных ингредиентов и пищевой продукции»" is revealed at the lecture classes, since the lecture is the main form of training, where the teacher gives the basic concepts of the discipline.

The sequence of presentation of the material at the lecture classes is aimed at forming an indicative basis for students for the subsequent assimilation of the material during independent work.

In practical classes during discussions at seminars and in discussing essays, students learn to analyze and predict the development of technology of specialized food products in various applications as a science, and reveal its scientific and social problems.

Practical classes of the course are held in all sections of the curriculum. Practical work is aimed at developing students' independent research work skills. During practical classes, the student performs a set of tasks that allows you to consolidate lecture material on the topic under study, to obtain basic skills in various fields of discipline. Active consolidation of theoretical knowledge is facilitated by the discussion of the problematic aspects of the discipline in the form of a seminar and practical exercises. At the same time, the skills of independent research activity are developed in the process of working with scientific literature, periodicals, the formation of the ability to defend one's point of view reasonably, listen to others, answer questions, and lead discussions.

When writing essays, it is recommended that you independently find the literature for it. The abstract reveals the content of the investigated problem. Work on the essay helps to deepen understanding of individual issues of the course, to form and defend your point of view, to acquire and improve independent creative work skills, to conduct active cognitive work.

The main types of independent work of undergraduates is work with literary sources and methodological recommendations for studying the technology of specialized food products, Internet resources for more in-depth familiarization with certain problems of the technology of specialized products. The results of the work are drawn up in the form of abstracts or reports with subsequent discussion. Topics of essays correspond to the main sections of the course.

To conduct ongoing monitoring and intermediate certification, several oral interviews and test-control works are carried out.

VII. MATERIAL AND TECHNICAL SUPPORT OF DISCIPLINE

Material and technical support for the implementation of the discipline includes classrooms for lectures and practical classes, equipped with multimedia equipment, and corresponding to sanitary and fire safety standards.

Name of equipped premises	List of main equipment
Laboratory of General Food Biotechnology Vladivostok, about. Russian p. Ajax 10, Building 25.1, aud. M 311. The classroom for lectures, practical and laboratory classes, group and individual consultations, ongoing monitoring and interim certification.	Training furniture for 25 workplaces, teacher's place (table, chair). Analytical and technological equipment (M311): Milk centrifuge with heating ЦЛМ 1-12; Liquid thermostat LOIP Lt-208a, volume 8l, 120x150 / 200mm; Analyzer of milk quality Lactan 1-4 mod. 230; PH-millivolmeter with tripod pH-150MI; VSP 1.5-2-3T scales; Refrigerator "Ocean-RFD-325B"; Drying cabinet, stainless steel chamber. steel, 58l; electric stove 111CH 101-226589; PE-6110 magnetic stirrer with heating; VNZh-0,3-KhS3 viscometer (d-1.41) glass capillary; Tripod PE-2710 lab. for burettes. Multimedia equipment: Monoblock Lenovo C360G-i34164G500UDK; Screen with electric 236 * 147 cm Trim Screen Line; DLP projector, 3000 ANSI Lm, WXGA 1280x800, 2000: 1 EW330U Mitsubishi; Subsystem of specialized hardware mounts CORSA-2007 Tuarex; Video Switching Subsystem: DVI DXP 44 DVI Pro Extron matrix switcher; Extender DVI over twisted pair DVI 201 Tx / Rx; Subsystem of audio switching and sound reinforcement; ceiling mount speaker SI 3CT LP Extron; Sennheiser EW 122 G3 UHF Microphone Lavalier Radio System with a

	wireless microphone and receiver; DMP 44 LC Extron digital audio processor; Extron IPL T S4 Network Management Controller; Wireless LANs for students are provided with a system based on 802.11a / b / g / n 2x2 MIMO (2SS) access points.
Independent work	
Computer class Vladivostok, about. Russian p. Ajax 10, Building 25.1, aud. M621. The classroom for lectures, practical exercises, group and individual consultations, ongoing monitoring and interim certification.	Training furniture for 17 workplaces, teacher's place (table, chair). Monoblock Lenovo C360G-i34164G500UDK 19.5 "Intel Core i3-4160T 4GB DDR3-1600 SODIMM (1x4GB) 500GB Windows Seven Enterprise - 17 pcs; Wired LAN - Cisco 800 series; Wireless LAN for students with a system based on 802.11a / b access points / g / n 2x2 MIMO (2SS).
Reading rooms of the FEFU Scientific Library with open access to the fund (building A - level 10)	Reading room equipment of the FEFU Scientific Library: HP All-in-One 400 All-in-One Monoblock 400 19.5 (1600x900), Core i3-4150T, 4GB DDR3-1600 (1x4GB), 1TB HDD 7200 SATA, DVD +/- RW, GigEth, Wi- Fi, BT, usb kbd / mse, Win7Pro (64-bit) + Win8.1Pro (64-bit), 1-1-1 Wty Internet access speed of 500 Mbps. Workplaces for people with disabilities are equipped with braille displays and printers; equipped with: portable devices for reading flat-printed texts, scanning and reading machines with a video enlarger with the ability to control color spectra; magnifying electronic magnifiers and ultrasonic markers

