МИНИСТЕРСТВО НАУКИ И ВЫСШЕГО ОБРАЗОВАНИЯ 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.

УЧЕБНО-МЕТОДИЧЕСКИЙ КОМПЛЕКС ДИСЦИПЛИНЫ

«Nutraceutical Biotechnology / Биотехнология нутрицевтиков»
Направление подготовки 19.04.01 Биотехнология
Магистерская программа «Agri-Food Biotechnology»
Форма подготовки очная

Школа биомедицины
Департамент пищевых наук и технологий
Курс 1 семестр 2
Лекции 18 (час.)
Практические занятия 18
Лабораторные работы __-__ час
Самостоятельная работа 36 час.
Всего часов _72__ час
Всего часов аудиторной нагрузки 36 час
Зачет __-_ семестр
Экзамен 2 семестр

Учебно-методический комплекс составлен в соответствии с требованиями образовательного стандарта, самостоятельно устанавливаемого ДВФУ, утвержденного приказом ректора от 07.07.2015г. №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: к. м. н. Владыкина Т. В

ANNOTATION
of the educational complex of discipline
«Nutraceutical Biotechnology / Биотехнология нутрицевтиков»
Direction of preparation: 04.19.01 Biotechnology
Educational program: "Agri-Food Biotechnology"

The educational-methodical complex of the discipline «Nutraceutical Biotechnology / Биотехнология нутрицевтиков» was developed for 1st year students in the direction 19.04.01 "Biotechnology", the master's program "Agri-Food Biotechnology" in accordance with the requirements of OS HE in this area.

The discipline «Nutraceutical Biotechnology / Биотехнология нутрицевтиков» is included in the variable part of the curriculum.

The total complexity of mastering the discipline is 72 hours. The curriculum includes lecture classes (18 hours), practical classes (18 hours), independent work of the student (36 hours). The discipline is implemented on the _1__ course in the _2__ semester.

The content of the discipline covers the following range of issues:

- food components (macro and micronutrients, vitamins, minerals; contaminants, food additives, etc.);

- metabolism of nutrients, the laws of food interaction and the effect of nutrients on the human body, nutritional, biological, energy value of food;

- nutritional value and safety of certain groups of products (plant, animal origin, products with high nutritional value);

The discipline «Nutraceutical Biotechnology / Биотехнология нутрицевтиков» is logically and meaningfully connected with such courses as "Biotechnology for the production of specialized food products", "Biotechnology for the production of functional food products", "Development of food technology for dietary therapeutic and dietary preventive nutrition".

The discipline is aimed at the formation of cultural and 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 НАУКИ И ВЫСШЕГО ОБРАЗОВАНИЯ РОССИЙСКОЙ ФЕДЕРАЦИИ
Федеральное государственное автономное образовательное учреждение высшего образования
«Дальневосточный федеральный университет»
(ДВФУ)

ШКОЛА БИОМЕДИЦИНЫ ДВФУ

«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 (РПУД)

«Nutraceutical Biotechnology / Биотехнология нутрицевтиков»

Направление подготовки 19.04.01 Биотехнология

Магистерская программа «Agri-Food Biotechnology»

Форма подготовки очная

Курс 1 семестр 2
лекции 18 час.
практические занятия 18 час
лабораторные работы – час
в том числе с использованием МАО лек __/пр_14__лаб.___час
всего аудиторных часов нагрузки: 36 час.
в том числе с использованием МАО_14 час.
самостоятельная работа 36 час.
в том числе на подготовку к экзамену _-__час.
контрольные работы -
курсовая работа/ курсовой проект_-__семестр
зачет - 2 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.

Составитель: к. м. н. Владыкина Т. В.

I. Рабочая программа пересмотрена на заседании Департамента:

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

Директор Департамента _____ _____
(подпись) (И.О. Фамилия)

II. Рабочая программа пересмотрена на заседании Департамента:

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

Директор Департамента _____ _____
(подпись) (И.О. Фамилия)

ABSTRACT

Bachelor's/Specialist's/Master's degree in 19.04.01Biotechnology

Study profile/ Specialization/ Master's Program "Title"

Agri-food biotechnology

Course title:*)* Nutriciology

variable part of Block, _2_credits

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

- the ability to quickly master new subject areas, identify inconsistencies, problems and develop alternative solutions to them (OK-4);

- the ability to lead a scientific discussion, knowledge of the norms of the scientific style of the modern Russian language (GC-6)

Learning outcomes:

OK-1 the ability to creatively adapt the achievements of foreign science, technology and education to domestic practice; high degree of professional mobility

OK-10 with the ability to improve and develop their intellectual and general cultural level, to gain knowledge in the field of modern problems of science, engineering and technology, humanities, social and economic sciences

OK-13 willingness to use legal and ethical standards in assessing the consequences of their professional activities, in the development and implementation of socially significant projects

PC-2 with the ability to analyze scientific and technical information in the field of biotechnology and related disciplines in order to provide scientific, patent and marketing support for basic research and technological research

PC-15 readiness to ensure the stability of production indicators and product quality

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

Course description: study of the laws of the influence of food and the process of consumption on human health, determining the path of easy digestion of

food, processing, utilization and elimination from the body, as well as the motives of human choice of food and the mechanisms of the influence of this choice on his health.

- the acquisition of theoretical knowledge on the composition of the components contained in food raw materials of plant and animal origin (macro - micronutrients, physiological functional ingredients;

- obtaining knowledge of the biological and medical consequences of the lack and excess of food components;

- mastering the research methods of the actual nutrition of various groups of the population;

- the formation of skills to scientifically justify the development of new food products;

Main course literature:

1. Vitamins and vitamin-like substances: a tutorial / Yu. A. Tyrsin, A. A. Krolevets, A. S. Chizhik. Moscow: DeLi Plus, 2013. - 202 p. (2 copies) http://lib.dvfu.ru:8080/lib/item?id=chamo:732093&theme=FEFU

2. Nutriciology: textbook / L. Z. Tel, E. D. Dalenov, A. A. Abduldaeva [and others]. Moscow: Litterra, 2016. - 543 p. (1 copy) http://lib.dvfu.ru:8080/lib/item?id=chamo:818987&theme=FEFU

Form of final knowledge control: credit

Annotation to the work program of the discipline
«Nutraceutical Biotechnology / Биотехнология нутрицевтиков»

The discipline «Nutraceutical Biotechnology / Биотехнология нутрицевтиков» is designed for students studying in the direction of 04/19/01 "Biotechnology", the master's program "Agri-Food Biotechnology", is included in the variable part of the curriculum (FTD.V.01).

In developing the work program of the discipline, the educational standard of the independently established FEFU higher education in the direction of preparation 19.04.01 "Biotechnology" and the curriculum of preparation 19.04.01 "Biotechnology" were used.

The total complexity of the discipline «Nutraceutical Biotechnology / Биотехнология нутрицевтиков» is 72 hours (2 credits). The curriculum includes lectures of 18 hours, practical classes of 18 hours, independent work of the student of 36 hours. Discipline is implemented on the 1st course in the 2nd semester. Assessment of learning outcomes: test in the 2nd semester.

The discipline of «Nutraceutical Biotechnology / Биотехнология нутрицевтиков» is based on the already studied disciplines, such as organic and bioorganic chemistry, biochemistry, food chemistry.

In turn, it is the "foundation" for the study of disciplines: "Biotechnology for the production of specialized food products", "Biotechnology for the production of functional food products", "Development of food technology for dietary therapeutic and preventive dietary nutrition"

The purpose of the study of the discipline «Nutraceutical Biotechnology / Биотехнология нутрицевтиков» is the formation of students' systemic knowledge in the field of nutrition science, to create advanced technologies for the development of products with a given composition and properties.

Objectives of the discipline:

- the study of the laws of the influence of food and the consumption process on human health, determining the pathway for easy absorption of food, processing,

utilization and excretion from the body, as well as the motives for choosing food by a person and the mechanisms of the influence of this choice on his health.

- acquisition of theoretical knowledge on the composition of the components contained in food raw materials of plant and animal origin (macro - micronutrients, physiological functional ingredients;

- gaining knowledge about the biological and medical consequences of lack and excess of food components

- mastery of research methods of actual nutrition of various population groups;

- the formation of skills to scientifically substantiate the development of new food products

To successfully study the discipline «Nutraceutical Biotechnology / Биотехнология нутрицевтиков», the following preliminary competencies must be formed in students:

- the ability to quickly master new subject areas, identify contradictions, problems and develop alternative solutions to them (OK-4);

- the ability to conduct a scientific discussion, knowledge of the standards of the scientific style of the modern Russian language (OK-6).

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

Code and wording of competency	**Competency Stages**	
OK-1 with the ability to creatively adapt the achievements of foreign science, technology and education to domestic practice; high degree of professional mobility	Knows	achievements of foreign science, technology and education in the field of nutrition
	Is able to	adapt the achievements of foreign science, technology and education to domestic practice in the field of nutrition
	Owns	ability to creatively adapt the achievements of foreign science, technology and education to domestic practice in the field of nutrition
OK-10 with the ability to improve and develop its intellectual and cultural level, gain knowledge in the field of modern problems of science,	Knows	basic laws of food hygiene, the effects of food and consumption on human health, the laws of nutrition
	Is able	improve and develop their intellectual and cultural level, gain knowledge in the field

engineering and technology, humanitarian, social and economic sciences		of modern problems of science, engineering and technology, humanitarian, social, economic sciences and nutrition
	Owns	knowledge of the basic laws of food hygiene, the impact of food and the consumption process on human health, the ability to improve and develop their intellectual and cultural level, gain knowledge in the field of modern problems of science, nutrition, engineering and technology, humanitarian, social and economic sciences.
OK-13 willingness to use legal and ethical standards in assessing the consequences of their professional activities, in the development and implementation of socially significant projects	Knows	the foundations of legal and ethical standards for assessing the consequences of their professional activities, in the development and implementation of socially significant nutritional projects
	Is able	correctly assess the consequences of their professional activities when developing and implementing socially significant nutritional projects
	Owns	willingness to use legal and ethical standards in assessing the consequences of their professional activities, in the development and implementation of socially significant nutritional projects
PK-2 with the ability to analyze scientific and technical information in the field of biotechnology and related disciplines with the aim of scientific, patent and marketing support for ongoing basic research and technological development	Knows	the basics of the composition of food raw materials and food products (macro - and microingredients, physiologically functional ingredients), their functional properties and transformations in the production process, to create functional food products
	Is able	apply the knowledge of the composition of food raw materials and food products (macro - and microingredients, physiologically functional ingredients), and is able to analyze scientific and technical information in the field of biotechnology and related disciplines with the aim of scientific, patent and marketing support for fundamental research and technological developments
	Owns	the ability to apply knowledge of the composition of food raw materials and food products (macro - and microingredients, physiologically functional ingredients), and to analyze scientific and technical information in the field of biotechnology and related disciplines with the aim of scientific, patent and marketing support for fundamental

		research and technological developments
PK-15 readiness to ensure the stability of production indicators and the quality of products	Knows	functional properties of macro - and micro-ingredients of functional ingredients of food raw materials and their transformation in the production process, advanced technologies for the development of finished products with a given composition and properties
	Is able	ensure the stability of production indicators and the quality of products
	Owns	the ability to ensure the stability of production indicators and the quality of products
PK-18 with the ability to develop and scientifically substantiate schemes for the optimal integrated certification of biotechnological products	Knows	The organization of adequate, balanced, functional, therapeutic and preventive nutrition, the basic principles of nutrition, the importance of proteins, fats, carbohydrates, the value of vitamins, minerals, trace elements in the nutrition of a sick and healthy person.
	Is able	Use the knowledge of the composition of food raw materials and food products to create functional foods and specialized food products
	Owns	The ability to develop and scientifically substantiate schemes for the optimal integrated certification of biotechnological products

To form the above competencies in the framework of the discipline "Nutrition" the following methods of active / interactive learning are used: lectures: lecture-conversation, problem lecture. Practical classes: method of scientific discussion, tests.

I. STRUCTURE AND CONTENT OF THE THEORETICAL PART OF THE COURSE (18 h.)

Section 1. General «Nutraceutical Biotechnology / Биотехнология нутрицевтиков». Theoretical Foundations of Nutrition Physiological and biochemical aspects of the action of nutrients. (12 hours).

Topic 1. Introduction to nutrition. Purpose, tasks of science. (2 hours)

Key terms and definitions. Microelementology, bioelementology. Theories of Nutrition. Theory of adequate, balanced nutrition. The physiological needs of a healthy person in nutrients, energy. Recommended norms of consumption of nutrients, energy and food. The effect of good nutrition on human health and life expectancy. The consequences of malnutrition. Basic dietary regimes and rules for the preparation of diets. Medical and therapeutic nutrition, their goals and objectives. The principles of menu design, selection of products and cooking methods for diets. The organization of preventive nutrition. Functional nutrition, the basic principles of organization. Analysis of various nutrition theories (vegetarianism, raw food diet, fasting, separate nutrition, etc.). Methods for assessing the adequacy of nutrition. The concept of nutritional status.

