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MINISTRY OF HEALTH PROTECTION OF UKRAINE

ODESSA NATIONAL MEDICAL UNIVERSITY

Department of Physiology and Biophysics

I APPROVE

Vice-rector for scientific and pedagogical work

Eduard BURYACHKIVSKY

September 1, 2023



PROGRAM OF ELECTIVE EDUCATIONAL DISCIPLINE

"Physiological basis of rational nutrition"

Level of higher education: second (master's)

Branch of knowledge: 22 "Health care"

Specialty: 222 "Medicine"

Educational and professional program: "Medicine"

2023

The program of the selective academic discipline is compiled on the basis of the educational and professional program "Medicine" for the training of specialists of the second (master's) level of higher education in the specialty 222 "Medicine" of the field of knowledge 22 "Health care", approved by the Scientific Council of ONMedU (protocol No. 8 of June 29 2023).

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The work program was approved at the meeting of the Department of
Physiology and Biophysics

Protocol No. 1 of August 28, 2023.

Head of the Physiology and Biophysics Department, honored doctor of Science of Ukraine, Doctor of Medicine, Professor Leonid GODLEVSKY

Agreed with the guarantor of OPP "Medicine" - Valery MARICHEREDA

Approved by the subject cyclical methodical commission for medical and biological disciplines of ONMedU

Protocol No. 1 of August 28, 2023.

Head of the subject cyclic methodical commission for medical and biological disciplines, Doctor of Medicine, prof. Leonid GODLEVSKY

Reviewed and approved at the meeting of the department

Protocol No. ___ of "___" _____ 20__

Head of Department _____

(signature)

(First Name Surname)

1. Description of the academic discipline

Name of indicators	Field of knowledge, specialty, specialization, level of higher education	Characteristics of the academic discipline
The total number of: Credits: 3.0 Hours: 90 Content modules: 3	Branch of knowledge (code and name) <u>22 "Health care"</u>	<i>Full-time education</i>
		<i>Elective discipline</i>
	Specialty (code and name) <u>222 "Medicine"</u>	<i>Year of training 3</i>
		<i>Semester V-VI</i>
	Level of higher education <u>second (master's)</u>	<i>Lectures (0 hours)</i>
		<i>Seminars (30 hours)</i>
		<i>Practical (0 hours)</i>
		<i>Laboratory (0 hours)</i>
		<i>Independent work (60 hours)</i>
		<i>including individual tasks (8 hours)</i>
		<i>Final control form (according to the curriculum) Credit</i>

2. The purpose and tasks of the educational discipline of competence, program learning outcomes

Goal: formation of the acquirers of elements of professional competences and practical skills in the field of modern physiological foundations of metabolic processes, digestion, nutrition, regularities of influence of food components on the state of health and functions of organs and systems, development of balanced diets and their correction for different functional states of the body.

Tasks of the discipline:

- Obtaining thorough knowledge of the morpho-functional organization of the human digestive system and the mechanisms of its neuro-humoral regulation
- Obtaining thorough knowledge about the peculiarities of the metabolism and energy of a healthy person under various conditions of functional states of the body
- The acquisition of skills in determining the needs of the body in proteins, fats, carbohydrates depending on the physiological state of the body (pregnancy, lactation), age, gender, professional activity
- The formation of basic concepts in students regarding the influence of food components and their metabolites on the functioning of the main physiological systems of the body
- Formation of students' concepts about the basic principles that underlie the modern approach to rational nutrition.

As a selective component, the study of the discipline will allow the applicant to form an individual educational trajectory. The process of studying the discipline is aimed at the formation of elements the following **competencies**:

- *integral*: the ability to solve typical and complex problems, including those of a research and innovation nature in the field of medicine. Ability to continue learning with a high degree of autonomy.

- *general (GC)*:

GC 4 - Knowledge and understanding of the subject area and understanding of professional activity.

GC 11 - Ability to search, process and analyze information from various sources

GC 12 - Determination and persistence in relation to assigned tasks and assumed responsibilities

- **special professional (SC):**

SC 24 - Compliance with ethical principles when working with patients and laboratory animals

SC 25 - Observance of professional and academic integrity, bear responsibility for the reliability of the obtained scientific results

SC 28 – Ability to apply fundamental biomedical knowledge at a level sufficient to perform professional tasks in the field of health care

Program learning outcomes (PLO):

PLO 1 - Have thorough knowledge of the structure of professional activity. To be able to carry out professional activities that require updating and integration of knowledge. To be responsible for professional development, the ability for further professional training with a high level of autonomy.

