



MINISTRY OF EDUCATION AND SCIENCE OF THE RUSSIAN FEDERATION
Federal state autonomous educational institution
of higher education
«Far Eastern Federal University»
(FEFU)

INSTITUTE OF LIFE SCIENCES AND BIOMEDICINE (SCHOOL)

AGREED

Head of OP

Kalenik T.K.
(signature) (full name)
«28» September 2021 г.

APPROVE

Head of VSP

Kalenik T.K.
(signature) (full name)
«28» September 2021 г.

WORKING PROGRAM OF THE DISCIPLINE

Development of food technology for dietary therapeutic and preventive dietetic nutrition
Direction of training 19.04.01 «Biotechnology»
(«Agri-Food Biotechnology»)
Form of training full-time

course 1 semester 1
lectures 18 hours.
practical classes 36 h.
laboratory work 00 hours.
including using
total classroom hours 54 hours.
independent work 54 h.
including preparation for the exam 00 hours (if the exam is provided).
control works (quantity) are not provided
term paper / term project are not provided
credit 1 semester
exam not included

The program of the state final certification was compiled in accordance with the requirements of the Federal State Educational Standard in the field of study 19.04.01 Biotechnology, approved by order of the Ministry of Science and Higher Education of the Russian Federation dated August 10, 2021 No. 737.

The program at the meeting of the Academic Council of the Institute of Life Sciences and Biomedicine (School) December 21, 2021
Director of the Department of Food Science and Technology Kalenik T.K.
Compiled by: Dobrynina E.V.

Reverse side of the title page of the RPMU

I. The work program was revised at the meeting of the department:

Protocol dated « _____ » _____ 20__ № _____

Director _____
(signature) (full name)

II. The work program was revised at the meeting of the department:

Protocol dated « _____ » _____ 20__ № _____

Director _____
(signature) (full name)

III. The work program was revised at the meeting of the department:

Protocol dated « _____ » _____ 20__ № _____

Director _____
(signature) (full name)

IV. The work program was revised at the meeting of the department:

Protocol dated « _____ » _____ 20__ № _____

Director _____
(signature) (full name)

ABSTRACT

Bachelor's/Specialist's/Master's degree in *19.04.01 Biotechnology*
Study profile/ Specialization/ Master's Program "Title" *Agri-food biotechnology*

Course title: Development of food technology for dietary therapeutic and dietary preventive nutrition

Variable part of Block 1, 3 credits

Instructor: Dobrynina E.V.

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

- the ability to search, store, process and analyze information from various sources and databases, to represent it in the required format using the information, computer and network technologies;

- the ability to use modern methods and technologies (including information) in their professional activities.

Learning outcomes:

SPC-1 - willingness to plan, organize and conduct research in the field of biotechnology, the ability to correctly process the results of experiments and draw sound conclusions and conclusions;

SPC-8 - the ability to conduct a feasibility analysis of production and the preparation of feasibility documentation;

SPC-18 - ability to develop and scientifically substantiate optimal integrated certification schemes for biotechnological product;

SPC-19 - ability to analyze process indicators for compliance with the initial scientific developments.

Course description: The educational program of the course is aimed at the formation of an appropriate level of study of the use of food raw materials in food production. The course program includes the study of issues related to the improvement of the technology of preparation and processing of food raw materials, the manufacture of food products for dietary therapeutic and dietary

preventive nutrition, preservation of the natural qualities of the food product; improve the organoleptic properties of food for dietary therapeutic and dietary preventive nutrition and increase their stability during storage.

Main course literature:

1. Food Biotechnology products from raw materials rastit.proiskhozhd .: Proc. / O.A.Neverova, A.Yu.Prosekov etc. -. M .: SIC INFRA-M, 2014. - 318 p

<http://lib.dvfu.ru:8080/lib/item?id=Znanium:Znanium-363762&theme=FEFU>

2. Food Biotechnology products from raw materials rastit.proiskhozhd .: Proc. / O.A.Neverova, A.Yu.Prosekov etc. -. M .: SIC INFRA-M, 2014. - 318

<http://lib.dvfu.ru:8080/lib/item?id=IPRbooks:IPRbooks-4160&theme=FEFU>

Form of final knowledge control: credit

1. Purpose and objectives of mastering the discipline:

The purpose of the study of the discipline is the assimilation by students of theoretical and practical knowledge in the field of basic approaches to the processing of raw materials, food manufacturing technologies for dietetic therapeutic and dietary preventive nutrition, and quality requirements for finished products in the field of food production for dietary therapeutic and dietary preventive nutrition.