Theme 2. Physiology of digestion. (2 hours)

The concept and organs of digestion. The selection and extraction from food of substances necessary for the body and their transformation into a form available for assimilation in tissues. Digestion in the oral cavity, stomach, duodenum, small and large intestines. The role of the pancreas and liver in digestion. The physiological basis of appetite. Digestibility of nutrients.

Topic 3. The composition of food raw materials and food products (8 hours.)

Macro - and microingredients, physiologically functional ingredients, etc. Physiological and biochemical aspects of the action of nutrients, their functional properties and transformations in the production process. The value of proteins, fats, carbohydrates in the nutrition of a sick and healthy person. The value of vitamins in the nutrition of a sick and healthy person. Products are sources of selected fat and water soluble vitamins. Minerals, trace elements their importance in the nutrition of a sick and healthy person. Characterization of physiological nutritional standards. The role of water in the life of the human body. Norms of water consumption. The amount of water removed from the human body. Water quality requirements.

Section 2. Partial «Nutraceutical Biotechnology / Биотехнология нутрицевтиков». (6 hours)

Topic 1. Nutritional value of certain food groups. (2 hours)

Nutritional value of products of plant and animal origin. The nutritional value of canned foods. Foods with high nutritional value - fortified foods, functional foods. Features nutritional approaches to the development of products with high nutritional value.

Topic 2. The role of nutrition in the occurrence of diseases. (2 hours)

Alimentary-dependent noncommunicable diseases and their prevention. Nutrition and prevention - overweight, type II diabetes mellitus, cardiovascular diseases, etc.

Topic 3. Nutrition of certain groups of the population (2 hours).

Features of catering for children and adolescents, pregnant and lactating women, the elderly and senile, students, athletes, etc. Nutrition of the population under the adverse effects of environmental factors. Features nutritional approaches to the development of products for various population groups. Problems and prospects of individualization of nutrition.

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

Practical classes (18 h.) MAO-14 h.

Topic 1. The composition of food raw materials and food products.

Type of study: **seminar (2 hours)**

The purpose of the lesson: to get acquainted with the classification, chemical composition and biological role of proteins, fats, carbohydrates, minerals and vitamins in human nutrition.

1. The biological value of proteins, essential amino acids and their role.

2. The biological role and nutritional value of fats.

3. The role of minerals in the human body.

4. Vitamins and their importance in human life

Topic 2. Physiology of digestion.

Type of study: **seminar (2 hours)**

The purpose of the lesson: to get acquainted with the basics of the physiology of digestion

1. The structure of the human digestive system.

2. Digestion in the oral cavity.

3. Digestion in the stomach.

4. Digestion in the small, large intestine.

5. Absorption of nutrients.

Topic 3. Nutritional and biological value of products of plant and animal origin.

Type of study: **seminar (2 hours)**

The purpose of the lesson: to get acquainted with the nutritional and biological value of products of plant and animal origin.

1. Hygienic characteristics of food products of plant origin.

2. Cereal products as the main sources of energy, vegetable protein and B vitamins in human nutrition.

3. Vegetables and fruits as the main source of vitamins.

4. Hygienic characteristics of food products of animal origin.

5. The importance of milk and dairy products in the nutrition of the population.

6. The value and role of meat and meat products in human nutrition ..

7. The importance of fish and fish products in nutrition.

8. Eggs as a source of high-value proteins (vitellin, etc.), lecithin and choline, a complex of mineral elements (phosphorus, etc.), vitamins (A, D, etc.)

Topic 4. Functional and enriched foods.

Type of study**: seminar (2 hours).**

The purpose of the lesson: to get acquainted with the types of functional and enriched foods, their properties.

The content of the lesson:

1. Functional food: definition, types, purpose.
2. Features of use and varieties of fortified foods.
3. Specialized food products, their purpose.
4. Preventive, curative and curative products.
5. Biologically active food additives (BAA), their classification.
6. Nutraceuticals and parapharmaceuticals.
7. Prebiotics. Probiotics

Topic 5. Energy costs and energy value of food.

Type of study**: practical lesson (2 hours)**

The purpose of the lesson: to be able to determine the energy costs of the body, necessary to justify the energy value of diets and physiological needs in basic nutrients.

The content of the lesson:

1. Acquaintance with the types of human energy consumption and methods for their determination.
2. Determination of daily energy consumption by the time-table method.
3. Determination of total daily energy costs.
4. Determination of daily energy consumption by the rapid method. Compare the received values.
5. Design the results in a table; protect the work with the teacher.

Topic 6. The study of the actual nutrition of various population groups. Research methods and criteria for evaluating the adequacy of nutrition in terms of nutritional status.

Type of study**: practical lesson (2 hours)**

The form of the lesson is a case study, analysis of specific situations (MAO).

Each student is invited to evaluate their nutritional status.

The purpose of the lesson: to be able to assess the adequacy of nutrition in terms of nutritional status.

The content of the lesson:

1. Methods of studying actual nutrition.
2. Criteria for assessing the adequacy of nutrition in terms of nutritional status.
3. Evaluation of their nutritional status by anthropometric indicators.
4. Determination of one's own physiological need for energy value and basic nutrients.

Topic 7. Features of nutrition in childhood and adolescence. Features of nutrition of pregnant and lactating women. Nutrition in old age. Nutrition athletes.

Type of study: **practical lesson (4 hours)**

The form of the lesson is a case study, analysis of specific situations (MAO).

Each student is invited to make a diet for a specific person.

The purpose of the lesson: to be able to assess the adequacy of the diet in accordance with the actual energy consumption and physiological norms of nutrition.

The content of the lesson:

1. Features of metabolism in children.
2. The energy value of the diet of pregnant and lactating.
3. Features of metabolism in athletes.
4. The principles of nutrition for the elderly and senile.

5. Determination of daily physiological nutritional standards, in accordance with the assignment.

6. Distribution of daily nutritional standards for individual meals, in accordance with the assignment.

7. Preparation of a daily diet based on physiological requirements, in accordance with the assignment.

Topic 8. Nutrition of students

Type of study: **practical lesson (4 hours)**

The form of the lesson is a case study, analysis of specific situations (MAO).

Each student is invited to evaluate their diet.

The purpose of the lesson: to learn how to make daily diets for different groups of the population in accordance with physiological norms of nutrition.

The content of the lesson:

1. Factors affecting the performance and health of persons with mental labor, the principles of building their nutrition.

2. Features of the construction of the diet of students.

3. Create a menu - layout of your own daily diet.

4. Based on the layout menu, prepare a report on your own nutrition.

5. Assess your own nutrition.

6. Prepare recommendations for rationalizing your own nutrition.

Topic 9. The basics of clinical nutrition.

Type of study: **seminar (4 hours)**

The form of the lesson is design (MAO).

Each student is invited to make nutrition recommendations for a person who has a specific nutritional disease (atherosclerosis, diabetes mellitus, obesity, cholelithiasis, osteoporosis, etc.).

Purpose of the lesson: to get acquainted with the basics of clinical nutrition.

The content of the lesson:

1. The role of nutrition in the development of metabolic disorders.

2. Classification of nutritional diseases.

3. Diseases and syndromes of malnutrition: protein-energy malnutrition, vitamin deficiency, mineral deficiency, insufficiency of essential polyunsaturated fatty acids, unidentified types of malnutrition.

4. Diseases and syndromes of overnutrition: energy redundancy, protein protein redundancy syndrome, PUFA redundancy syndrome, vitamin and mineral redundancy.

5. Food allergies.

6. The importance of atherosclerosis in the formation of cardiovascular pathology.

7. Causes of diabetes, types of diabetes.

8. Long-term diets in the treatment of patients with diabetes.

9. Obesity: causes, classification, diagnosis.

10. The main directions and nutritional principles of nutritional prevention of obesity.

11. The nutritional principles of building diets in the treatment of patients with gallstone disease.

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

Educational and methodological support for the independent work of students in the discipline «Nutraceutical Biotechnology / Биотехнология нутрицевтиков» is presented in Appendix 1 and includes:

- a schedule of independent work on the discipline;

- characteristics of tasks for independent work of students and methodological recommendations 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 1. General «Nutraceutical Biotechnology / Биотехнология нутрицевтиков». Theoretical Foundations of Nutrition Physiological and biochemical aspects of the action of nutrients.	OK-1 OK-10 OK-13 PK-2 PK-15 PK-18	knows the basics of nutrition, physiological and biochemical aspects of the action of nutrients	Poll Test control Presentation	Credit Question 1-45
			Able to navigate and use knowledge of the basics of nutrition and physiological and biochemical aspects of the action of nutrients	Situational task	Situational task
			Owns comprehensive knowledge in the field of nutrition and physiological and biochemical effects of nutrients	Test	Situational task
2	Section 2 Partial «Nutraceutical Biotechnology / Биотехнология нутрицевтиков»	PK-15 PK-18	knows the basics of nutritional value of certain food groups, the role of nutrition in the occurrence of diseases and the fundamentals of nutrition of certain population groups	Poll Test control Presentation	Credit Question 46-72
			Able to navigate and use knowledge in the field of nutritional value of certain food groups, the role of nutrition and the basics of private nutrition	Situational task	Situational task
			Owns comprehensive knowledge in the field of nutritional value of certain food groups, the role of nutrition in the	Test	Situational task

			occurrence of diseases and the nutritional basis of certain population groups		

Control tasks and teaching 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 mastering an educational program are presented in Appendix 2.

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

Main literature

(electronic and print editions)

1. Vitamins and vitamin-like substances: a training manual / Yu. A. Tyrsin, A. A. Krolevets, A. S. Chizhik. Moscow: DeLi Plus, 2013 .-- 202 p. (2 copies) http://lib.dvfu.ru:8080/lib/item?id=chamo:732093&theme=FEFU

2. «Nutraceutical Biotechnology / Биотехнология нутрицевтиков» / «Nutraceutical Biotechnology / Биотехнология нутрицевтиков»: Textbook / L.Z. Tel, E. D. Dalenov, A. A. Abduldaeva [et al.]. Moscow: Litterra, 2016 .-- 543 p. (1 copy) http://lib.dvfu.ru:8080/lib/item?id=chamo:818987&theme=FEFU

Additional literature

(electronic and print editions)

1. Teplova, A.I. Vitamins and minerals for life and health [Electronic resource] / A.I. Teplov. - The electron. Dan. - St. Petersburg: SpecLit,

2016 .-- 111 p. - Access mode: https://e.lanbook.com/book/103972.

2. Food hygiene [Electronic resource]: a training manual / V.S. Kaveshnikov [et al.]. - The electron. Dan. - Tomsk: Siberian State Medical University, 2019 .-- 132 p. - Access mode: https://e.lanbook.com/book/113544.

3. Popova, N.N. The basics of nutrition [Electronic resource]: a training manual / N.N. Popova. - The electron. Dan. - Voronezh: VGUIT, 2013 .-- 106 p. - Access Mode: https://e.lanbook.com/book/71654

4. Popova, N.N. Food and biologically active additives [Electronic resource]: study guide / N.N. Popova, E.S. Popov, I.P. Shchetilina. - The electron. Dan. - Voronezh: VGUIT, 2016 .-- 67 p. - Access mode: https://e.lanbook.com/book/92220.

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6. Tutelian, V.A. Theoretical and practical aspects of diet therapy for type 2 diabetes [Electronic resource]: monograph / V.A. Tutelian, H.H. Sharafetdinov, A.A. Kochetkova. - The electron. Dan. - Moscow:, 2016 .-- 244 p. - Access Mode: https://e.lanbook.com/book/96081

7. Polievsky S.A. Sports nutrition: a textbook for high schools / S. A. Polievsky - Moscow: Academy, 2015. - 201 p. (3 copies)

http://lib.dvfu.ru:8080/lib/item?id=chamo:790352&theme=FEFU

8. Kharenko, E.N. Technology of functional products for gerodietetic nutrition [Electronic resource]: study guide / E.N. Kharenko, N.N. Yarichevskaya, S.B. Yudina. - The electron. Dan. - St. Petersburg: Doe, 2019 .-- 204 p. - Access mode: https://e.lanbook.com/book/113907.

9. Tyrsin Yu.A. Secrets of proper nutrition: minerals, vitamins, water / Yu. A. Tyrsin, A. A. Krolevets, S. V. Belmer and others. Russian Academy of Natural Sciences - Moscow: Delhi Plus, 2014. - 271 p. (2 copies) http://lib.dvfu.ru:8080/lib/item?id=chamo:731950&theme=FEFU.