Приложение 1

МИНИСТЕРСТВО ВЫСШЕГО ОБРАЗОВАНИЯ И НАУКИ РОССИЙСКОЙ ФЕДЕРАЦИИ
Федеральное государственное автономное образовательное учреждение высшего образования
«Дальневосточный федеральный университет»
(ДВФУ)

ШКОЛА БИОМЕДИЦИНЫ

УЧЕБНО-МЕТОДИЧЕСКОЕ ОБЕСПЕЧЕНИЕ САМОСТОЯТЕЛЬНОЙ РАБОТЫ ОБУЧАЮЩИХСЯ

по дисциплине «Production of specialized ingredients and food products / Производство специализированных ингредиентов и пищевой продукции»

Направление подготовки 19.04.01 Биотехнология

магистерская программа «Agri-Food Biotechnology»

Форма подготовки очная

Владивосток
2021

Schedule of independent work on the discipline

№	Date / Deadline	Type of independent work	Estimated time to complete	Form of control
1	24-25 week	Preparation of essays	14	Abstract, interview on the topic of abstract
2	26-27 week	Presentation preparation	14	Presentation, interview on the topic of presentation
3	28-29 week	Test preparation	14	Test
4	30-32 week	Round table preparation	14	Holding a round table
5	Every week of the semester	Preparation for practical work	16	Practice Report

Students' independent work consists of preparing for practical classes, working on recommended literature, writing reports on the topic of a seminar, preparing presentations.

The teacher offers each student individual and differentiated tasks. Some of them can be carried out in a group (for example, several students can do the preparation of a report and presentation on the same topic, sharing their responsibilities - one prepares the scientific and theoretical part, and the second carries out an analysis of the practice).

Tasks for self-fulfillment

1. A literature review should be carried out on a given topic of MAO. Based on the developed material, the topic should be prepared and presented for discussion.

2. Writing an essay on a topic proposed by the teacher or independently selected by the student and agreed with the teacher.

3. Preparation of presentations using multimedia equipment.

Methodological instructions for the abstract

The goals and objectives of the essay

The essay (from lat. Referto - report, report) is a summary of the problems of a practical or theoretical nature with the formulation of certain conclusions on the subject. A student-selected problem is studied and analyzed based on one or more sources. In contrast to the course project, which is a comprehensive study of the problem, the essay is aimed at analyzing one or more scientific papers.

The objectives of writing an abstract are:

development of students' skills in finding relevant problems of modern legislation;

• development of skills to summarize the material with highlighting only the most significant points necessary to reveal the essence of the problem;

• development of skills to analyze the material studied and formulate their own conclusions on the selected issue in writing, in a scientific, competent language.

The tasks of writing an essay are*:*

- teach the student to convey the opinions of the authors as faithfully as possible, on the basis of which the student writes his essay;
- teach the student to correctly state their position on the problem analyzed in the abstract;
- prepare the student for further participation in scientific - practical conferences, seminars and competitions;
- help the student to determine the topic of interest to him, the further disclosure of which is possible when writing a term paper or diploma;
- to clarify for themselves and state the reasons for their consent (disagreement) with the opinion of one or another author on this issue.

The basic requirements for the content of the essay

The student should use only those materials (scientific articles, monographs, manuals) that are directly related to their chosen topic. Remote reasoning not related to the problem being analyzed is not allowed. The content of the essay

should be specific, only one problem should be investigated (several are allowed, only if they are interconnected). The student must strictly adhere to the logic of presentation (start with the definition and analysis of concepts, go to the problem statement, analyze the ways to solve it and draw the appropriate conclusions). The abstract should end with a conclusion on the topic.

The structure of the essay consists of:

1. The title page;

2. Introduction, where the student formulates the problem to be analyzed and investigated;

3. The main text, which consistently reveals the selected topic. Unlike term paper, the main text of the essay involves a division into 2-3 paragraphs without highlighting the chapters. If necessary, the text of the abstract can be supplemented by illustrations, tables, graphs, but they should not "overload" the text;

4. Conclusions, where the student formulates conclusions made on the basis of the main text.

5. The list of used literature. This list refers to those sources that the student refers to in preparing the essay, as well as others that were studied by him during the preparation of the essay.