Objectives of the discipline are:

The student must learn the processing modes of raw materials and semi-finished products in the production of individual food products, develop skills in the development of food technology for dietary therapeutic and preventive dietary nutrition.

As a result of studying this discipline, the following general cultural and professional competencies are formed in students.

Code and wording of competency	Competency Stages	
SPC – 1 willingness to plan, organize and conduct research in the field of biotechnology, the ability to correctly process the results of experiments and draw sound conclusions and conclusions	Knows	organization and conduct of technological work in the field of biotechnology
	Can	organize research work in the field of biotechnology, conduct correct processing of experimental results and make reasonable conclusions and conclusions
	Owns	skills in organizing and conducting technological work in the field of biotechnology
SPC – 8 the ability to conduct a feasibility analysis of production and the preparation of feasibility documentation	Knows	how to conduct a technical and economic analysis of production and draw up technical and economic documentation
	Can	use technical and economic documentation
	Owns	information on conducting a technical and economic analysis of production and drawing up technical and economic documentation
SPC – 18 ability to develop and scientifically substantiate optimal integrated certification	Knows	schemes for optimal comprehensive certification of biotechnological products
	Can	develop schemes for optimal comprehensive certification of biotechnological products

schemes for biotechnological product	Owns	skills in developing and scientifically substantiating schemes for optimal integrated certification of biotechnological products
SPC – 19 ability to analyze process indicators for compliance with the initial scientific developments	Knows	how to conduct technological processes and production
	Can	independently improve in the professional field of technological processes for compliance with the original scientific developments
	Owns	skills to analyze the indicators of the technological process for compliance with the original scientific developments

To form the above competencies in the framework of the discipline “Development of food technology for dietary therapeutic and preventive dietetic nutrition”, the following methods of active learning are used: a lecture course with the use of MAO “Technological Technique“ Insert ”, practical exercises with the use of MAO “Seminar - press conference”.

2. The complexity of the discipline and types of training sessions in the discipline

The total labor intensity of the discipline is 3 credit units (108 academic hours).

The types of training sessions and work of the student in the discipline can be:

Designation	Types of training sessions and work of the student
Lec	Lectures
Lab	Labs
Pe	Practical exercises
Oc	Online course
SR	Independent work of the student during the period of theoretical training
Control	Independent work of the student and contact work of the student with the teacher during the period of intermediate certification

Discipline structure:

The form of education is full-time.

№	Section name disciplines	Semester	The number of hours by type of training sessions and work of the student						Forms of intermediate certification, current monitoring of progress
			Lec	Lab	Pe	Oc	SR	Control	
1	Section 1 Basics of the organization and conduct of dietary therapeutic and dietary preventive nutrition	1	6		12				Seminar, credit
2	Section 2. The formation of diets, the use of specialized products and the types of processing for the preparation of products in dietary therapeutic and preventive dietetic food	1	6		12		54		Seminar, credit
3	Section 3. Modern and alternative theories of nutrition. Nutrition Aestheti	1	6		12				Seminar, credit
	Total:		18		36		54		

3.STRUCTURE AND CONTENT OF THE THEORETICAL PART OF THE COURSE (18 HOURS)

Topic 1. Basics of the organization and conduct of dietary therapeutic and dietary preventive nutrition

The value of dietary therapeutic and preventive dietary nutrition. The basic principles of clinical nutrition. Diet Therapy Tactics. The purpose and characteristics of the main diets by type of sparing. Organization of diet food in medical institutions. The diet of patients. Organization of medical nutrition. Quality control of foods and prepared foods. Vitaminization of food ascorbic acid. Organization of diet food in industrial enterprises. Dietary fiber in clinical nutrition. Milk in health food. Rules for issuing dietary therapeutic and dietary preventive nutrition.

Topic 2. The formation of diets, the use of specialized products and the types of processing for the preparation of products in dietary therapeutic and preventive dietetic food

Preventive effect of nutrients when exposed to occupational hazards. Tasks of preventive dietary nutrition. Dietary prophylactic diets. Vitaminization and

energy value of diets of therapeutic nutrition. Nutrition for people working in conditions of exposure to radioactive substances. Nutrition when working in the production of sulfuric and nitric acids, fluorine, chlorine, allergic substances. Steamed cooking technology. Nutrition for the prevention of lead intoxication. Nutrition for people working in the production of phosphorus, mercury, arsenic, dyes. Nutrition when working with substances that have a toxic effect on the central and peripheral nervous system.