Regulatory materials

1. Norms of physiological needs for energy and nutrients for various groups of the population of the Russian Federation. Guidelines MP 2.3.1.2432-08

2. SanPiN 2.3.2.1078-01 "Hygienic requirements for safety and nutritional

value of food"

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. Scopushttp database: //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

1. Using MS Office Power Point software
2. Using MS Office 2010 software
3. Reference legal system Consultant plus.

VI. METHODOLOGICAL INSTRUCTIONS FOR THE DEVELOPMENT OF THE DISCIPLINE

The theoretical part of the discipline «Nutraceutical Biotechnology / Биотехнология нутрицевтиков» 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 the discussions, when discussing essays and in classes using active learning methods, students learn to analyze and predict the development of food 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 the practical classes, the student performs a set of tasks, which allows to consolidate lecture material on the topic under study, to obtain basic skills in the field of building diets for various population groups, taking into account their physiological characteristics.

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 (MAO). 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 students is work with literary sources and methodological recommendations on the history of medicine, bioethical problems, Internet resources for a deeper familiarization with individual problems of the development of medicine and bioethics. 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 interim certification, oral surveys and test-control work are carried out.

VII. MATERIAL AND TECHNICAL SUPPORT OF DISCIPLINE

The material and technical support for the implementation of the discipline includes classrooms for lectures and practical exercises, provided with multimedia equipment and corresponding to sanitary and fire-fighting rules and norms.

Name of equipped premises and premises for independent work	List of main equipment
Laboratory of Technology of Animal Products Vladivostok, Russian Island 10 Ajax d., Building 25.1, aud. M 312. 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 (M312): IRF-454 B2 M refractometer; Planix 5 Planimeter; PE-6110 magnetic stirrer with heating; Refrigerator "Ocean-RFD-325B"; Cooker Gorenie E52102 AW (for preparation and heat treatment of food products) 2 pcs.; Libra; Stainless steel distiller steel (5 l / h, power. 4,5 kW); Meat grinder "Unit-ugr-452"; Dishwasher Hansa ZIM416H; Moulinex HM 550 mixer (for grinding products) 101-277950; Blender BRAUN MX-2050; Tripod PE-2710 lab. for burettes. Multimedia equipment: Monoblock Lenovo C360G-i34164G500UDK with Uninterruptible power supply Powercom SKP-1000A; 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.
Reading rooms of the FEFU Scientific Library with open access to the fund (building A - level 10)	Reading room equipment for the FEFU Scientific Library: HP All-in-One 400 All-in-One Monoblock 400 All-in-One 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. The classroom for lectures,	Training furniture for 17 workplaces, teacher's place (table, chair), Monoblock Lenovo C360G-i34164G500UDK 19.5 "Intel Core i3-4160T 4GB DDR3-1600 SODIMM

practical classes, group and individual consultations, ongoing monitoring and interim certification.	(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).

Приложение 1

МИНИСТЕРСТВО НАУКИ И ВЫСШЕГО ОБРАЗОВАНИЯ РОССИЙСКОЙ ФЕДЕРАЦИИ

Федеральное государственное автономное образовательное учреждение высшего образования

«Дальневосточный федеральный университет»

(ДВФУ)

ШКОЛА БИОМЕДИЦИНЫ

УЧЕБНО-МЕТОДИЧЕСКОЕ ОБЕСПЕЧЕНИЕ САМОСТОЯТЕЛЬНОЙ РАБОТЫ ОБУЧАЮЩИХСЯ

по дисциплине «Nutraceutical Biotechnology / Биотехнология нутрицевтиков»

направления 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	2-6 week	Essay	10	UO-3-Report, message
2	7-16 week	Presentation of the presentation on the topic of the abstract	10	UO-3-Report, message
	2-17 week	Practical training	10	PR - 1-9, Test
3	17-18 week	Test preparation	6	Interview

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 should be an analysis of the literature on the studied discipline. According to the developed material, a colloquium should be prepared and presented.

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

Methodical recommendations for writing and writing an abstract

An abstract is a student's creative activity, which reproduces in its structure research activities to solve theoretical and applied problems in a particular branch of scientific knowledge. In view of this, term paper is an essential component of the educational process in higher education.

The abstract, as a model of scientific research, is an independent work in which the student solves a problem of a theoretical or practical nature, applying the scientific principles and methods of this branch of scientific knowledge. The result of this scientific search can possess not only subjective, but also objective scientific novelty, and therefore can be presented for discussion by the scientific community in the form of a scientific report or message at a scientific and practical conference, as well as in the form of a scientific article.

The abstract assumes the acquisition of skills for building business cooperation based on ethical standards for the implementation of scientific activities. Purposefulness, initiative, disinterested cognitive interest, responsibility for the results of one's actions, integrity, competence are personality traits that characterize the subject of research activity that meets the ideals and norms of modern science.

An abstract is an independent educational and research activity of a student. The teacher provides advisory assistance and evaluates the process and performance. It provides an approximate topic of abstract works, clarifies, together with the resident, the problem and research topic, helps to plan and organize research activities, sets the time and the minimum number of consultations.

The teacher accepts the text of the abstract for verification at least ten days before the defense.

Traditionally, a certain structure of the abstract has developed, the main elements of which in the order of their arrangement are the following:

1. The title page.
2. The task.

3. The table of contents.

4. The list of symbols, symbols and terms (if necessary).

5. Introduction.

6. The main part.

7. Conclusion.

8. Bibliographic list.

9. Applications.

On the title page are indicated: educational institution, graduating department, author, teacher, research topic, place and year of the abstract.

The title of the abstract should be as short as possible and fully consistent with its content.

The table of contents (contents) reflects the names of the structural parts of the abstract and the page on which they are located. The table of contents should be placed at the beginning of the work on one page.

The presence of a detailed introduction is a mandatory requirement for an abstract. Despite the small volume of this structural part, its writing causes considerable difficulties. However, it is precisely a well-executed introduction that is the key to understanding the entire work, which testifies to the professionalism of the author.

Thus, the introduction is a very responsible part of the essay. The introduction should begin with a justification of the relevance of the selected topic. As applied to the abstract, the concept of "relevance" has one feature. From how the author of the essay knows how to choose a topic and how correctly he understands and evaluates this topic from the point of view of modernity and social significance, characterizes his scientific maturity and professional readiness.

In addition, in the introduction it is necessary to isolate the methodological base of the abstract, to name the authors, whose works constituted the theoretical basis of the study. A review of the literature on the topic should show the author’s thorough acquaintance with special literature, his ability to systematize sources,

critically examine them, highlight the essential, determine the main thing in the current state of knowledge of the topic.

The introduction reflects the significance and relevance of the chosen topic, defines the object and subject, purpose and objectives, the chronological framework of the study.

The introduction ends with the presentation of general conclusions about the scientific and practical significance of the topic, the degree of its study and availability of sources, and the hypothesis.

The main part sets out the essence of the problem, reveals the topic, defines the author's position, the factual material is given as an argument and to illustrate the points put forward. The author needs to show the ability to consistently present the material while analyzing it. In this case, preference is given to the main facts, rather than small details.

The abstract ends with the final part, which is called the "conclusion". Like any conclusion, this part of the abstract plays the role of a conclusion, due to the logic of the study, which takes the form of a synthesis of the accumulated in the main part of scientific information. This synthesis is a consistent, logically coherent presentation of the results obtained and their correlation with a common goal and specific tasks set and formulated in the introduction. It is here that the so-called "derivative" knowledge is contained, which is new in relation to the initial knowledge. The conclusion may include practical suggestions.

Evaluation Criteria

The stated understanding of the abstract as a holistic author's text defines the criteria for its evaluation: the novelty of the text; the validity of the choice of source; the degree of disclosure of the essence of the issue; compliance with design requirements.

Text novelty:

a) the relevance of the research topic; b) the novelty and independence in the formulation of the problem, the formulation of a new aspect of the known problem in the establishment of new connections (interdisciplinary, intrasubject, integration); c) the ability to work with research, critical literature, systematize and structure the material; d) the manifestation of the author's position, the independence of estimates and judgments; e) the stylistic unity of the text, the unity of genre features.

The degree of disclosure of the essence of the issue:

a) the relevance of the plan to the topic of the abstract; b) compliance of the content with the topic and the plan of the abstract; c) the completeness and depth of knowledge on the topic; d) the validity of the methods and methods of working with the material; f) the ability to generalize, draw conclusions, compare different points of view on one issue (problem).

The validity of the choice of sources:

a) assessment of the literature used: whether the most famous works on the topic of the study were involved (including journal publications of recent years, recent statistics, summaries, references, etc.).

Compliance with design requirements:

a) how correctly drawn up links to used literature, list of references; b) assessment of literacy and culture of presentation (including spelling, punctuation, stylistic culture), knowledge of terminology; c) compliance with the requirements for the volume of abstract.

The reviewer should clearly formulate the remark and questions, preferably with links to the work (it is possible on specific pages of the work), to research and factual data that the author did not take into account.

The reviewer may also indicate: did the student address the topic earlier (essays, written works, creative works, olympiad works, etc.) and if there are any preliminary results; how the graduate conducted the work (plan, intermediate stages, consultation, revision and revision of the written plan or lack of a clear plan, rejection of the recommendations of the head).

The student submits an abstract for review no later than a week before the defense. The reviewer is the teacher. Experience shows that it is advisable to familiarize the student with the review a few days before the defense. Opponents are appointed by the teacher from among students. For an oral presentation, a student needs only 10-20 minutes (approximately the same amount of time is answered by tickets for the exam).

Grade 5 is given if all the requirements for writing and defending the essay are met: the problem is identified and its relevance is justified, a brief analysis of various points of view on the problem is made and its own position is logically stated, conclusions are drawn, the topic is fully disclosed, the scope is met, the requirements for the external are met design, given the correct answers to additional questions.

Grade 4 - the basic requirements for the essay and its protection are met, but there are flaws. In particular, there are inaccuracies in the presentation of the material; there is no logical sequence in judgments; the volume of the abstract is not sustained; there are design flaws; incomplete answers were given to additional questions during the defense.

Grade 3 - there are significant deviations from the requirements for abstracting. In particular: the topic is only partially covered; actual errors were made in the content of the abstract or in answering additional questions; no output during protection.

Grade 2 - the topic of the abstract is not disclosed, a significant misunderstanding of the problem is revealed.

Grade 1 - the student's abstract is not presented.

Guidelines for preparing presentations

To prepare the presentation, it is recommended to use: PowerPoint, MS Word, Acrobat Reader, LaTeX package beamer. The simplest presentation program is Microsoft PowerPoint. To prepare a presentation, it is necessary to process the information collected during the writing of the abstract.

Presentation preparation sequence:

1. Clearly articulate the purpose of the presentation.

2. Determine what the presentation format will be: live performance (then, how long will it be) or electronic distribution (what will be the context of the presentation).

3. Select the entire content for presentation and build a logical chain of presentation.

4. Identify key points in the text and highlight them.

5. Determine the types of visualization (pictures) to display them on slides in accordance with the logic, purpose and specifics of the material.

6. Choose a design and format slides (number of images and text, their location, color and size).

7. Check the visual perception of the presentation.

Types of visualization include illustrations, images, charts, tables. Illustration is a representation of a real existing visual range. Images - unlike illustrations - are a metaphor. Their purpose is to evoke emotion and create an attitude towards it, to influence the audience. With the help of well-designed and presented images, information can remain in the human memory for a long time. Chart - visualization of quantitative and qualitative relationships. They are used to convincingly demonstrate data, for spatial thinking in addition to logical. A table is a concrete, visual and accurate display of data. Its main purpose is to structure information, which sometimes facilitates the perception of data by the audience.

Practical tips for preparing a presentation

- printed text + slides + handouts are prepared separately;

- slides - a visual presentation of information, which should contain a minimum of text, a maximum of images that carry a semantic load, look clear and simple;

- text content of the presentation - oral speech or reading, which should include arguments, facts, evidence and emotions;

- the recommended number of slides is 17-22;

- Mandatory information for the presentation: topic, last name and initials of the speaker; message plan; brief conclusions from all that has been said; list of sources used;

- handout - should provide the same depth and coverage as a live performance: people have more confidence in what they can carry with them than disappearing images, words and slides are forgotten, and handouts remain a constant tangible reminder; handouts are important at the end of the presentation; handouts should be different from slides, should be more informative.

Topics of abstracts and presentations

1. Classical theories of nutrition.
2. Alternative theories of nutrition.
3. The consequences of protein deficiency in nutrition.
4. The consequences of excess protein in the diet.
5. Cholesterol and its role in the human body.
6. The biological role of simple carbohydrates. The consequences of their redundancy in nutrition.
7. Sources of dietary fiber, their healing effect on the human body.
8. The biological role of vitamin C, the consequences of malnutrition.
9. The biological role of vitamin D, the consequences of malnutrition.
10. The biological role of vitamin A, the consequences of malnutrition.
11. The biological role of B vitamins, the consequences of malnutrition.
12. The biological role of calcium, the consequences of malnutrition.
13. The biological role of fluoride, the consequences of malnutrition.
14. The biological role of iodine, the consequences of malnutrition.
15. The biological role of iron, the consequences of malnutrition.
16. The nutritional value of milk and dairy products.
17. Nutritional value of meat and meat products.
18. Nutritional value of grain processing products.
19. The nutritional value of vegetables and fruits.
20. Groups of dietary supplements.