The essay is 10-15 pages of typewritten text, but in any case should not exceed 15 pages. Interval - 1.5, font size - 14, margins: left - 3 cm, right - 1.5 cm, upper and lower - 1.5 cm. Pages must be numbered. The indent from the beginning of the line is 1.25 cm.

The order of delivery of the essay and its assessment

Essays are written by students during the semester in the terms set by the teacher in a particular discipline, reported by the student and submitted for discussion. The printed version is given to the teacher, leading the discipline.

Based on the results of the check, the student is given a certain number of points, which is included in the total number of student points scored by him during the semester. When evaluating the essay, the correspondence of the content to the chosen topic, the clarity of the work structure, the ability to work with

scientific literature, the ability to pose a problem and analyze it, the ability to think logically, knowledge of professional terminology, and literacy are taken into account.

Recommended topics and list of essays

1. Identification and molecular genetic characteristics of probiotic microorganisms. Molecular mechanisms of action of probiotics.

2. Nutraceuticals and special foods.

3. Nutrition problems of healthy and sick people: trophology, therapeutic, functional and supportive nutrition, biologically active food supplements (BAA) in clinical and nutritional practice.

4. Safety assessment of probiotic preparations and food products.

5. Technological aspects of creating flour confectionery for special purposes.

6. Microbiological criteria and methods for assessing the quality and safety of specialty confectionery.

7. Food concentrates for special purposes. New recipes, technologies, characteristics of consumer properties.

8. Sugar confectionery for special purposes, new recipes, technologies, characteristics of consumer properties.

9. Development of the range of preventive and medical - diet bakery products for special purposes.

10. Gluten-free flour confectionery for preventive and therapeutic nutrition.

11. Diet therapy for celiac disease: the role of gluten-free products.

12. Modern approaches to the organization of diet therapy for galactosemia in children.

13. Specialized therapeutic food products: characteristics and applications for young children.

14. Specialized food products for submarine crews: characteristics, technology features.

15. Specialized food products for food on board an aircraft: characteristics, technology features.

16. Specialized food products for mine rescuers: characteristics, technology features.

17. Specialized food products for miners: characteristics, technology features.

18. Specialized food products for military personnel: characteristics, technology features.

19. Specialized food products for lifeboats and rafts of marine vessels: characteristics, technology features.

20. Technological aspects of the production of specialized products with natural radioprotectors.

21. Directions in the creation of herodietic products.

22. Specialized food products for astronauts: characteristics, technology features.

Приложение 2

МИНИСТЕРСТВО ВЫСШЕГО ОБРАЗОВАНИЯ И НАУКИ РОССИЙСКОЙ ФЕДЕРАЦИИ
Федеральное государственное автономное образовательное учреждение высшего образования
«Дальневосточный федеральный университет»
(ДВФУ)

ШКОЛА БИОМЕДИЦИНЫ

ФОНД ОЦЕНОЧНЫХ СРЕДСТВ

по дисциплине «Production of specialized ingredients and food products / Производство специализированных ингредиентов и пищевой продукции»

Направление подготовки 19.04.01 Биотехнология

магистерская программа «Agri-Food Biotechnology»

Форма подготовки очная

Владивосток
2021

Passport FOS

in the discipline "Production of specialized ingredients and food product"

Code and wording of competency	Competency Stages	
PK-11 with the ability to provide technological discipline, sanitary and hygienic operation of the enterprise, the maintenance of technological equipment in proper technical condition	Knows	technological discipline, sanitary-hygienic mode of operation of the enterprise, the maintenance of technological equipment in proper technical condition
	Is able	provide technological discipline, sanitary-hygienic operation of the enterprise, the maintenance of technological equipment in proper technical condition
	Owns	skills to ensure technological discipline, sanitary-hygienic mode of operation of the enterprise, the maintenance of technological equipment in proper technical condition
PK-14 with the ability to use standard and develop new methods of engineering calculations of technological parameters and equipment of biotechnological industries	Knows	standard and new methods of engineering calculations of technological parameters and equipment of biotechnological industries
	Is able	use standard and develop new methods of engineering calculations of technological parameters and equipment of biotechnological industries
	Owns	skills of using standard and developing new methods of engineering calculations of technological parameters and equipment of biotechnological industries
PK-17 readiness for experimental development of technology and process scaling	Knows	pilot development of technology and process scaling
	Is able	to carry out pilot industrial testing of technology and scaling of processes
	Owns	skills for pilot development of technology and process scaling
PK-18 with the ability to develop and scientifically substantiate schemes for the optimal integrated certification of biotechnological products	Knows	optimal integrated certification schemes for biotechnological products
	Is able	to develop and scientifically substantiate schemes for the optimal integrated certification of biotechnological products
	Owns	skills of development and scientific substantiation of schemes for the optimal integrated certification of biotechnological products
PK-19 with the ability to analyze technological process indicators for compliance with initial scientific developments	Knows	analysis of technological process indicators for compliance with initial scientific developments
	Is able	analyze the performance of the technological process for compliance with the original scientific developments
	Owns	skills in analyzing technological process indicators for compliance with initial scientific developments