PLO 2 - Understanding and knowledge of fundamental and clinical biomedical sciences, at a level sufficient for solving professional tasks in the field of health care.

PLO 3 - Specialized conceptual knowledge, which includes scientific achievements in the field of health care and is the basis for conducting research, critical understanding of problems in the field of medicine and related interdisciplinary problems.

PLO 10 - Determine the necessary mode of work, rest and nutrition on the basis of the final clinical diagnosis, observing the relevant ethical and legal norms, by making a reasoned decision according to existing algorithms and standard schemes.

PLO 21 - Search for the necessary information in the professional literature and databases of other sources, analyze, evaluate and apply this information.

As a result of studying the academic discipline, the student of higher education must:

Know:

- the basics of the structure and function of the digestive organs and the mechanisms of their regulation
- peculiarities of the metabolism of a healthy person under different functional conditions
- Physiological norms of the body's needs for food substances depending on the body's physiological state
- the main stages of nutrient conversion processes in the human body
- principles and stages of food rations

Be able:

- interpret the results of studies of digestive processes
- analyze the influence of the nature of nutrition on the functioning of the main systems
- evaluate a person's energy expenditure and nutritional status based on anthropometric data
- analyze the nutritional and biological value of food products;
- calculate the physiological norms of nutrition and determine the adequacy of the actual nutrition of a person to the individual needs of the body
- compose and substantiate the diets of persons of different age and gender groups
- carry out an assessment and develop reasonable recommendations for a rational correction of the diet

3. Content of the academic discipline

Content module 1. The influence of food on the morpho-functional state of the human body

Topic 1. Introduction to the course "Physiological foundations of rational nutrition".
Functions of food. Physiological basis of research methods of the human digestive system

Topic 2. Physiological bases of the processes of digestion and assimilation of food. The physiological role of the taste and smell systems in the digestion process. The role of the stomach in the physiological processes of digestion. The role of pancreatic juice, bile, juice of the small and large intestines in digestion processes. Study of the mechanisms of neuro-humoral regulation of digestion. The role of APUD system components in digestion processes. Physiological basis of hunger and satiety.

Topic 3. The influence of nutrition on the functioning of internal organs and systems. Mechanisms of supporting immune protection of the body by the human gastrointestinal tract

Topic 4. Energy and plastic needs of the physiological functions of the human body. Physiological foundations of the study of the main, working metabolism and processes of human thermoregulation

Topic 5. Physiological characteristics of basic food products. The value of water, products of animal and plant origin.

Content module 2. Physiological value of food nutrients

Topic 6. Physiological features of protein metabolism. Composition of proteins. Replaceable and essential amino acids. Norms of protein consumption for different physiological states of the body. Regulation of protein metabolism.

Topic 7. Physiological features of carbohydrate metabolism. Simple and complex carbohydrates. Peculiarities of their metabolism. Carbohydrate consumption norms for different physiological states of the body. Regulation of carbohydrate metabolism.

Topic 8. Physiological features of fat metabolism. Vegetable and animal fats. Their components. Features of fat metabolism. Norms of fat consumption for different physiological states of the body. Regulation of fat metabolism.

Topic 9. The role of vitamins and minerals in human metabolism. Classification of vitamins. Their components. Physiological importance of vitamins in the metabolism of human substances. Deficit and surplus states. Mineral substances and their physiological role.

Topic 10. Physiological mechanisms of water-salt and acid-alkaline balance. Norms of water consumption in different physiological states. The physiological role of water and salts in the human body. Metabolism of kilit and alkali in the human body. Physiological value of pH balance and its norms.

Topic 11. Toxic food components and protective factors. Toxic components of food. Their types and species. Formation mechanisms. Protective mechanisms of the human body.

Content module 3. Differentiated nutrition of different population groups

Topic 12. Principles of individual balanced nutrition. Assessment of a person's nutritional status. Peculiarities of drawing up food rations under the conditions of public catering. Norms, regimes of public catering.

Topic 13. Peculiarities of food rations of different age, gender and professional population groups. Peculiarities of preparing food rations under different conditions of physical activity and sports. Peculiarities of food rations for people of different ages

Topic 14. Physiological bases of preventive and therapeutic nutrition. Specific effect of products and dishes. Characteristics of dietary products. The use of vegetables and fruits in dietary nutrition.

Topic 15. Final control of practical skills and theoretical knowledge. Protection of individual tasks. Credit class.