21. The difference between dietary supplements and food and medicines.

22. Benefits of breastfeeding.

23. Features of nutrition of young children.

24. Features nutrition teenagers.

25. Features nutrition athletes.

26. Features of nutrition in the elderly.

27. Atherosclerosis, causes of development, consequences, prevention.

28. Type 2 diabetes mellitus, nutritional correction.

29. Alimentary obesity, nutritional correction.

30. Food allergies, signs, prevention.

31. Milk and dairy products in everyday and clinical nutrition: Nutritional and biological value of milk. Nutritional and biological value of dairy products (dairy products, cottage cheese, sour cream, cheese. Use of dairy products in clinical nutrition.

32. The value of fruits and vegetables in everyday and clinical nutrition: Nutritional and biological value of vegetables and fruits. Vegetables and fruits are sources of micronutrients. Vegetables and fruits - as a factor in reducing the risk of developing some chronic diseases.

33. The healing properties of honey: a history of the use of honey in nutrition. Nutritional and biological value of honey. Indications and contraindications for the use of honey in daily and medical nutrition.

34. Hypervitaminosis in humans: Causes of the development of hypervitaminosis. Hypervitaminoses D and A. Hypervitaminoses C and B1. Prevention of hypervitaminosis.

35. Nutrition of persons with mental work: Features of the functional state of the human body during mental work. The need for energy, macro- and micronutrients in people with mental labor. The diet of persons with mental labor.

36. Nutrition of the elderly. Features of the functional state of the human body in the elderly and senile. The need for energy, macro- and micronutrients in people of older age groups. Diet.

Приложение 2

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

ШКОЛА БИОМЕДИЦИНЫ

ФОНД ОЦЕНОЧНЫХ СРЕДСТВ

по дисциплине «Nutraceutical Biotechnology / Биотехнология нутрицевтиков»
направления 19.04.01 «Биотехнология»
магистерская программа «Agri-Food Biotechnology»
Форма подготовки очная

Владивосток

2021

FOS PASSPORT

Code and wording of competency	Competency Stages	
OK-1 with the ability to creatively adapt the achievements of foreign science, technology and education to domestic practice; high degree of professional mobility	Knows	achievements of foreign science, technology and education in the field of nutrition
	Is able to	adapt the achievements of foreign science, technology and education to domestic practice in the field of nutrition
	Owns	ability to creatively adapt the achievements of foreign science, technology and education to domestic practice in the field of nutrition
OK-10 with the ability to improve and develop its intellectual and cultural level, gain knowledge in the field of modern problems of science, engineering and technology, humanitarian, social and economic sciences	Knows	basic laws of food hygiene, the effects of food and consumption on human health, the laws of nutrition
	Is able	improve and develop their intellectual and cultural level, gain knowledge in the field of modern problems of science, engineering and technology, humanitarian, social, economic sciences and nutrition
	Owns	knowledge of the basic laws of food hygiene, the impact of food and the consumption process on human health, the ability to improve and develop their intellectual and cultural level, gain knowledge in the field of modern problems of science, nutrition, engineering and technology, humanitarian, social and economic sciences.
OK-13 willingness to use legal and ethical standards in assessing the consequences of their professional activities, in the development and implementation of socially significant projects	Knows	the foundations of legal and ethical standards for assessing the consequences of their professional activities, in the development and implementation of socially significant nutritional projects
	Is able	correctly assess the consequences of their professional activities when developing and implementing socially significant nutritional projects
	Owns	willingness to use legal and ethical standards in assessing the consequences of their professional activities, in the development and implementation of socially significant nutritional projects
PK-2 with the ability to analyze scientific and technical information in the field of biotechnology and related disciplines with the aim of scientific, patent and marketing support for ongoing	Knows	the basics of the composition of food raw materials and food products (macro - and microingredients, physiologically functional ingredients), their functional properties and transformations in the production process, to create functional food products

basic research and technological development	Is able	apply the knowledge of the composition of food raw materials and food products (macro - and microingredients, physiologically functional ingredients), and is able to analyze scientific and technical information in the field of biotechnology and related disciplines with the aim of scientific, patent and marketing support for fundamental research and technological developments
	Owns	the ability to apply knowledge of the composition of food raw materials and food products (macro - and microingredients, physiologically functional ingredients), and to analyze scientific and technical information in the field of biotechnology and related disciplines with the aim of scientific, patent and marketing support for fundamental research and technological developments
PK-15 readiness to ensure the stability of production indicators and the quality of products	Knows	functional properties of macro - and micro-ingredients of functional ingredients of food raw materials and their transformation in the production process, advanced technologies for the development of finished products with a given composition and properties
	Is able	ensure the stability of production indicators and the quality of products
	Owns	the ability to ensure the stability of production indicators and the quality of products
PK-18 with the ability to develop and scientifically substantiate schemes for the optimal integrated certification of biotechnological products	Knows	The organization of adequate, balanced, functional, therapeutic and preventive nutrition, the basic principles of nutrition, the importance of proteins, fats, carbohydrates, the value of vitamins, minerals, trace elements in the nutrition of a sick and healthy person.
	Is able	Use the knowledge of the composition of food raw materials and food products to create functional foods and specialized food products
	Owns	The ability to develop and scientifically substantiate schemes for the optimal integrated certification of biotechnological products

№	Supervised sections / topics of discipline	Codes and stages of formation of competencies		Evaluation Tools	
				current control	intermediate certification
1	Section 1. General «Nutraceutical Biotechnology / Биотехнология нутрицевтиков». Theoretical Foundations of Nutrition Physiological and biochemical aspects of the action of nutrients.	OK-1 OK-10 OK-13 PK-2 PK-15 PK-18	knows the basics of nutrition, physiological and biochemical aspects of the action of nutrients	Poll Test control Presentation	Credit Question 1-45
			Able to navigate and use knowledge of the basics of nutrition and physiological and biochemical aspects of the action of nutrients	Situational task	Situational task
			Owns comprehensive knowledge in the field of nutrition and physiological and biochemical effects of nutrients	Test	Situational task
2	Section 2 Partial «Nutraceutical Biotechnology / Биотехнология нутрицевтиков»	PK-15 PK-18	knows the basics of nutritional value of certain food groups, the role of nutrition in the occurrence of diseases and the fundamentals of nutrition of certain population groups	Poll Test control Presentation	Credit Question 46-72
			Able to navigate and use knowledge in the field of nutritional value of certain food groups, the role of nutrition and the basics of private nutrition	Situational task	Situational task
			Owns comprehensive knowledge in the field of nutritional value of certain food groups, the role of nutrition in the occurrence of diseases and the nutritional basis of certain population groups	Test	Situational task

Шкала оценивания уровня сформированности компетенций

Code and wording of competency	Competency Stages		Criteria	Indicators	Points
OK-1 with the ability to creatively adapt the achievements of foreign science, technology and education to domestic practice; high degree of professional mobility	knows (threshold level)	fundamentals of microelementology, bioelementology, nutrition theory, and modern advances in nutrition	basic knowledge of nutrition theory	knows the basics of the provisions on nutrition theory, the laws of nutrition	45-64
	able (advanced)	use and apply knowledge on the basics of microelementology, bioelementology and nutrition theory to creatively adapt the achievements of foreign science, technology and education to domestic practice with a high degree of professional mobility	the ability to creatively use the main provisions on the theory of nutrition, the laws of nutrition and adapt the achievements of foreign science, technology and education to domestic practice; high degree of professional mobility	knows how to creatively use the main provisions on the theory of nutrition, the laws of nutrition and adapt the achievements of foreign science, technology and education to domestic practice; highly professional mobility	65-84
	owns (high)	has knowledge of microelementology, bioelementology, nutrition theory and modern nutritional achievements with a high degree of professional mobility and the ability to creatively adapt the achievements of foreign science, technology and education to domestic practice	possession of the ability to creatively adapt the achievements of foreign science, technology and education to domestic practice; high degree of professional mobility	owns the ability to creatively adapt the achievements of foreign science, technology and education to domestic practice; high degree of professional mobility	85-100
OK-10 with the ability to improve and develop its intellectual and	knows (threshold level)	basic laws of food hygiene, the effects of food and consumption on human health	knowledge how to improve their knowledge, how to obtain knowledge in	knows how to improve and develop his intellectual and cultural	45-64

cultural level, gain knowledge in the field of modern problems of science, engineering and technology, humanitarian, social and economic sciences			the field of modern problems of science, engineering and technology, humanitarian, social and economic sciences	level, gain knowledge in the field of modern problems of science, engineering and technology, humanitarian, social and economic sciences	
	able (advanced)	knows how to improve and develop his intellectual and cultural level, gain knowledge in the field of modern problems of science, engineering and technology, humanitarian, social and economic sciences	ability to improve and develop one's intellectual and cultural level, gain knowledge in the field of modern problems of science, engineering and technology	knows how to master new information and improve and develop his intellectual and cultural level	65-84
	owns (high)	knowledge of the basic laws of food hygiene, the impact of food and the consumption process on human health, the ability to improve and develop their intellectual and cultural level, gain knowledge in the field of modern problems of science, nutrition, engineering and technology, humanitarian, social and economic sciences.	possession of skills and knowledge of the basic laws of food hygiene, the impact of food and the consumption process on human health, the ability to improve and develop their intellectual and cultural level,	owns the basic laws of food hygiene, the impact of food and the consumption process on human health, the ability to improve and develop their intellectual and cultural level,	85-100
OK-13 willingness to use legal and ethical standards in assessing the consequences of their professional activities, in the development and implementation	knows (threshold level)	the foundations of legal and ethical standards for assessing the consequences of their professional activities, in the development and implementation of socially significant nutritional projects	knowledge of the basics of legal and ethical standards for assessing the consequences of their professional activities, in the development and implementation	knows the legal and ethical standards for assessing the consequences of his professional activities, in the development and	45-64

of socially significant projects			of socially significant nutritional projects	implementation of socially significant nutritional projects	
	able (advanced)	correctly assess the consequences of their professional activities when developing and implementing socially significant nutritional projects	ability to apply legal and ethical standards in professional activities	able to apply legal and ethical standards in professional activities, in the development and implementation of socially significant projects	65-84
	owns (high)	willingness to use legal and ethical standards in assessing the consequences of their professional activities, in the development and implementation of socially significant nutritional projects	skills to use legal and ethical standards in assessing the consequences of their professional activities, in the development and implementation of socially significant projects	owns the skill of applying legal and ethical standards in assessing the consequences of his professional activity, in the development and implementation of socially significant projects	85-100
PK-2 with the ability to analyze scientific and technical information in the field of biotechnology and related disciplines with the aim of scientific, patent and marketing support for ongoing basic research and technological development	knows (threshold level)	the basics of the composition of food raw materials and food products (macro - and microingredients, physiologically functional ingredients), their functional properties and transformations in the production process, to create functional food products	knowledge of the basics of the analysis of scientific and technical information in the field of biotechnology and related disciplines	knows how to use the basics of the analysis of scientific and technical information in the field of biotechnology and related disciplines	45-64
	able (advanced)	apply the knowledge of the composition of food raw materials and food products (macro - and microingredients, physiologically functional	the ability to apply the basics of the analysis of scientific and technical information in	able to analyze scientific and technical information in the field of	65-84

		ingredients), and is able to analyze scientific and technical information in the field of biotechnology and related disciplines with the aim of scientific, patent and marketing support for fundamental research and technological developments	the field of biotechnology and related disciplines with the aim of scientific, patent and marketing support for ongoing basic research and technological development	biotechnology and related disciplines with the aim of scientific, patent and marketing support for ongoing basic research and technological development	
	owns (high)	the ability to apply knowledge of the composition of food raw materials and food products (macro - and microingredients, physiologically functional ingredients), and to analyze scientific and technical information in the field of biotechnology and related disciplines with the aim of scientific, patent and marketing support for fundamental research and technological developments	knowledge of the basics of the analysis of scientific and technical information in the field of biotechnology and related disciplines for the purpose of scientific, patent and marketing support for ongoing basic research and technological development	owns the knowledge of the basics of the analysis of scientific and technical information in the field of biotechnology and related disciplines with the aim of scientific, patent and marketing support for ongoing basic research and technological development	85-100
PK-15 readiness to ensure the stability of production indicators and the quality of products	knows (threshold level)	the main laws for ensuring the stability of production indicators, the functional properties of the macro - and micro-ingredients of the functional ingredients of food raw materials and their transformation during the production process, advanced technologies for the development of finished products with a given composition and properties	knowledge of the action of the basic laws of ensuring the stability of production indicators and the quality of products	knows how the basic laws operate to ensure the stability of production indicators and the quality of products	45-64

	able (advanced)	ensure the stability of production indicators and the quality of products	ability to ensure the stability of production indicators and the quality of products	able to ensure the stability of production indicators and the quality of products	65-84
	owns (high)	the ability to ensure the stability of production indicators and the quality of products	skills to ensure the stability of production indicators and the quality of products	owns skills to ensure the stability of production indicators and the quality of products	85-100
PK-18 with the ability to develop and scientifically substantiate schemes for the optimal integrated certification of biotechnological products	knows (threshold level)	modern principles and approaches to the creation of new technologies, taking into account regulatory documentation	knowledge of the basic laws for the development and scientific justification of schemes for the optimal integrated certification of biotechnological products	knows how the basic laws governing the development and scientific justification of schemes for the optimal integrated certification of biotechnological products	45-64
	able (advanced)	use the knowledge of the composition of food raw materials and food products to create functional foods and specialized food products	the ability to apply knowledge to create competitive functional and specialized food products	knows how to apply knowledge to create competitive food products of functional and specialized purpose	65-84
	owns (high)	the ability to develop and scientifically substantiate schemes for the optimal integrated certification of biotechnological products	possession of comprehensive knowledge in the field of food additives, flavorings and technological aids	owns comprehensive knowledge in the field of food additives, flavorings and technological auxiliaries	85-100

Evaluation tools for intermediate certification

Intermediate certification of students in the discipline «Nutraceutical Biotechnology / Биотехнология нутрицевтиков» is carried out in accordance with local regulations of the FEFU and is mandatory.