№	Supervised sections / topics of discipline	Codes and stages of formation of competencies		Evaluation Tools	
				current control	intermediate certification
1	Section I. Specialized Food	PK-11; PK-14; PK 17; PK-18; PK-19	knows the technological discipline, sanitary-hygienic mode of operation of the enterprise, the maintenance of technological equipment in proper technical condition; standard and new methods of engineering calculations of technological parameters and equipment of biotechnological industries; pilot development of technology and process scaling; optimal integrated certification schemes for biotechnological products; analysis of technological process indicators for compliance with initial scientific developments	UO-1 - interview, UO-2 - colloquium, PR-4 – abstract	Exam Questions 1-76 Pr-1 - final test
			Able to provide technological discipline, sanitary-hygienic mode of operation of the enterprise, the maintenance of technological equipment in proper technical condition; use standard and develop new methods of engineering calculations of technological parameters and equipment of biotechnological industries; to carry out pilot industrial testing of technology and scaling of processes; to develop and scientifically substantiate schemes for the optimal integrated certification of biotechnological products; analyze the performance of the technological process for compliance with the original scientific developments		
			owns the skills to ensure technological discipline, sanitary-hygienic mode of operation of the enterprise, the maintenance of technological equipment in proper technical condition; skills of using standard and developing new methods of engineering calculations of technological parameters and equipment of biotechnological industries; skills for pilot development of technology and scaling processes; skills in the development and scientific justification of schemes for the optimal integrated certification of biotechnological products; skills in analyzing technological process indicators for compliance with initial scientific developments		

The scale for assessing the level of competency formation in the discipline «Production of specialized ingredients and food products / Производство специализированных ингредиентов и пищевой продукции»

Code and wording of competency	Competency Stages		Criteria	Indicators	Points
PK-11 with the ability to provide technological discipline, sanitary and hygienic operation of the enterprise, the maintenance of technological equipment in proper technical condition	knows (threshold level)	technological discipline, sanitary-hygienic mode of operation of the enterprise, the maintenance of technological equipment in proper technical condition	knowledge of the sanitary-hygienic mode of operation of the enterprise, the maintenance of technological equipment in proper technical condition	the ability to give definitions of basic concepts in the organizational and production field; the ability to list and disclose the essence of the norms and rules of the organizational and production area	45-64
	able (advanced)	comply with the sanitary-hygienic mode of operation of the enterprise, taking into account the technological features of production, contain technological equipment in proper technical condition	the ability to comply with the sanitary-hygienic mode of operation of the enterprise, to maintain technological equipment in proper technical condition	the ability to apply the terminological apparatus of the organizational and production area, to work with regulatory documents	65-84
	owns (high)	methods of compliance with the sanitary-hygienic regime of the enterprise	tools, methods and techniques for determining sanitary and hygienic indicators at the enterprise	the ability to use technological equipment on their own, to ensure technological discipline, the sanitary-hygienic regime of the enterprise	85-100
PK-14 with the ability to use standard and develop new methods of engineering calculations of technological parameters and equipment of biotechnological industries	knows (threshold level)	features of standard and new methods of engineering calculations of technological parameters and equipment of biotechnological industries	knowledge of the basic concepts and terminologies of engineering calculations of technological parameters and equipment of biotechnological industries	the ability to uncover the essence of methods of engineering calculations of technological parameters and equipment of biotechnological industries	45-64
	able (advanced)	use standard methods of engineering calculations of technological parameters and equipment of biotechnological industries	ability to work with methods of engineering calculations of technological parameters and equipment of biotechnological industries	the ability to justify and apply the results at biotechnological enterprises	65-84
	owns (high)	methods of using standard and new methods of engineering	the ability to understand the requirements for the content and sequence	the ability to conduct independently engineering calculations of	85-100