Topic 3. Modern and alternative theories of nutrition. Nutrition Aesthetics

Theory of balanced nutrition. Diet. Basic principles of a balanced diet. Posts from the point of view of a nutritionist. Clinical nutrition and homeopathy. Therapeutic mineral water and nutrition. Physiological nutritional standards and levels of consumption of food and biologically active substances. Theory of adequate nutrition. The concept of optimal nutrition. The concept of directional (target) nutrition. The concept of individual nutrition. Unconventional types of food. The nutritional status of the body. The principles of product design for the correction and maintenance of human health on a plant and animal basis.

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

Practical classes (36 hours)

Lesson 1. The study of methods for determining the quality indicators of raw materials and preventive food, using the method of active learning - seminar-press conference

Lesson 2. Rules for calculating the nutritional value of preventive food

Lesson 3. Determining the energy value of dairy products

Lesson 4. Determination of nutritional value of dairy products (compilation of integral scores)

Lesson 5. Creating a daily diet menu for different population groups

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

Educational and methodological support for students' independent work in the discipline "Development of food technology for dietary therapeutic and preventive dietetic nutrition" 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.

6. 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 1 Basics of the organization and conduct of dietary therapeutic and dietary preventive nutrition	SPC-1 SPC-8 SPC-18 SPC-19	Knows methods for developing new and modifying existing biotechnological processes for obtaining end products	Essay	credit
			Able to apply methods for developing new and modifying existing biotechnological processes for obtaining final products		
			Owns methods for developing new and modifying existing biotechnological processes for obtaining end products		
2	Section 2. The formation of diets, the use of specialized products and the types of processing	SPC-1 SPC-8 SPC-18 SPC-19	Knows how to organize and conduct the technological process within the framework of the technology for the production of	Essay	credit

	for the preparation of products in dietary therapeutic and preventive dietetic food		biotechnological products adopted in the organization		
			Able to apply methods of organizing and conducting a technological process within the framework of the technology for the production of biotechnological products adopted in the organization	Essay	
			Owens methods of organizing and conducting the technological process within the framework of the technology for the production of biotechnological products adopted in the organization	Essay	
3	Section 3. Modern and alternative theories of nutrition. Nutrition Aestheti	SPC-1 SPC-8 SPC-18 SPC-19	Knows how to develop proposals for optimizing biotechnological processes and managing the release of biotechnological products	Essay	credit
			Able to apply methods for developing proposals for optimizing biotechnological processes and managing the release of biotechnological products	Essay	credit
			Owens how to develop proposals for optimizing biotechnological processes and managing the release of biotechnological products	Essay	credit

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

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

Main literature

1. Food ingredients in the creation of modern food / [ed. V. A. Tutelyan,

- A. P. Nechaev]. Moscow: DeLi Plus, 2014 .-- 519 p.
<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. - 447 p.
<http://lib.dvfu.ru:8080/lib/item?id=chamo{58444&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.
<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.
<http://lib.dvfu.ru:8080/lib/item?id=chamo:416005&theme=FEFU>
5. Functional food: a textbook for universities / [R. A. Zaynullin, R.V. Kunakova, H.K. Gadeleva, etc.]. Moscow: KnoRus, 2012 .-- 303 p.
<http://lib.dvfu.ru:8080/lib/item?id=chamo:667028&theme=FEFU>
6. Functional foods. Introduction to technology: a textbook for high schools / A. F. Doronin, L. G. Ipatova, A. A. Kochetkova [et al.]; under the editorship of A.A. Kochetkova. Moscow: DeLi Print, 2009 .-- 286 p.
<http://lib.dvfu.ru:8080/lib/item?id=chamo{59010&theme=FEFU>
7. Functional foods. Introduction to technology: a textbook for high schools / A. F. Doronin, L. G. Ipatova, A. A. Kochetkova [et al.]; under the editorship of A.A. Kochetkova. Moscow: DeLi Print, 2009 .-- 286 p.
<http://lib.dvfu.ru:8080/lib/item?id=chamo{59010&theme=FEFU>
8. Examination of specialized food products. Quality and safety: a textbook for universities / [L. A. Mayurnikova, V. M. Poznyakovsky, B. P. Sukhanov and others]; under the general. ed. V.M. Poznyakovsky. St. Petersburg: GIORD, 2012 .-- 421 p.