Questions for the credit

1. Definition of terms and concepts «Nutraceutical Biotechnology / Биотехнология нутрицевтиков», bioelementology, good nutrition, adequate nutrition

2. Theories of nutrition. Theory of rational, adequate nutrition Alternative theories of nutrition.

1. Macronutrients: proteins, fats, carbohydrates.

2. The structure of the human digestive system.

3. Methods of studying actual nutrition.

4. Assessment of nutritional status.

5. Drawing up diets for healthy individuals, taking into account age, type of activity.

6. Characterization of physiological nutritional standards.

7. Energy costs and energy value of food

8. Factors that determine the human body's need for nutrients and energy.

9. Proteins of animal and vegetable origin, their sources, hygienic value.

10. Fats of plant and animal origin, their sources, the role in human nutrition.

11. Simple and complex carbohydrates, their sources, hygienic value.

12. Definition, classification, value of minerals in human nutrition.

13. Fats, their nutritional and biological value. Hygienic importance in the nutrition of fats. Foods are sources of fat. Physiological standards for calculating needs for individual nutrition. Adequacy assessment.

14. Norms of physiological requirements for energy and nutrients for various groups of the population of the Russian Federation. Methods for assessing the adequacy of individual nutrition.

15. Nutritional status. Indicators of food status. Types of nutritional status.

Methods for assessing nutritional status.

16. Proteins, their nutritional and biological value, the importance of protein in nutrition. Products, sources of proteins. Physiological norms, methods of calculating needs for individual nutrition. Adequacy assessment.

17. Carbohydrates, their nutritional and biological value. Hygienic importance of carbohydrates in food. Products are sources of carbohydrates. Physiological norms, methods of calculating needs for individual nutrition. Adequacy assessment.

18. Hypo - and vitamin deficiencies. The main causes of vitamin deficiency. Measures for the prevention of hypo - and vitamin deficiencies.

19. Mineral substances / macro - and microelements /, their role in human nutrition. The principles of regulation. Sources of intake. Prevention of microelements.

20. The focus of diets, especially nutritional composition and requirements for foods and dishes.

21. The main macronutrients. Classification, practical significance.

22. The main micronutrients. Classification, practical significance.

23. Protein - the basis of good nutrition. Protein malnutrition diseases.

24. Amino acids (interchangeable, irreplaceable), their importance in nutrition.

25. The biological role and nutritional value of fats. The composition and properties of fats.

26. Polyunsaturated fatty acids and their importance in nutrition.

27. Fats - a source of biologically active substances - phosphatides, sterols. Their biological role and their importance in nutrition.

28. Carbohydrates are the main source of energy. Hygienic characteristics of simple carbohydrates (monosaccharides, disaccharides).

29. Carbohydrates, the biological role and their importance in nutrition, the characterization of complex carbohydrates (starch, glycogen).

30. Dietary fiber. Fibrous structures of food (fiber, pectin, etc.) and their

physiological significance.

31. Vitamins. Physiological and biochemical aspects of the action, their functional properties and transformations in the production process.

32. The value of vitamins in human life. Vitamin deficiency and its prevention. Vitamin classification.

33. Properties, physiological significance, insufficiency, need and sources of fat-soluble vitamins.

34. Properties, physiological significance, insufficiency, need and sources of water-soluble vitamins.

35. Vitamin-like substances. Physiological and biochemical aspects of the action, their functional properties and transformations in the production process.

36. Minerals. Physiological and biochemical aspects of the action, their functional properties and transformations in the production process.

37. Classification of mineral elements. The role of mineral elements in the life of the body.

38. Biomicroelements and their role in nutrition.

39. Energy costs and energy value of food.

40. The exchange of energy and energy costs of a person.

41. Energy balance. Diseases of the energy balance.

42. Unregulated waste of energy - the main metabolism, the specific-dynamic action of food substances (SDPD).

43. Regulated energy expenditure - energy consumption in the process of labor activity.

44. Recommended energy requirements for various age and occupational groups.

45. Recommended physiological requirements for proteins, fats, carbohydrates. Normative documents.

46. Methods of studying nutrition (balance sheet, budget, questionnaire, questionnaire, weight, according to the layout menu).

47. Nutritional value of animal products.

48. Nutritional and biological value of milk and dairy products.

49. Nutritional and biological value of various types of meat. The value and role of meat and meat products in human nutrition.

50. Nutritional and biological value of fish and fish products in nutrition.

51. Products of grain processing, their nutritional and biological value. The influence of production technology on the nutritional value of grain processing products.

52. Nutritional supplements. Their role in maintaining health.

53. Biologically active substances.

54. Nutritional and biological value of fruits and vegetables.

55. Excess nutrition, its role in the development of various forms of pathology.

56. Malnutrition, its role in the development of various forms of pathology.

57. Excess nutrition, its role in the formation of cardiovascular and other pathologies.

58. Features of nutrition for children and the elderly.

59. Features of the nutrition of certain groups of the population: the elderly, mainly engaged in mental and physical labor.

60. Alimentary-dependent noncommunicable diseases and their prevention.

61. Factors contributing to the development of atherosclerosis. General characteristic of the anti-atherosclerotic diet.

62. The principles of building therapeutic nutrition.

63. Factors affecting the development of food allergies and ways to reduce food allergenicity.

64. Diabetes, factors contributing to the development of diabetes.

65. Obesity, frequency and impact on life expectancy. Diet therapy for obesity.

66. Gallstone disease, the causes of its development. Prevention and diet therapy of cholelithiasis.

67. Unloading rations, diet.

68. Nutrition and prevention - overweight, type II diabetes mellitus, cardiovascular diseases, etc.

69. Features of nutrition of certain groups of the population (children, pregnant and lactating women, the elderly and senile, etc.).

70. Features of nutritional approaches to product development for various population groups. Problems and prospects of individualization of nutrition.

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»	A student is «Credited» if he has 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 cerdited»	The assessment «unsatisfactory» is given to a student who does not know a significant part of the program material, makes significant mistakes, unsurely performs practical work with great difficulties and cannot continue training without additional classes in the relevant discipline.

Evaluation tools for ongoing certification

Control tests are intended for students studying the «Nutraceutical Biotechnology / Биотехнология нутрицевтиков» course.

When working with tests, it is proposed to choose one answer option from the ones proposed. At the same time, the tests are not the same in complexity. Among the proposed there are tests that contain several options for the correct answers. The student must indicate all the correct answers.

Tests are designed for both individual and collective solution. They can be used in the process of classroom studies, and independent work. The selection of tests necessary to control knowledge in the process of intermediate certification is

carried out by each teacher individually.

The results of the test tasks are assessed by the teacher on a five-point scale for issuing certification or on the basis of the "credit" - "non-credit" system. The mark "excellent" is given with the correct answer to more than 90% of the tests proposed by the teacher. The rating is “good” - with the correct answer to more than 70% of the tests. The rating is “satisfactory” - with the correct answer to 50% of the proposed tests.

Test Samples

Energy and essential nutrients per day

1. The need for proteins of mental workers (men) 18-29 years old is ... g.
a) 55
b) 72
c) 91
d) 95
e) 105

2. The need for fats of mental workers (women) 40-59 years old is ... g.
a) 70
b) 81
c) 60
d) 90
e) 100

3. The need for fats of mental workers (men) 30-39 years is ... g.
a) 70
b) 77
c) 103
d) 110
e) 120

4. The need for carbohydrates of mental workers (women) 18-29 years old is ... g.
a) 200
b) 289
c) 324
d) 399
e) 430

5. The need for carbohydrates of mental workers (men) 40-59 years old is ... g.
a) 310
b) 303
c) 348
d) 425
e) 480

6. The need for ascorbic acid of workers is ... mg.
a) 15
b) 30
c) 55
d) 90
e) 200

7. Correspondence of energy consumption to the group of labor intensity for men 18-29 years old (kcal):
a) I group of labor intensity a) 2800
b) II group of labor intensity b) 2450
c) W group of labor intensity c) 3300
d) IV group of labor intensity d) 4200
e) V group of labor intensity e) 3850

8. Correspondence of the percentage of contamination of the daily diet due to proteins, fats, carbohydrates, (%):
a) proteins a) 33
b) fats b) 54
c) carbohydrates c) 60
d) 13

9. The nutrition of mental workers has the focus:
a) anti-sclerotic
b) antistress
c) hyponatrium
d) low-calorie
e) aliphatic

10. In the lunch menu for workers of the 1st group of labor intensity, it is advisable to include in the dishes:
a) vitamin salad with seaweed
b) assorted fish
c) soup on mushroom broth
d) chicken noodle soup
e) the liver in a strict manner
f) meat stuffed cabbage
g) hot chocolate

h) apple mousse
i) sweet bun

11. People engaged in mental work should eat a day once:
a) 3
b) 4
c) 6
d) 8

12. In the diet of people engaged in mental work, it is recommended to include products:
a) smoked fish
b) seafood
c) chocolate
d) buns
e) bran bread
f) offal
g) dairy products

13. Compliance with the norms of daily consumption of products for university students, (g):
a) meat products a) 50
b) bakery products b) 180
c) sugar c) 400
d) cow butter d) 25
e) 500
f) 2500

14. The energy consumption of women of the III group of physical activity of 30-39 years is ... kcal.
a) 2550
b) 3700
c) 4000
d) 4200

15. The energy consumption of men of the III group of physical activity of 30-39 years is ... kcal.
a) 4700
b) 2500
c) 3000
d) 3150
e) 4300

16. The need for proteins of men of the III group of physical activity of 18-29 years old is ... kcal.

a) 70
b) 94
c) 118
d) 130
e) 150

17. The protein needs of women of the III group of physical activity 18-29 years old are ... kcal.
a) 70
b) 76
c) 87
d) 100
e) 120

18. The need for fats of men of the III group of physical activity of 40-59 years is ... kcal.
a) 96
b) 113
c) 158
d) 170
e) 200

19. The need for fats of women of the III group of physical activity 40-59 years make up ... kcal.
a) 96
b) 95
c) 116
d) 136
e) 150

20. The need for carbohydrates of men of the III group of physical activity of 30-39 years is ... kcal.
a) 305
b) 462
c) 602
d) 650
e) 700

21. The need for carbohydrates of women of the III group of physical activity of 30-39 years is ... kcal.
a) 305
b) 372
c) 440
d) 490
e) 580

22. The need for ascorbic acid of persons engaged in heavy physical labor is ... mg.

a) 30
b) 50
c) 90
d) 100
e) 200

23. The calorie content of the diet for persons engaged in manual labor is increased by:

a) proteins
b) fat
c) carbohydrates
d) vitamins
e) mineral substances

24. Anti-sclerotic diet involves the inclusion in the diet:

a) seafood dishes
b) products containing dietary fiber
c) offal dishes
d) confectionery
e) canned snacks
f) fatty meat dishes

25. The elderly are recommended unloading diets:

a) alarming
b) fruit
c) meat
d) sugar
e) tea room
f) sour cream

26. The protein requirement for older men is ... g.

a) 45
b) 68
c) 69
d) 90
e) 115

27. The need for fats for older men is ... g.

a) 20
b) 45
c) 63
d) 77
e) 105

28. The need for carbohydrates for older men is g.
a) 110
b) 200
c) 275
d) 335
e) 405

29. The daily energy consumption for older women is ... kcal.
a) 1100
b) 1600
c) 1975
d) 2300
e) 2800

30. The quantitative correspondence of the need for food products of the elderly, (g)
a) milk a) 640
b) cottage cheese b) 70
c) vegetables c) 10
g) butter g) 2
e) 400