		calculations of technological parameters and equipment of biotechnological industries	of development of methods of engineering calculations of technological parameters and equipment of biotechnological industries	technological parameters and equipment of biotechnological industries	
PK-17 readiness for experimental development of technology and process scaling	knows (threshold level)	the basics of pilot development of technology and process scaling	knowledge of the basics of industrial technology development and process scaling	the ability to give definitions of basic concepts in the field of pilot development of technology and process scaling; list and disclose the essence of research methods	45-64
	able (advanced)	to carry out pilot industrial development of technology and process scaling	the ability to conduct pilot industrial testing of technology and scaling processes	the ability to apply the terminological apparatus of the biotechnological field and explain the essence of methods in verbal answers to questions and in written works	65-84
	owns (high)	methods of pilot development of technology and process scaling	Possession of tools, methods and techniques for pilot development of technology and scaling processes	the ability to work with data on pilot industrial testing of technology and process scaling, to conduct independent research and present their results	85-100
PK-18 with the ability to develop and scientifically substantiate schemes for the optimal integrated certification of biotechnological products	knows (threshold level)	the basics of developing schemes for the optimal integrated certification of biotechnological products	knowledge of the basic principles for developing schemes for the optimal integrated certification of biotechnological products	the ability to reveal the essence of the development of schemes for the optimal integrated certification of biotechnological products; substantiate their relevance	45-64
	able (advanced)	draw up and scientifically substantiate schemes for the optimal integrated certification of biotechnological products	the ability to work with library catalogs, the ability to compile and scientifically substantiate schemes for the optimal integrated certification of biotechnological products	ability to formulate tasks in the field of integrated certification of biotechnological products	65-84
	owns (high)	methods and techniques for developing schemes of optimal integrated certification of biotechnological products	possession of the ability to develop and scientifically substantiate schemes for the optimal integrated certification of biotechnological products	the ability to justify and apply optimal integrated certification schemes for biotechnological products	85-100

PK-19 with the ability to analyze technological process indicators for compliance with initial scientific developments	knows (threshold level)	features of the analysis of process indicators	knowledge of basic concepts and terminology on the methods of the technological process	the ability to reveal the essence of the methods of analysis of technological process indicators	45-64
	able (advanced)	analyze the performance of the technological process for compliance with the original scientific developments	the ability to work with tables and reference materials, the ability to apply methods of analysis of technological process indicators and implement them in enterprises of biotechnological industries	the ability to justify and apply the results of the analysis of technological process indicators at enterprises of biotechnological production	65-84
	owns (high)	research methods of technological process indicators for compliance with initial scientific developments	mastery of methods for analyzing technological process indicators for compliance with initial scientific developments	the ability to independently analyze the indicators of the technological process for compliance with the original scientific developments and present their results for discussion at round tables, seminars, scientific conferences	85-100

I. Evaluation tools for intermediate certification

Interim certification includes the student's answer to the questions for the classification and passing the final test.

Student grading criteria

Points (rating)	Pass / Exam Assessment (standard)	Requirements for formed competencies
100-85	Set off / excellent	The student is rated as “excellent” if he has deeply and firmly grasped the program material, sets out it comprehensively, consistently, clearly and logically in order, knows how to closely relate theory to practice, freely copes with tasks, questions and other types of application of knowledge, and does not have difficulty the answer when modifying tasks, uses the material of monographic literature in the answer, correctly substantiates the decision made, has versatile skills and techniques for performing practical tasks.
84-75	"Set off" / "good"	The student is rated “good” if he knows the material well, correctly and essentially sets out it, avoiding significant inaccuracies in answering the question, correctly applies theoretical principles when solving practical questions and tasks, and possesses the necessary

		skills and techniques for their implementation
74-61	"Set off" / "satisfactory"	A student is rated “satisfactory” if he has knowledge of only the basic material, but has not learned its details, admits inaccuracies, insufficiently correct wording, violations of the logical sequence in the presentation of program material, and has difficulty performing practical work.
60-0	"Not set off" / "unsatisfactory"	Evaluation of "unsatisfactory" is given to a student who does not know a significant part of the program material, makes significant mistakes, hesitates, with great difficulty performs practical work. As a rule, grades are given to students who cannot continue their studies without additional classes in the relevant discipline.