<http://lib.dvfu.ru:8080/lib/item?id=chamo:664633&theme=FEFU>

9. Kudryavtseva, T.A. Biotechnology of food products for special purposes. Part 1 [Electronic resource]: teaching aid / T.A. Kudryavtseva, L.A. Zabodalova, O.Yu. Orlova. - The electron. Dan. - St. Petersburg: NRU ITMO, 2013. -- 87 p. <https://e.lanbook.com/book/70817>

10. Zinoviev M.E. Technology of functional nutrition products [Electronic resource]: study guide / Zinovieva M.E., Schneider K.L. - Electron. textual data. — Kazan: Kazan National Research Technological University, 2016. — 175 c. — Access mode: <http://www.iprbookshop.ru/79571.html>

Additional literature

1. Biotechnology of higher plants: a textbook / L. A. Lutova; St. Petersburg University: Publishing House of St. Petersburg University, 2003. 227 p., [4] p. silt.

<http://lib.dvfu.ru:8080/lib/item?id=chamo:337&theme=FEFU>

2. Plant biotechnology: Cell selection / V. A. Sidorov; [resp. ed. Yu. Yu. Gleb]; Academy of Sciences of the Ukrainian SSR, Institute of Botany, Department of Cell Biology and Engineering, Institute of Botany. Kiev: Naukova Dumka, 1990, 280 p.

<http://lib.dvfu.ru:8080/lib/item?id=chamo:28051&theme=FEFU>

3. Creation of haploid plants of Pancake weed Brassicanapus using microspore culture / T. N. Gribova, A. N. Knyazev, A. M. Kamionskaya. Biotechnology: theoretical and scientific-practical journal. - 2012. - No. 2, p. 59-65. <http://lib.dvfu.ru:8080/lib/item?id=chamo:664976&theme=FEFU>

4. From hybrid plants to transgenic / Gaponenko AK, Dolgov SV [text], p. 52-65 p. <http://lib.dvfu.ru:8080/lib/item?id=chamo:167196&theme=FEFU>

5. Cell culture of higher plants: from theory to practice / Nosov A. M. [text], p. 8-17 <http://lib.dvfu.ru:8080/lib/item?id=chamo:198194&theme=FEFU>

6. Plant as an object of biotechnology / A. V. Babikova, T. Yu. Gorpenchenko, Yu. N. Zhuravlev. 2007, p. 184-211. <http://lib.dvfu.ru:8080/lib/item?id=chamo:799733&theme=FEFU>

7. Fundamentals of biotechnology: a textbook for universities / T. A. Egorova, S. M. Klunova, E. A. Zhivukhina. Moscow: Academy, 2005, 208 p. 2nd ed., Erased. <http://lib.dvfu.ru:8080/lib/item?id=chamo:236946&theme=FEFU>
8. Fundamentals of biotechnology: a textbook for universities / T. A. Egorova, S. M. Klyunova, E. A. Zhivukhina. Moscow: Academy, 2006, 208 p. 3rd ed., Erased. <http://lib.dvfu.ru:8080/lib/item?id=chamo:255141&theme=FEFU>
9. Biotechnology from A to Z / William Bains. Oxford New York: Oxford University Press, 2000.IX, 411 p. 2nd ed. <http://lib.dvfu.ru:8080/lib/item?id=chamo:11263&theme=FEFU>
10. Modern biotechnology. Myths and reality / [comp. Yu. N. Eldyshev]. Moscow: Tideks Co., 2004.200 p. <http://lib.dvfu.ru:8080/lib/item?id=chamo:243435&theme=FEFU>
11. Biotechnology: study guide / Yu. O. Sazykin, S. N. Orekhov, I. I. Chakaleva; under the editorship of A.V. Katlinsky. Moscow: Academy, 2006, 255 p. <http://lib.dvfu.ru:8080/lib/item?id=chamo:257572&theme=FEFU>
12. Biotechnology: a textbook for high schools / S. M. Klunova, T. A. Egorova, E. A. Zhivukhina. Moscow: Academy, 2010, 256 pp. <http://lib.dvfu.ru:8080/lib/item?id=chamo:416005&theme=FEFU>
13. Biotechnology: a textbook for universities / S. N. Orekhov, I. I. Chakaleva; under the editorship of A.V. Katlinsky. Moscow: Academy, 2014, 282 p. <http://lib.dvfu.ru:8080/lib/item?id=chamo:785446&theme=FEFU>
14. Transgenic tomato plants - producers of the ultra-sweet protein thaumatin II / A. P. Firsov [et al.]. Article source: Biotechnology: theoretical and scientific-practical journal. - 2012. - No. 2, p. 43-49. <http://lib.dvfu.ru:8080/lib/item?id=chamo:664975&theme=FEFU>