31. Sample lunch menu for seniors:
a) beetroot caviar
b) broth with dumplings
c) vegetable soup with pearl barley
d) fried liver with onions and mashed potatoes
e) beef stew with vegetable stew
f) rhubarb jelly
g) dried fruit compote
h) hot smoked fish
i) kharcho soup
j) frying

32. The energy value of the diet for older people is reduced by:
a) sugar
b) flour products
c) fatty meat products
d) vegetable fats
e) vegetables
f) fruit
g) dairy products
h) fish (low-fat species)
33. In the diet of older people should be limited:

a) sodium chloride
b) liquid
c) proteins
d) fats
e) vitamins
f) dietary fiber

Energy metabolism, types of energy consumption

34. Energy expenditures of I group of labor intensity of men 18-29 years old ... kcal
a) 2000
b) 2450
c) 2800
d) 3000
e) 3200

35. Energy expenditures of the II group of labor intensity of women 18-29 years old ... kcal
a) 2000
b) 2200
c) 2550
d) 2750
e) 3000

36. Energy expenditures of the II group of labor intensity of men 40-59 years old ... kcal
a) 2000
b) 2750
c) 3000
d) 3200
e) 2500

37. Energy expenditures of the III group of labor intensity of women 40-59 years old ... kcal
a) 2200
b) 2500
c) 2700
d) 3000
e) 3400

38. Energy expenditures of the III group of labor intensity of men 30-39 years old ... kcal
a) 2500
b) 2950
c) 3150

d) 3400
e) 3800

39. Energy expenditures of the IV group of labor intensity of women 30-39 years old ... kcal
a) 2500
b) 2950
c) 3150
d) 3400
e) 3800

40. Energy expenditures of the IV group of labor intensity of men 18-29 years old ... kcal
a) 2500
b) 3850
c) 3700
d) 3900
e) 4100

41. Energy expenditures of the V group of labor intensity of women 40-59 years old ... kcal
a) 3500
b) 3750
c) 4300
d) 4500
e) 5000

42. The energy value of the diet in the north increases due to ....
a) fat
b) proteins
c) carbohydrates

43. The energy value of the diet in the south is reduced by ....
a) fat
b) proteins
c) carbohydrates

44. The energy value of breakfast with three meals a day is ...%.
a) 10
b) 25
c) 50

45. The energy value of a meal with three meals a day is ...%
a) 25
b) 50

c) 80

46. The energy value of a dinner with three meals a day is ...%.
a) 25
b) 50
c) 75

47. Correspondence of energy costs to the sport ... kcal.
a) chess a) 2000
b) gymnastics b) 3200
c) boxing c) 4500
d) cycling d) 5500
e) 6500

The basics of human physiology
The structure and functions of the central and peripheral nervous system

48. The structural element of the nervous system is ....
a) neuron
b) axon
c) dendrite

49. The nerve cell receives information on ....
a) axon
b) dendrite
c) synapse

50. Gaps between the processes filled with intercellular fluid
nerve cells are called ....
a) reflexes
b) axons
c) synapses

51. The receptive structures of cells are called ....
a) receptors
b) reflexes
c) dendrites

52. The brain stem includes:
a) medulla oblongata
b) the hypothalamus
c) cerebellum
d) 12 pairs of cranial nerves
e) large hemispheres

53. The vagus nerve innervates:
a) lower limbs
b) organs of the chest cavity
c) abdominal organs
d) upper limbs
e) hearing organs

54. The cerebellum is located ....
a) above the medulla oblongata
b) in the temporal region of the brain
c) in the frontal lobe of the brain

55. The mediator of the parasympathetic nervous system is:
a) acetylcholine
b) norepinephrine
c) thyroxine

56. The mediator of the sympathetic nervous system is:
a) acetylcholine
b) norepinephrine
c) thyroxine

57. For the implementation of a reflex act ... a neuron is needed.
58. The ways in which nerve impulses enter the brain are called:
a) afferent
b) efferent
c) insertion neurons

59. The origin of unconditioned reflexes:
a) congenital
b) acquired in the process of life
c) disappearing in the first months of life

Humoral regulation system

60. The endocrine glands produce substances - regulators ....
61. Compliance with the specifics of the substances:
a) hormones a) are secreted into the gallbladder
b) enzymes b) are released into the blood
c) are secreted into the intestinal lumen (or
cell)

62. Signs of hyperthyroidism are:
a) weight loss
b) mucous edema

c) bone fragility
d) anemia
e) an increase in the mass of the thyroid gland

63. In the thyroid gland, iodine-containing hormones are produced:
a) thyroxine
b) diiodotyrosine
c) adrenaline
g) insulin
e) glucagon

64. Thyroxine controls in the body:
a) energy metabolism
b) the emotional tone of a person
c) acid-base balance
d) hematopoiesis
e) water-salt balance

65. Parathyroid glands secrete:
a) parahormone
b) thyroid-stimulating hormone
c) insulin

66. The thymus gland (thymus) secrets ....
a) chymosins
b) thyroxine
c) adrenaline

67. The pancreas possesses ....
a) mixed secretion
b) the ability to secrete digestive enzymes
c) the ability to synthesize hormones

68. Pancreatic hormones - insulin and glucagon - regulate metabolism:
a) fat
b) carbohydrate
c) protein
d) mineral
e) water-salt

69. Insufficient synthesis of insulin and excessive - glucagon is the cause of development ....
a) diabetes
b) exhaustion
c) anemia

70. The manifestations of diabetes are:
a) impaired glucose utilization by tissues
b) an increase in the concentration of glucose in the blood
c) decrease in hemoglobin level
d) accelerated glucose metabolism
e) an increase in the amount of urea in the blood

71. In the cortical layer of the adrenal glands are synthesized:
a) mineralocorticoids
b) parahormone
c) thyroxine

72. It is synthesized in the adrenal medulla ....
a) adrenaline
b) insulin
c) glucagon

73. Male sex hormones are ....
a) androgens
b) progesterones
c) estrogen

The basics of human physiology

74. Appetite is ....
a) hunger (the need to replenish energy costs)
b) partial hunger
c) taste hunger

75. Hunger appears when:
a) reduction of the walls of the "empty" stomach
b) a decrease in the concentration of glucose in the blood
c) violation of acid-base balance in the body
d) increased thirst
e) an increase in the concentration of sodium in tissues

76. ... food hunger - insufficient intake in the human body with food of certain nutrients.

77. ... food hunger - insufficient intake of food in general by the human body.

78. The ability to perceive and evaluate the characteristics of food and drinks - ....

79. The differentiation of taste is due to:
a) the occurrence of a specific electrical pulse when compounding a chemical with a receptor
b) the type of tableware
c) calorie content
d) the generation of impulses in the brain
e) visual assessment of (product)

80. Most people prefer taste:
a) sweet
b) salty
c) "metal"
d) bitter
e) "alkaline"

81. The optimal temperature for a complete taste experience is….
a) 0-7
b) 10-35
c) 45-65

82. Food intolerance is associated with:
a) the absence of enzymes involved in the metabolism of components food
b) food allergies associated with the formation of antibodies to certain food components
c) psychological rejection of certain products
d) the reception of culinary processing
e) temperature control
f) appearance

83. Most often, allergic reactions cause:
a) potatoes
b) citrus
c) sugar
d) chocolate
e) bread
f) apples
g) pasta
h) strawberries

84. Food intolerance can only be avoided by ... from the diet, this food component that causes a reaction.

85. Dishes from carrots according to the degree of increase of their digestibility:
a) carrot cutlet

b) carrot marinade
c) carrot salad with sour cream
d) carrot soup puree

86. Dishes from eggs according to the degree of increase of their digestibility:
a) egg porridge
b) fried eggs - fried eggs
c) natural omelet
d) hard boiled egg

87. Low-digestible food:
a) legumes
b) mushrooms
c) fresh bread
d) dried bread
e) fresh milk
f) fried eggs
g) confectionery
h) vegetables

The physiological role of proteins, fats, carbohydrates, minerals substances and vitamins

Proteins

88. The final products of protein metabolism are ....
a) ammonia
b) ketone bodies
c) acetone

89. The sequence in increasing order of degree of assimilation of the dish:
a) deep-fried potatoes
b) mashed potatoes
c) boiled potatoes

90. The sequence in increasing order of degree of assimilation of the dish:
a) beef steak fried
b) barbecue
c) boiled meat
d) steam chutes

91. The correspondence of the average coefficient of assimilation of food proteins, (%):
a) animal proteins a) 100.0
b) vegetable proteins b) 80.0
c) proteins of mixed food c) 85.0

d) 90.0

92. Factors that improve the absorption of protein food:
a) increase in the proportion of ballast substances in the diet
b) a balanced diet
c) steaming
d) large amounts of food
e) excess fat in the diet
f) thyroid dysfunction

93. The main source of protein of animal origin is: meat, milk, egg and ....

94. The protein content in animal meat is ...%.
a) 2.0 - 4.0
b) 14.0 - 20.0
c) 30.0 - 40.0

95. The protein content in animal meat is ...%.
a) 2.0 - 4.0
b) 14.0 - 20.0
c) 30.0 - 40.0

96. The protein content in cereal plants is ...%.
a) 5.0 - 12.0
b) 20.0 - 25.0
c) 25.0 - 30.0

97. The protein content in vegetables and fruits is ...%.
a) 0.5 - 2.0
b) 5.0 - 10.0
c) 10.0 - 20.0

98. Conformity of protein content in products, (%):
a) very large (over 15.0) a) Dutch cheese
b) large (10.0 - 15.0) b) wheat bread
c) moderate (5.0 - 10.0) c) apple
d) small (2.0) g) potatoes
e) egg

99. Conformity of protein content in food products (%):
a) beef a) 7.0 - 8.0
b) chicken egg b) 35.0
c) wheat bread c) 18.0 - 20.0
d) milk d) 12.0
e) 3.0

100. Conformity of protein content in food products ...%.
a) pasta a) 7.0
b) cervelat b) 2.0
c) potatoes c) 24.0
d) 0.5

101. Conformity of protein content in food products ...%.
a) peas a) 7.0
b) apples b) 20.5
c) bread c) 0.5

Carbohydrates

102. Correspondence of the degree of sweetness of various carbohydrates ...%.
a) sugar a) 130
b) fructose b) 74
c) inert sugar c) 16
d) glucose g) 100
e) lactose e) 173

103. In case of diabetes mellitus, it is unacceptable to include in the diet:
a) glucose
b) sugar
c) fructose
d) xylitol
e) lactose
f) sorbitol

104. Lactose consists of:
a) glucose
b) galactose
c) maltose
d) mannose
e) fructose
f) ribose

105. Lactose ....
a) inhibits the development of putrefactive microorganisms
b) activates putrefactive processes
c) provokes fermentation processes in the intestine

106. The daily norm of dietary fiber for an adult is ... gr.
a) 5 - 10
b) 25 - 30

c) 40 - 50

107. Excessive intake of dietary fiber can lead to ....
a) incomplete digestion of food
b) malabsorption of vitamins
c) inhibition of intestinal motility
d) gallstone disease
e) atherosclerosis
f) obesity

108. Excessive sugar intake in children causes:
a) rickets
b) exhaustion
c) obesity
d) tooth decay
e) anemia
f) thyroid dysfunction

109. The sources of "empty" calories are:
a) sugar
b) alcohol
c) rye bread
d) potatoes
e) cabbage
f) bran

110. The optimal ratio of proteins, carbohydrate fats in the diet is:
a) 1: 1: 2
b) 1: 1: 4
c) 1: 1: 5

111. For persons engaged in heavy physical labor, the optimal ratio of proteins, fats, carbohydrates is:
a) 1: 1: 4
b) 1: 1.2: 5
c) 1: 1: 6

112. The optimal ratio of proteins, fats and carbohydrates for persons engaged in mental work is:
a) 1: 1: 4
b) 1: 1: 5
c) 1: 0.8: 3

113. The composition of enzymes involved in the oxidation of carbohydrates includes:

a) Vitamin A (retinol)
b) vitamin B1 (thiamine)
c) vitamin PP (niacin)
d) vitamin C (ascorbic acid)
e) vitamin D (calciferol)

114. Excess carbohydrates in the human body turns into ....

115. Sugar substitutes are:
a) xylitol
b) sorbitol
c) maltose
d) pectin
e) lactose
f) galactose

116. The average daily human need for carbohydrates is ... gr.
a) 30-50
b) 400-500
c) 700-1000

Fats

117. The essential components of fats are:
a) glycerin
b) fat soluble vitamins
c) carotenoids
d) unsaturated fatty acids
e) PUFA
f) waxes