Set-off questions

1. Nutrition problems of modern man. Reasons, solutions.
2. Nutritional status of the population of Russia. Problems, solutions.
3. Nutrition policy. Analysis of recent changes.
4. Power optimization. Methods of solution, their characteristics.
5. Comparative characteristics of the types of food.
6. Functional nutrition. Characterization, application, relevance.
7. The need and rationing of proteins in nutrition.
8. Characterization of the most important protein (standard) amino acids.
9. Carbohydrates. Classification, structure, use in specialized nutrition.
10. Dietary fiber. Classification, structure, use in specialized nutrition.
11. Lipids. Classification, structure, use in specialized nutrition.
12. Vitamins. Classification, structure, use in specialized nutrition.
13. Safe level of micronutrient intake per day. Examples. Violations, effects on the body.
14. Development of special-purpose products: a systematic approach.
15. Development of specialty products: an innovative approach.
16. General requirements for assessing the quality and safety of special products.
17. Identification of specialty products.
18. The procedure for the examination of special products.

19. Evaluation of the preventive effectiveness of special products.

20. The importance of dietary supplements in adjusting nutrition and public health.

21. The qualitative composition of dietary supplements. Characteristic. Examples.

22. The quantitative composition of dietary supplements. Characteristic. Examples.

23. Nutraceuticals. Characteristics, examples, effects on the body.

24. Parapharmaceuticals. Characteristics, examples, effects on the body.

25. Probiotics. Characteristics, examples, effects on the body.

26. State control over the production and sale of dietary supplements.

27. Physiological restructuring of the metabolism of pregnant and lactating women.

28. The need for energy and nutrients during pregnancy.

29. The need for energy and nutrients in lactation.

30. Specialized products for dietetic and therapeutic nutrition. pregnant women: technology features.

31. Specialized products for the dietary and therapeutic nutrition of pregnant women: assortment.

32. Baby food: assortment.

33. Providing children and adolescents with nutrients and energy.

34. Providing children and adolescents with nutrients and energy.

35. Food groups for healthy and sick children of different ages.

36. Nutritional value of baby food.

37. Dairy-based baby food.

38. Meat and fish based baby food.

39. Grain-based baby food.

40. Baby food based on fruits and vegetables.

41. Identification and examination of baby food.

42. Food for the elderly and senile.

43. The need for nutrients and energy of the elderly.

44. The need for minerals of the elderly.

45. The organization of a balanced diet of the elderly and senile.

46. Directions in the creation of herodietic products. The choice of raw materials.

47. Classification of products for the elderly and senile.

48. Herodietic products based on milk and bacterial starter cultures.

49. Herodietic products based on grain raw materials.

50. Herodietic products based on meat and fish raw materials.

51. The basic principles of a balanced diet of athletes.

52. Classification of products for sports nutrition.

53. Technology drinks for sports nutrition.

54. Food astronauts. Range. Features of production.

55. Technological developments of space food products.

56. Product quality requirements for astronauts.

57. Food products on board the aircraft.

58. Nutrition rescuers on duty and during the liquidation of accidents in mines.

59. Food for diabetics. Features of technology.

60. Classification of dietary products.

61. Features of the production of dietary products.

62. Food ration for lifeboats and rafts of sea vessels.

63. Products with sweeteners and sweeteners for patients with diabetes.

64. Products with a low content of sodium chloride or without it.

65. Products with high nutritional value.

66. Canned food for the dietary and preventive nutrition of adults.

67. Problems of overweight and obesity, products for correcting body weight.

68. Therapeutic and preventive nutrition. Characteristic, features.

69. Tasks and basic principles of food fortification with micronutrients.

70. Features of the development and evaluation of the quality of enriched products.

71. Categories of fortified foods. Examples, characteristic.

72. Therapeutic and dietary products enriched with vitamins.

73. Treatment, prophylactic and dietary products enriched with minerals.

74. Products for patients with celiac disease. Assortment, production features.

75. Special food products for the correction of technogenic effects on the body.

76. Lactose-free dairy products. Assortment, production features.

Final test

VARIANT 1

Task 1. What are the names of food products with a given chemical composition due to the enrichment, elimination or substitution of macro- and micronutrients with other food components for various categories of the population - food products for athletes, lactating and pregnant women, elderly people, children, etc.?

a) Natural foods.

b) Specialized food products.

c) Non-traditional food products.

d) Alimentary food products.

Task 2. Vitaminization of ready meals in institutions for children and adolescents is carried out:

a) ascorbic acid added to all dishes in the autumn-winter period;

b) ascorbic acid, added to three dishes in the autumn-winter period;

c) multivitamin preparations added to all dishes in the autumn-winter period;

d) ascorbic acid added to cold liquid dishes year-round.