**The list of resources of the information and telecommunication network
"Internet"**

1. <http://elibrary.ru> Scientific Electronic Library eLIBRARY.RU

2. The electronic library system "Doe" <http://e.lanbook.com/>
3. The electronic library system "IPRBOOK" <http://www.iprbookshop.ru>
4. Scopus database: <http://www.scopus.com/home.url>
5. Web of Science Database <http://apps.webofknowledge.com/>
6. Database of full-texting academic journals in China <http://oversea.cnki.net/>
7. The electronic library of dissertations of the Russian State Library <http://diss.rsl.ru/>
8. EBSCO Electronic Databases <http://search.ebscohost.com/>

List of information technology and software

In the process of training in the discipline "Biotechnology of genetically modified raw materials and food products", the following software is used installed on the personal computers of the School of Biomedicine: office suite Microsoft Office 2010 professional plus, version 14.0.6029.1000; educational software package 7-Zip, version 9.20.00.0; training complex of programs Abbyy FineReader 11, version 11.0.460; training package of programs Adobe Acrobat XI Pro, version 11.0.00; browser for working in the environment of WWW Google Chrome, version 42.0.2311.90; Teaching software package CoreDraw Graphics Suite X3, version 13.0.0.739.

8. METHODOLOGICAL INSTRUCTIONS FOR THE DEVELOPMENT OF THE DISCIPLINE

The theoretical part of the discipline "Development of food technology for dietary therapeutic and preventive dietetic nutrition" is revealed in lectures, since a 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 in seminars, in discussing essays and in classes using active teaching methods, bachelors learn to analyze and predict the development of nutrition 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. In the course of practical training, the bachelor performs a set of tasks, which allows to consolidate lecture material on the topic being studied, to obtain basic skills in the field of food production technology. The active consolidation of theoretical knowledge is facilitated by the discussion of the problematic aspects of the discipline in the form of a seminar and classes using active learning methods. 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 a discussion.

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 masters is work with literary sources, Internet resources for a deeper familiarization with certain problems in the field of food production. 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, test-control works and colloquiums are carried out.

9. MATERIAL AND TECHNICAL SUPPORT OF DISCIPLINE

Training lab
Vladivostok, Russian Island, 10
Ajax, Building 25.1, aud. M311,

Monoblock Lenovo C360G-i34164G500UDK;
Screen with electric 236 * 147 cm Trim Screen
Line; DLP projector, 3000 ANSI Lm, WXGA

area 96.6 m²

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

Analytical and technological equipment (M311): Milk centrifuge with heating IJIM 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.

Reading rooms of the FEFU Scientific Library with open access to the fund
Vladivostok, Russian island, 10
Ajax, building A - level 10

All-in-One HP All-in-One 400 All-in-One Monoblock 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

Computer class
Vladivostok, Russian Island, 10
Ajax, Building 25.1, aud. M621,
area 44.5 m²

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)

10. VALUATION FUNDS

Code and wording of competency	Competency Stages	
SPC – 1 willingness to plan, organize and conduct research in the field of biotechnology, the ability to correctly process the results of experiments and draw sound conclusions and conclusions	Knows	organization and conduct of technological work in the field of biotechnology
	Can	organize research work in the field of biotechnology, conduct correct processing of experimental results and make reasonable conclusions and conclusions
	Owens	skills in organizing and conducting technological work in the field of biotechnology
SPC – 8 the ability to conduct a feasibility analysis of production and the preparation of feasibility documentation	Knows	how to conduct a technical and economic analysis of production and draw up technical and economic documentation
	Can	use technical and economic documentation
	Owens	information on conducting a technical and economic analysis of production and drawing up technical and economic documentation
SPC – 18 ability to develop and scientifically substantiate optimal integrated certification schemes for biotechnological product	Knows	schemes for optimal comprehensive certification of biotechnological products
	Can	develop schemes for optimal comprehensive certification of biotechnological products
	Owens	skills in developing and scientifically substantiating schemes for optimal integrated certification of biotechnological products
SPC – 19 ability to analyze process indicators for compliance with the initial scientific developments	Knows	how to conduct technological processes and production
	Can	independently improve in the professional field of technological processes for compliance with the original scientific developments
	Owens	skills to analyze the indicators of the technological process for compliance with the original scientific developments