118. The average daily need for fats is ... gr.
a) 30-50
b) 80-100
c) 120-180

119. The diet should contain unheated vegetable oil of at least ... gr.
a) 5-15
b) 25-30
c) 50-70

120. The rationing of fats in the human diet depends on:
a) the nature of work
b) food composition
c) gender

d) season
e) diet
f) product range

121. The daily need for cholesterol should not exceed ... mg.
a) 300
b) 400
c) 500

122. To reduce fat in the diet, it is preferable to use the following methods of heat treatment:
a) frying in the main way
b) cooking
c) allowance
d) stewing after frying
e) deep-frying
f) frying in the oven

123. The "base" of the food pyramid is the following product groups:
a) cereals
b) meat
c) dairy products
d) fats
e) vegetables
f) fish

124. One of the basic principles of a healthy diet is:
a) regular fasting
b) organic consumption of animal fats
c) reduction in the consumption of potatoes and pasta

125. "Hidden" food fats are found in:
a) sturgeon fish
b) butter
c) pork
d) vegetable oils
e) margarine
f) bone fat

126. Correspondence of fat content in food products:
a) very large (over 40 a) kefir fat
b) large (20-40%) b) egg
c) moderate (10-19%) c) Dutch cheese
d) small (3-9%) d) walnuts

127. Dishes in decreasing order of fat content:
a) fried potatoes in the main way
b) deep fried potatoes
c) stewed potatoes
d) boiled potatoes

128. The chips contain a lot:
a) dietary fiber
b) salt
c) fat
d) proteins
e) carbohydrates
f) vitamins

129. Correspondence of the cholesterol content in 100 g of the edible part, (mg):
a) brains a) 300
b) beef liver b) 1
c) cod c) 2000
d) 30

130. Correspondence of the content of linoleic acid in food products (in 100 g):
a) sunflower oil a) 0.84
b) butter b) 60
c) pork fat c) 10

Vitamins

131. The absorption of fat-soluble vitamins requires the presence of fats in the intestines and ...

132. To preserve vitamins when cooking vegetables, they should be placed in ... water.

133. To preserve vitamins, peeled vegetables should be stored no more than ... an hour.

134. To preserve vitamins, peeled vegetables should be stored:
a) in a dark place
b) in the light
c) at low temperatures
d) at room temperature
e) in water
f) in fat

135. To provide vitamins for food rations, the following conditions must be

observed:

a) minimize heat treatment time
b) use vegetable decoctions for cooking soups and sauces
c) store food in the light
d) wash vegetables in sliced form
e) for cooking, place vegetables in cold water
f) when heated, stir food frequently

136. According to solubility, vitamins are divided into water-soluble and

137. Fat soluble vitamins:
a) cyancobalamin
b) pyridoxine
c) tocopherol
d) phylloquinone
e) routine
f) retinol
g) niacin
h) ascorbic acid

138. Vitamin-like substances:
a) vitamin U
b) bioflavonoids (P)
c) choline (B4)
d) folacin (Sun)
e) niacin (PP)
f) riboflavin (B2)
g) phylloquinone (C)
h) retinol (A)

139. The average daily requirement for an adult in vitamin C is ... mg.
a) 10-15
b) 30-40
c) 50-70
d) 80-100

140. The average daily requirement for an adult in vitamin PP is ... mg.
a) 5
b) 10
c) 15
d) 20

141. The average daily requirement of an adult for vitamin B1 is ... mg.
a) 0.5
b) 1.5

c) 2.5
d) 3.5

142. The average daily requirement of an adult in vitamin E is ... mg.
a) 8
b) 15
c) 30
d) 40

143. The average daily requirement of an adult for vitamin A is ... mg.
a) 100
b) 300
c) 700
d) 900

144. Vitamins soluble in water:
a) thiamine
b) riboflavin
c) calciferol
d) retinol
e) ascorbic acid
f) phylloquinone
g) tocopherol
h) vitamin F

Minerals

145. Iron in the body is an integral part of:
a) hemoglobin
b) peptidases
c) amylases

146. For the absorption of iron is necessary:
a) vitamin B12
b) oxalic acid
c) vitamin C
d) phytin
e) tannin
f) glycine

147. Prevent the absorption of iron:
a) phytin (contained in grain)
b) B vitamins
c) polyphenolic compounds (tea)
d) ascorbic acid

e) retinol (vitamin A)
f) rutin (vitamin P)

148. With iron deficiency in the body develops ....

149. In an easily digestible form, iron is contained in:
a) meat
b) bread
c) egg yolk
d) vegetables
e) beans
f) fruit

150. The biological role of iodine is due to its participation in the construction of the hormone ... gland

151. Correspondence of diseases caused by micronutrient deficiency:
a) iodine a) anemia
b) iron b) caries
c) fluorine c) goiter

152. The average daily need for magnesium is ... for an adult, mg.
a) 50
b) 400
c) 800

153. The biological role of fluorine is associated with its participation in ....
a) thermoregulation
b) the formation of tooth enamel
c) hematopoiesis

154. The source of fluoride is:
a) drinking water
b) cod
c) berries
d) bread
e) milk
f) vegetables

155. Conformity of mineral content in food products:
a) calcium a) dairy products
b) magnesium b) apricot
c) potassium c) cereals

156. The average daily water requirement for an adult is:

a) 500-1000
b) 1750-2200
c) 2500-3000

157. Correspondence of cause and effect:
a) true thirst a) excess water intake
b) false thirst b) lack of water in the blood
c) stressful situations

158. To eliminate true thirst, you must:
a) rinsing the mouth with water
b) drinking salted water
c) sucking sour candies

Characteristics of the nutritional value of the main groups of food products Nutritional value of animal products and its changes after processing

159. The protein content in meat ranges from ...%.
a) 7 - 10
b) 15 - 20
c) 20 - 27

160. Correspondence of% fat content of various types of meat:
a) beef a) 18 - 20
b) pork b) 0.9 - 2
c) veal c) 27 - 49

161. Sea fish and non-fish products of the sea contain trace elements:
a) cobalt
b) iodine
c) fluorine
d) manganese

162. The nutritional value of condensed milk is ... than natural.

163. Correspondence of fermented milk products to different nationalities:
a) Russians a) kefir
b) Ukrainians b) Ayran
c) Georgians c) yogurt
d) Ossetians d) fermented baked milk
e) Highlanders e) Matsion

164. Lactic acid bacteria ...
a) inhibit putrefactive microbes
b) contributes to their rapid development

c) do not affect the processes of decay in the large intestine

165. Correspondence of fat content and type of cottage cheese, (%):
a) bold a) 9
b) bold b) 18
c) fat-free c) 1

166. Undesirable components of cheese that adversely affect the body:
a) protein
b) vitamin A
c) easily digestible calcium
d) fat
e) cholesterol

167. Cheeses, taking into account the increase in their usefulness:
a) hard cheese with a fat content of 20%
b) hard cheese with a fat content of 10%
c) feta cheese
d) hard cheese with a fat content of 40%

168. Vitamin synthesized by microorganisms of fermented milk products ....

169. The nutritional value of cheeses is due to the presence of:
a) well-absorbed calcium
b) complete proteins
c) fat-soluble vitamins
d) aldehydes
e) lower fatty acids
f) bitter peptides
g) amines
h) ammonia
i) ketones

170. Sources of purine bases are:
a) offal
b) fish roe
c) broths
d) milk
e) egg
f) dairy drinks
g) cheese
h) cooking fats

171. The biological value of an egg is due to its high content and balance ... of amino acids.

172. Vitamin - is absent in a chicken egg.
a) biotin
b) retinol
c) calciferol
d) ascorbic acid
e) riboflavin

173. In decreasing order of fat content:
a) whole milk
b) buttermilk
c) skim milk
d) whey

The basic principles of dietary nutrition, nutrition for various diseases (taking into account the numbering system of diets)

174. The diet number 9 is limited to:
a) calcium
b) carbohydrates
c) animal fats
d) proteins
e) sodium chloride
f) dietary fiber
g) vitamins
h) potassium

175. Diet No. 9 recommends dishes and products:
a) light products of premium flour
b) protein-bran bread
c) milk cereal soups
d) fermented milk drinks
e) seafood dishes
f) stewed raisins and dried apricots
g) confectionery
h) smoked salmon

176. For diseases of the cardiovascular system with circulatory failure, diet No. ... is recommended.

177. In diet No. 10 limit:
a) proteins
b) animal fats
c) sodium chloride
d) the amount of fluid

e) potassium
f) lipotropic substances
g) vitamins
h) trace elements

178. In diet No. 10 restrict foods and dishes:
a) pancakes
b) salt-free bread
c) vegetarian cereal soups
d) sausages
e) cottage cheese and dishes from it
f) cereals
g) chocolate
h) boiled lean meat

179. In diet No. 10, dishes and products are recommended:
a) mushroom soups
b) cold beetroot
c) fresh wheat bread
d) dishes from the liver (offal)
e) vinaigrettes with vegetable oil
f) xylitol compotes
g) canned fish in oil
h) hard boiled egg

180. An approximate lunch menu diet No. 10:
a) fresh cucumber salad
b) sauerkraut salad
c) pearl barley soup with vegetables in vegetable oil
d) bone broth with croutons
e) dried fruit compote on xylitol
f) tea with sugar
g) boiled meat with carrot puree
h) pasta with ham and tomato
i) fried liver with onions
j) cocoa

181. The diet number corresponds to the disease in which it is prescribed:
a) gastric ulcer a) 9
b) diabetes b) 1
c) obesity c) 7
d) kidney disease d) 8

182. The following products contribute to the reduction of putrefactive processes in the intestine:

a) kefir
b) fish
c) egg
d) honey
e) dried fruits
f) meat
g) offal
h) cheeses
183. Factors contribute to the secretion of bile:
a) fats
b) xylitol
c) warm food
d) hunger
e) overeating
f) lack of oxygen
g) excess fluid
h) egg white

184. Unrefined sunflower oil contains:
a) vitamin E
b) phospholipids
c) linoleic acid
d) palmitic acid
e) benzoic acid
f) citric acid
g) amino acids
h) butyric acid

185. It is advisable to limit egg yolks in diets for diseases:
a) cardiovascular
b) gallstone disease
c) kidney
d) anemia
e) stomach
f) intestines

186. The optimal frequency of food intake in clinical nutrition ... times.
a) 2
b) 5
c) 8
d) 10

187. Culinary products that can be recommended for diet food:
a) soup with croutons
b) radish salad with butter

c) beetroot salad with prunes
d) fried eggs
e) carrot soup puree

188. Culinary products that can be recommended for diet food:
a) pea soup
b) apple sambuc
c) meat with meat
d) egg porridge
e) chicken

Therapeutic and dietary nutrition

189. The amount of free fluid for a low-protein diet is ... l.
a) 0.1 - 0.5
b) 0.8 - 1.0
c) 2.0 - 3.0

190. the amount of free fluid for a low-calorie diet is ... l.
a) 0.8 - 1.5
b) 2.5 - 3.0
c) 3.0 - 5.0

191. If the patient is overweight, he is prescribed ... a diet.

192. For pulmonary tuberculosis, a diet is prescribed ...

193. The following are included in the low-calorie diet:
a) baking from premium flour
b) cocoa in milk with sugar
c) boiled pollock
d) yogurt 8% fat
e) stewed chicken
f) kefir 1% fat
g) bran bread
h) apple sambuc
i) berry jelly

194. to reduce the content of extractives in soups and sauces you can use ... meat broths.

195. With diabetes, the following are completely excluded from the diet:
a) refined sugar
b) salt
c) dietary fiber

d) fats

196. Dishes that do not meet the requirements of a low-calorie heat treatment diet:
a) wheat casserole with raisins
b) boiled potatoes
c) steam curd souffle
d) goulash from boiled beef
e) boiled fish
f) steam soufflé

197. Dishes that do not meet the requirements of a low-protein diet for heat treatment:
a) carrot puree
b) cottage cheese casserole
c) potato pancakes
d) semolina pudding
e) boiled potatoes
f) souffle carrot steam

198. Products not included in the daily average low-protein diet:
a) beef
b) offal
c) bird
d) cottage cheese
e) fish products
f) sago
g) rice groats

199. In the absence of a complete set of products recommended for diet, it is possible ... in accordance with the norms of interchangeability.

200. for individual selection of the chemical composition of the diet and its caloric content is allowed to use the buffet ....