Task 3. What is the fundamental regulatory document governing the turnover of specialized food products in the Russian Federation?

a) Technical regulation of the Customs Union 027/2012 "On the safety of certain types of specialized food products, including dietary therapeutic and preventive dietetic nutrition."

b) Technical regulation of the Customs Union 033/2013 "On the safety of milk and dairy products."

c) GOST 34006-2016 “Specialized food products. Food products for nutrition of athletes. Terms and Definitions".

d) GOST R 52349-2005 “Food products. Functional food products. "

Task 4. In which section of the gastrointestinal tract is the breakdown of fats in adults?

a) the oral cavity d) the small intestine

b) the large intestine; e) the esophagus

c) the stomach

Task 5. A functional food ingredient (FFI) can be considered as such if it satisfies the requirement:

a) The content of FFI in the food product should be at least 15% of the recommended daily physiological requirements.

b) The content of FFI in the food product should be at least 30% of the recommended daily physiological requirements.

c) The content of FFI in the food product should be at least 40% of the recommended daily physiological requirements.

d) The content of FFI in the food product should be at least 50% of the recommended daily physiological requirements.

Task 6. The main metabolic effect, which is achieved by a diet with a reduced amount of carbohydrates and an increase in lipotropic substances:

a) increased use of glucose for the synthesis of fat in adipose tissue;

b) a decrease in the oxidation of fatty acids in the liver;

c) increased use of glucose for the synthesis of fat in the liver;

d) an increase in the synthesis of phospholipids and a decrease in the deposition of neutral fat in the liver;

d) a decrease in the synthesis of phospholipids.

Task 7. What foods do you need to include in the student's diet for the prevention of osteopenia?

a) chicken egg d) milk, dairy products

b) butter e) cereal

c) fish dishes f) meat dishes

Task 8. Compare which monosaccharides are part of the following compounds:

1. Glucose + glucose.	a) lactose
2. Glucose + fructose.	b) maltose
3. Galactose + glucose.	c) sucrose
4. Fructose + glucose + galactose.	d) raffinose

Task 9. The biological role of fats is that they:

a) are a source of B vitamins;

b) are a source of energy, phosphates, fatty acids and fat-soluble vitamins;

c) are a source of vitamins C and PP;

d) are sources of minerals.

Task 10. Which of the following substances inhibit the absorption of iron from the gastrointestinal tract?

a) fruit acids c) vitamin C

b) phosphates, oxalates, calcium; d) tannic acid

VARIANT 2

Task 1. The solubility of proteins in the aquatic environment is determined by:

a) ionization of a protein molecule;

b) hydration of protein molecules upon dissolution;

c) the shape of the protein molecule;

d) the ability to bind natural ligands.

Task 2. Select the correct answer. Oxygen free radicals:

a) stimulate bond breaks in nucleic acid molecules;

b) damage unsaturated fatty acids of cell membranes;

c) inhibit the synthesis of prostaglandins;

d) carry out the immune defense of the body;

e) contribute to the formation of crosslinks and disruption of the functioning of proteins;

f) inhibit the processes of neutralization of xenobiotics in the liver.

Task 3. A patient with a fatty liver is prescribed a vegetable-milk diet. What lipotropic substances deficiency make up the recommended products?

a) unsaturated fatty acids d) methionine

b) saturated fatty acids e) serotonin

c) creatine f) calcitonin

Task 4. To wash the dishes in the food unit in educational institutions should have a washing bath:

a) 3-female b) 4-female c) 2-female

Task 5. In which product is the maximum phosphorus content:

a) soybeans c) beans

b) cheese d) flounder

Task 6. Arrange the cereals as their calcium content decreases:

a) buckwheat c) millet

b) oat; d) pearl barley

Task 7. The substances with a protective function against microorganisms include:

a) volatile; c) vitamins A, P, E of group B;

b) retinol, tocopherol, etc .; d) sterols, sterols.

Task 8. What is the name of specialized food products designed to correct carbohydrate, fat, protein, vitamin and other types of metabolism, as well as food products designed to reduce the risk of developing diseases?

a) Dietary preventive food products.

b) Functional food products.

c) Dietary medical food products.

d) Herodietic food products..

Task 9. The amount of iron that must be obtained with food to cover physiological needs, depending on age (compare data):

1) age 1-3 years	a) 18 mg / day
2) 4-10 years	b) 1 mg / kg / day
3) 11-20 years	c) 10 mg / day

Task 10. What foods are recommended for iron deficiency?

a) meat	c) cottage cheese
b) fruits, vegetables	d) all of the above

VARIANT 3

Task 1. What functions are inherent only in proteins?

a) energy	c) buffer
b) catalytic	d) structural

Task 2. What forms of nutrition are specialized species?

a) Dietary therapeutic and dietary preventive nutrition.

b) Nutrition of an average person.

c) Sports nutrition, nutrition of pregnant and lactating mothers, functional nutrition.

d) Baby food.