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

Student grading criteria

Points required to evaluate the final test	Credit score	Requirements for completed competencies in the student's oral response
100-61	«credited»	The student is given a credit if he has a knowledge on the physiological basis of the organization of balanced rational nutrition of various population groups. Able to successfully conduct research on the digestibility and digestibility of food substances by a person, as well as to

		calculate the energy value of food, human consumption of useful substances. He owns methods for determining the biological and energy value of food, digestibility and digestibility of food substances, taking into account the characteristics of the human body.
60-0	«not credited»	The student is not credited if he does not know a significant part of the program material, makes significant mistakes, hesitates with practical difficulties with practical difficulties and cannot continue training without additional classes in the relevant discipline.

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

Tasks for self-fulfillment

1. On a given topic of the simulation game, an analysis of the literature on the discipline under study should be carried out. Based on the developed material, an imitation game 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 implementation of the essay

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 term paper, which is a comprehensive study of the problem, the essay is aimed at analyzing one or more scientific papers.

The objectives of writing an essay 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, course project

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 essay should end with a conclusion on the topic.

The structure of the abstract 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. Meat products and dairy products for therapeutic purposes

2. The development of functional foods
3. Functional products in a modern nutritional structure
4. Characterization of food and biologically active substances in nutrition and maintaining human health
5. Proteins of animal and vegetable origin
6. The principles of product design for the correction and maintenance of human health on a plant and animal basis
7. Formulation of original therapeutic and prophylactic products based on raw materials from the meat and dairy industries
8. Minerals as components of probiotics and functional foods
9. Dietary fiber as a component of functional nutrition products
10. Methods of biomedical assessment
11. The effect of new types of sausages therapeutic effect on the body of animals
12. Biotechnology of drugs used to obtain special products
13. Classification of dietary supplements
14. The use of microorganism cultures in the production of specialty foods
15. Comparative characteristics of various functional additives
16. Pilot industrial testing of the production technology of new types of sausages for medical purposes
17. The use of synbiotic compositions in food production
18. Selection of probiotic crops in the production of dairy products
19. Evaluation of the quality of dairy products. Methods of organoleptic, physico-chemical and microbiological analysis
20. Evaluation of the quality of bakery products. Methods of organoleptic, physico-chemical and microbiological analysis
21. Evaluation of the quality of meat products. Methods of organoleptic, physico-chemical and microbiological analysis
22. Methods for assessing the preventive value of special products
23. Evaluation of economic efficiency and social significance of the

development of food products for therapeutic purposes

24. Technological schemes of food products for therapeutic purposes

25. Use of immobilized enzymes in the food industry

26. Bacterial preparations with selective antagonistic activity

Вопросы к зачету

1. The role of dietary nutrition
2. The role of preventive dietary nutrition
3. Scientific basis for the production of fortified products
4. Meat products therapeutic products
5. The development of preventive (therapeutic) food
6. Functional products in a modern nutritional structure
7. Characterization of food and biologically active substances in nutrition and maintaining human health
8. Proteins of animal and vegetable origin
9. The scientific basis for the production of fortified products
10. Principles of product design for the correction and maintenance of human health on a plant and animal basis
11. Formulation of original therapeutic and prophylactic products based on raw materials from the meat and dairy industries
12. Minerals as components of probiotics and therapeutic food products
13. Dietary fiber in foods
14. Methods of biomedical assessment
15. The influence of new types of sausages therapeutic and prophylactic effect on the body of animals
16. Biotechnology of drugs used to obtain special products
17. The use of microorganism cultures in the production of specialty foods
18. Comparative characteristics of various functional additives
19. Pilot industrial testing of the production technology of new types of sausages for medical purposes
20. The use of synbiotic compositions in food production
21. Selection of probiotic crops in the production of dairy products
22. Evaluation of the quality of dairy products. Methods of organoleptic, physico-chemical and microbiological analysis

23. Evaluation of the quality of bakery products. Methods of organoleptic, physico-chemical and microbiological analysis
24. Evaluation of the quality of meat products. Methods of organoleptic, physico-chemical and microbiological analysis
25. Methods for assessing the preventive value of special products
26. Evaluation of the economic efficiency and social significance of the development of food products for therapeutic purposes
27. Technological schemes of food products for medical purposes
28. The use of immobilized enzymes in the food industry
29. Bacterial preparations with selective antagonistic activity
30. The main commercial domestic drugs pro- and prebiotic action

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, and regulatory information are presented. 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 were 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 problem being revealed and in the design of the work.