201. The use of ... active additives is permitted for dietary adjustment.

202. When prescribing standard diets, administration of ... days is not excluded.

Toxic and anti-nutritional components of food, providing adverse effect on the body

203. Fitin is contained in:
a) legumes
b) brown bread

c) wheat bread
d) eggs
e) meat
f) milk

204. Caffeine is found in:
a) coffee
b) tea
c) bran
d) vegetables
e) tonic drinks
f) mineral waters
g) juices
h) kvass

205. The absorption of iron is disturbed when there is an excess of ballast and ... substances in food.

206. Sources of tannins (tannin) is ....

207. Conformity of the content of anti-food substances in products:
a) tannins a) cabbage
b) ballast substances b) rhubarb
c) phytin c) tea
d) oxalic acid d) cabbage

208. The absorption of iodine is blocked ... compounds.

209. Containing compounds are present in:
a) cabbage
b) cereals
c) bread
d) peanuts
e) pasta
f) fruit
g) radish

210. The effect of lectins is manifested in:
a) dysfunction of the thyroid gland
b) slowing breathing
c) violation of the permeability of the wall of the small intestine
e) bone destruction
e) gluing red blood cells

211. Lectins are contained in:

a) legumes
b) bread
c) peanuts
d) fish
e) offal
f) plant seedlings
g) chicken meat

212. The kernels of almonds, apricots, cherries contain strong poisons - ....

213 The most useful potato tubers contain a toxic substance - ....

214. Alcoholic beverages contain a toxic component - ....

215. Plants grown on soil containing excessive amounts of ... fertilizers accumulate highly toxic nitroso compounds.

216. Polycyclic aromatic carbohydrates with a carcinogenic effect are formed in:
a) overheated fats
b) smoking products
c) green tubers
d) boiled milk
e) marinades

217. Carcinogenic carbohydrate found in Indian and Georgian tea, coffee ....

Protective components. Protective food components

218. The properties of antioxidants are shown:
a) tocopherols (vitamin E)
b) ascorbic acid (vitamin C)
c) cyancobalamin (B12)
d) calciferols (vitamin D)
e) thiamine (vitamin B1)

219. Confirmatory agents can influence through:
a) skin
b) hair
c) nails
d) the digestive tract
e) airways
f) lymphatic system
g) the nervous system

220. substances involved in the function of barrier tissues organism:
a) retinol
b) carbohydrates
c) ascorbic acid
d) xylitol
e) cyancobalamin
f) calciferol

221. Provide neutralizing liver function:
a) vitamin B12
b) vitamin U
c) lecithin
d) volatile
e) chlorophyll
f) adrenaline
g) hydrochloric acid
h) ammonia

222. Nutritional factors of protection against microorganisms:
a) ballast substances
b) volatile
c) chlorophyll
d) carbohydrates
e) fats
f) magnesium

223. The anti-sclerotic effect is exerted by food components:
a) polyunsaturated fatty acids
b) dietary fiber
c) ascorbic acid
d) calcium
e) retinol
f) cholesterol
g) saturated fatty acids
h) caffeine

224. Compliance with the nature of the action of a group of protective substances:
a) bactericidal action a) vitamins E
b) absorption of toxic substances b) pectin substances
c) methylation of toxic substances c) volatile
d) protection against free oxidizing radicals d) vitamin B12

225. Prevent the deposition of cholesterol in blood vessels ... fatty acids.

226. Prevent the formation of stones in the biliary tract ... fatty acids.

227. Vitamins possess anticancer activity:
a) ascorbic acid
b) retinol
c) folic acid
d) calciferol
e) phylloquinone
f) nicotinamide

Factors counteracting the effects of protective substances

228. Excessive intake of easily digestible carbohydrates leads to:
a) weight gain
b) diabetes
c) decrease in body weight
d) disruption of the intestines
e) the shift of acid-base balance
f) the formation of stones in the biliary tract

229. Some types of cheese, chocolate, red wine contain ... amines.

230. Biogenic amines cause:
a) narrowing of blood vessels
b) obesity
c) increase in blood pressure
d) hypothesis
e) caries
f) diabetes

231. The main ways to eliminate the effects of anti-nutritional factors is ... processing products.

232. With excessive heat treatment, carcinogenic substances such as:
a) oxymethylfurfural
b) benzopyrene
c) caffeine
d) betaine
e) tannin
f) solanine

233. In cheese form it is not recommended to use:
a) spinach
b) legumes

c) bird cherry
d) cabbage
e) corn
f) fruit seed kernels
g) dill

234. The rational way to cook food contaminated with radioactive substances is ....

235. in case of contamination of products with radioactive substances after boiling them, decoction ....
a) not used
b) used for cooking first courses
c) used for making sauces

236. For the removal of radionuclides in the body it is necessary:
a) carbohydrate diet
b) fat diet
c) high protein diet

237. Reduce the deposition of radionuclides in the body of minerals:
a) potassium
b) chlorine
c) calcium
d) sodium
e) phosphorus
f) iodine

238. The main sorbent of radionuclides in the stomach is ....

239. Products: Accelerate the elimination of radionuclides from otranismo:
a) kefir
b) herring
c) whole grain bread
d) raw vegetables
e) concentrated broths
f) butter
g) sugar
h) smoked meats

240. During the period of increased exposure to radiation, it should be excluded from
diet drinks:
a) red tart wines
b) freshly brewed green tea

c) instant coffee
d) fermented milk drinks

241. Antioxidants in nutrition are necessary for ....
a) protect the body from free radicals
b) prevention of rickets
c) eliminate iodine deficiency
d) prevention of stone formation in the biliary tract

Basic principles of healthy (rational) nutrition

242. Lunch should satisfy the need for nutrients by ...%.
a) 15-25
b) 35-45
c) 60-70

243. Dinner should satisfy the need for nutrients by ...%.
a) 5-10
b) 20-25
c) 40-50

244. The correct sequence of meals contributes to ... food.

245. The order of reception of dishes
a) pilaf
b) pickle Leningrad
c) beetroot caviar
d) cranberry jelly

246. To complete the breakfast you should choose:
a) bean soup
b) meat hodgepodge
c) coffee
d) cheesecakes with sour cream
e) jelly
f) fresh cucumber salad
g) soft drinks
h) dessert

247. Compliance with meals:
a) breakfast a) pickle
b) lunch b) rice porridge
c) dinner c) steam chicken cutlets

248. Recommended yield of cold appetizers ... g.

a) 30-40
b) 75-150
c) 200-300

249. The recommended output of the first dishes (soups) ... g.
a) 100-200
b) 250-500
c) 600-800

250. Recommended garnish outlet ... g.
a) 25-75
b) 100-200
c) 300-400

251. Recommended yield of sweet dishes ... g.
a) 25-75
b) 100-200
c) 300-400

252. An important element of the body's use of food is ... nutrition.

253. Dinner should include dishes from:
a) fish (low-fat varieties)
b) dairy products
c) offal
d) mushrooms
e) eggs
f) fatty meats
g) coffee
h) canned food

254. "Sparing menu" involves the use of food products:
a) dairy
b) non-fish seafood
c) vegetables
d) mushrooms
e) marinades
f) fatty meats
g) canned food
h) smoked meats
255. It is not recommended to include in the assortment of dishes of children's cafes:
a) dairy products
b) tonic drinks
c) small-sized confectionery

d) egg dishes
e) deep-frying products
f) fruit and berry soft drinks

256. The assortment of "vitamin" tables of catering establishments includes:
a) vegetable oil
b) raw vegetables
c) pork fat
d) smoked fish
e) sausages
f) canned food

ANSWERS

1. b
2. c
3. b
4. b
5. b
6. d
7. a-b, b-a, c-c, d-e, e-d
8. a-d, b-a, c-b, - -c
9. a, b
10. a, d, f, h
11. b
12. b, e, g
13. a-b, b-c, c-a, d-d, - -e
14. b
15. d
16. b
17. b
18. b
19. b
20. b
21. b
22. c
23. b, c
24. a, b
25. a, b
26. b
27. d
28. d
29. c
30. a-e, b-b, c-a, d-c, - - d
31. a, c, e, g
32. a, b, c
33. a, b
34. b
35. b
36. e
37. b
38. c
39. b
40. b
41. b
42. a
43. a
44. b
45. b
46. a
47. a-b, b-c, c-d, d-e, - - a
48. a
49. b
50. c
51. a
52. a, b
53. b, c
54. a
55. a
56. b
57. 2
58. a
59. a
60. hormones
61. a-b, b-c, - - a
62. a, e
63. a, b
64. a, b
65. a
66. a
67. a
68. a, b
69. a
70. a, b
71. a
72. a
73. a
74. c
75. a, b
76. specific
77. non-specific
78. taste
79. c
80. a, b
81. b
82. a, b
83. b, d, h
84. excluding
85. c, b, a, d
86. d, b, c, a
87. a, b, c
88. a
89. a, c, b

90. b, a, c, d
91. a-d, b-b, c-c, - -a
92. b, c
93. fish
94. b
95. b
96. a
97. a
98. a-a, b-c, c-b, d-d, - - e
99. a-c, b-d, c-a, d-e, - -b
100. a-a, b-c, c-b, - - d
101. a-b, b-c, c-a
102. a-d, b-e, c-a, d-b, e-c
103. a, b
104. a, b
105. a
106. b
107. a, b
108. c, d
109. a, b
110. b
111. b
112. c
113. b, c
114. fat
115. a, b
116. b
117. b, e
118. b
119. b
120. a, d
121. c
122. b, c
123. a, e
124. b
125. a, c
126. a-d, b-c, c-b, d-a
127. b, a, c, d
128. b, c
129. a-c, b-a, c-d, - - b
130. a-b, b-a, c-c
131. bile
132. boiling
133. 1
134. a, c
135. a, b
136. fat soluble
137. c, d, f
138. a, b, c
139. d
140. d
141. b
142. b
143. d
144. a, b, e
145. a
146. a, c
147. a, c
148. anemia
149. a, c
150. thyroid
151. a-c, b-a, c-b
152. b
153. b
154. a, b
155. a-a, b-c, c-b
156. b
157. a-b, b-c, - -a
158. b
159. b
160. a-a, b-c, c-b
161. b
162. lower
163. a-c, b-d, c-e, d-a, e-b
164. a
165. a-b, b-a, c-c
166. d, e
167. c, b, a, d
168. B12
169. a, b, c
170. a, b, c
171. irreplaceable
172. d
173. a, b, d, c
174. a, b, d
175. a
176. a-b, b-c, c-a
177. b
178. a, b
179. a, g, h
180. Vitamin C
181. a, c
182. a, f
183. c
184. a, b, c
185. a, c, d
186. a, d
187. c, d
188. b, c, e
189. b, d, e
190. № 10
191. b, c, d
192. a, d, g
193. b, e, f
194. a, c, e, g
195. a-b, b-a, c-d, d-c
196. a, d, e
197. a, b, c
198. a, b, c
199. a, b
200. b
201. c, e
202. b, d
203. b
204. a
205. low calorie
206. high calorie
207. c, e, f, g, h, i
208. secondary
209. a
210. a, b
211. b, c
212. c, e
213. replacement
214. products
215. biological
216. unloading

217. a, b
218. a, b, e
219. tannins
220. tea
221. a-c, b-a, c-d, d-b
222. sulfur containing
223. a, d, g
224. c, e
225. a, c, f
226. cyanides
227. solanine
228. ethanol
229. nitrogen
230. a, b
231. benzopyrene
232. a, b
233. a, d, e
234. a, c
235. a, b, c
236. b, c
237. a, b, c
238. a-c, b-b, c-d, d-a
239. unsaturated
240. unsaturated
241. a, b
242. a, b
243. biogenic
244. a, c
245. warm
246. a, b
247. b, f
248. cooking
249. a
250. c
251. a, c
252. pectin
253. a, c, d
254. c
255. a
256. a, d, e

Test Evaluation Criteria

Assessment is carried out in an e-learning session on a hundred-point scale.

The test includes 100 tasks, the maximum mark on the test is 100.

Within the framework of the current level of mastering knowledge in the discipline, a test result of at least 61 points is allowed.

Examples of situational tasks

Situational task number 1.

The daily energy expenditure of a miner of 39 years is 5000 kcal. Calculate his daily need for B, F, U. Assess the adequacy of nutrition, give recommendations for rationalizing nutrition.

Situational task number 2.

A student (age 18 years, body weight 55 kg) receives 80 g protein, 120 g fat, 360 g carbohydrates with a diet. Calculate the amount of energy he receives. Give the necessary recommendations on the adequacy of nutrition and a balanced diet.

Situational task number 3.

Evaluate the balance and sufficiency of the nutritional value of a 65-year-old man, weight 85 kg .: B - 80 g, W - 40 g, U - 350 g.

Situational task number 4.

Rate the nutritional status of a girl of 25 years old, height 160 cm, weight 95 kg.

Evaluation criteria for solving situational problems:

- the mark “excellent” is given to the student who correctly solved the problem and substantiated his decision, giving a link to the regulatory document required for the solution;
- A student who has correctly solved the problem, but has not substantiated his decision at the proper level, deserves a “good” mark;
- a student who has discovered a sufficient level of knowledge to solve a problem, but who has made errors in its solution, deserves a “satisfactory” mark;
- the grade “unsatisfactory” is given to the student who has not solved the problem.