Task 3. In which product is the maximum calcium content:

a) soybean	c) cottage cheese
b) cheese	d) beans

Task 4. A functional food product can be considered if the following conditions are met:

a) The product is enriched with vitamins, minerals, dietary supplements.

b) The product has a unique manufacturing technology.

c) The product has undergone chemical or biological changes.

d) A product enriched with biologically active substances with scientifically sound and proven properties that reduces the risk of developing nutritional diseases.

Task 5. What components of bile are involved in the digestion of fats?

a) higher saturated fatty acids

b) cholesterol and its esters

c) salts of bile acids

d) pancreatic lipase

e) diacylglycerols

f) pancreatic α-amylase

Task 6. What is the name of the set of characteristics or properties of a functional food product (FFP), which provides a reduction in the risk of developing diseases associated with nutrition, and replenishment, as well as preventing nutritional deficiencies, maintaining and improving health?

a) The significance of the FFP.

b) The effectiveness of the FFP.

c) The validity of the FFP.

Task 7. What is the name of specialized food products with a given nutritional and energy value, physical and organoleptic properties, and intended for use as part of therapeutic diets?

a) Dietary preventive food products.

b) Functional food products.

c) Dietary medical food products.

d) Herodietic food products.

Task 8. In a patient suffering from enterocolitis, after milk intake appeared diarrhea, colic, flatulence. What enzyme deficiency is this related to?

a) amylases;

b) sucrose

c) lactases

d) maltases

e) glycogen synthetase

Task 9. What is the name of specialized food products of a given chemical composition, increased nutritional value and directed efficiency, which has a

specific effect on increasing a person's adaptive capabilities to physical and neuro-emotional stress?

a) Food products for nutrition of athletes.

b) Food products for pregnant and lactating women.

c) Food products for gerodietetic nutrition.

d) Food products for baby food.

Task 10. What is the name of the food product of dietary therapeutic or preventive dietetic food, in which the content of easily digestible carbohydrates (monosaccharides and disaccharides) is absent or reduced relative to their content in similar food products and (or) the carbohydrate composition is changed?

a) Food products for nutrition of athletes.

b) Food products for pregnant and lactating women.

c) Food products for gerodietetic nutrition.

d) Food products of diabetic nutrition.

II. Evaluation tools for ongoing certification

Evaluation Criteria

- 100-86 points are awarded to the student, if the student expressed his opinion on the formulated problem, argued for it, accurately determining its content and components. The data of domestic and foreign literature, statistical information, regulatory information are given. The student knows and possesses the skill of independent research work on the topic of research; methods and techniques of analysis of theoretical and / or practical aspects of the study area. There are no factual errors related to understanding the problem; graphically, the work is framed correctly

- 85-76 - points - the work is characterized by semantic integrity, coherence and sequence of presentation; no more than 1 mistake was made in explaining the meaning or content of the problem. For argumentation, data from domestic and foreign authors are given. Demonstrated research skills. There are no actual errors related to understanding the problem. One or two errors in the design of the work

- 75-61 points - the student conducts a fairly independent analysis of the main stages and semantic components of the problem; understands the basic foundations and theoretical justification of the chosen topic. The main sources on this topic are brought. No more than 2 errors were made in the meaning or content of the problem, the design of the work

- 60-50 points - if the work is a retransmitted or completely rewritten source text without any comments, analysis. The structure and theoretical component of the topic is not disclosed. Three or more than three errors were made in the semantic content of the disclosed problem and in the design of the work.

Questions for colloquiums, interviews in the discipline
«Production of specialized ingredients and food products / Производство специализированных ингредиентов и пищевой продукции»

Section I. Specialized Food

1. Types of food. The role of nutrition in maintaining health. Functions and biological effects of food.

2. Functional ingredients used in biotechnology specialized food products

3. Specialized nutrition for various population groups

Evaluation Criteria

- 100-86 points are awarded to the student, if the student knows and is fluent in the material, expressed his opinion on the formulated problem, argued for it. For preparation, the student uses not only lecture material, but also additional domestic and foreign literature.

- 85-76 - points - the work is characterized by semantic integrity, coherence and sequence of presentation. There are no actual errors related to understanding the problem.

- 75-61 points - the student understands the basic foundations and theoretical justification of the topic. The main sources on this topic are brought.

- 60-50 points - if the answer is a retransmitted source text, without any comments, analysis. Three or more than three errors were made in the semantic

content of the topic.