4. The structure of the academic discipline

Name of sections and topics	Full-time					
	That's all	Including				
		Lectures	Seminars	practical	laboratory	SR
<i>Content module 1. The influence of food on the morpho-functional state of the human body</i>						
Topic 1. Introduction to the course "Physiological foundations of rational nutrition". Functions of food. Physiological basis of research methods of the human digestive system	6	0	2	0	0	4
Topic 2. Physiological bases of the processes of digestion and assimilation of food. The physiological role of the gustatory and olfactory systems in the process of digestion. The role of the stomach in the physiological processes of digestion. The role of pancreatic juice, bile, juice of the small and large intestines in the processes of digestion. Research of the mechanisms of neuro-humoral regulation of digestion. The role of APUD system components in digestion processes. Physiological basis of hunger and satiety.	14	0	2	0	0	12
Topic 3. The influence of nutrition on the functioning of internal organs and systems. Mechanisms of supporting immune protection of the body by the human gastrointestinal tract.	6	0	2	0	0	4
Topic 4. Energy and plastic needs of the physiological functions of the human body. Physiological foundations of the study of the main, working metabolism and processes of human thermoregulation	6	0	2	0	0	4
Topic 5. Physiological characteristics of basic food products. The value of water, products of animal and plant origin.	4	0	2	0	0	2
Together according to the content module	36	0	10	0	0	26
<i>Content module 2. Physiological value of food nutrients</i>						
Topic 6. Physiological features of protein metabolism	4	0	2	0	0	2
Topic 7. Physiological features of carbohydrate metabolism.	4	0	2	0	0	2
Topic 8. Physiological features of fat metabolism.	4	0	2	0	0	2
Topic 9. The role of vitamins and minerals in human metabolism.	4	0	2	0	0	2
Topic 10. Physiological mechanisms of water-salt and acid-alkaline balance.	4	0	2	0	0	2
Topic 11. Toxic food components and protective factors.	4	0	2	0	0	2
Together according to the content module	24	0	12	0	0	12
<i>Content module 3. Differentiated nutrition of different population groups</i>						

Topic 12.Principles of individual balanced nutrition. Assessment of a person's nutritional status.Peculiarities of drawing up food rations under the conditions of public catering. Norms, regimes of public catering.	8	0	2	0	0	6
Topic 13. Peculiarities of food rations of different age, gender and professional population groups. Peculiarities of preparing food rations under different conditions of physical activity and sports. Peculiarities of food rations for people of different ages.	8	0	2	0	0	6
Topic 14. Physiological bases of preventive and therapeutic nutrition. Specific effect of products and dishes. Characteristics of dietary products. The use of vegetables and fruits in dietary nutrition.	6	0	2	0	0	4
Topic 15. Final control of practical skills and theoretical knowledge. Protection of individual tasks. Credit class.	8	0	2	0	0	6
Together according to the content module	30	0	8	0	0	22
Together for the discipline:	90	0	30	0	0	60

5. Topics of lectures/seminars/practical/laboratory classes

5.1. Topics of lectures

Lecture classes are not provided.

5.2. Topics of seminar classes

№	Topic	How many hours
1.	Topic 1. Introduction to the course "Physiological basis of rational nutrition". Functions of food.	2
2.	Topic 2. Physiological bases of the processes of digestion and assimilation of food.	2
3.	Topic 3.The influence of nutrition on the functioning of internal organs and systems.	2
4.	Topic 4. Energy and plastic needs of the physiological functions of the human body.	2
5.	Topic 5.Physiological characteristics of basic food products. The value of water, products of animal and plant origin.	2
6.	Topic 6. Physiological features of protein metabolism	2
7.	Topic 7. Physiological features of carbohydrate metabolism	2
8.	Topic 8. Physiological features of fat metabolism.	2
9.	Topic 9. The role of vitamins and minerals in human metabolism.	2
10.	Topic 10. Physiological mechanisms of water-salt and acid-alkaline balance.	2
11.	Topic 11. Toxic food components and protective factors.	2
12.	Topic 12. Principles of individual balanced nutrition.	2
13.	Topic 13. Peculiarities of food rations of different age, gender and professional population groups.	2
14.	Topic 14. Physiological bases of preventive and therapeutic nutrition.	2

15.	Topic 15. Final control of practical skills and theoretical knowledge. Protection of individual tasks. Credit class.	2
	Together	30

5.3. Topics of practical classes

Practical training are not provided.

5.4. Topics of laboratory classes

Laboratory classes are not provided.

5. Independent work

№	Name of the topic/types of tasks	How many hours?
Content module 1. The influence of food on the morpho-functional state of the human body		
1.	Topic 1. Preparation for the seminar on topic 1. Physiological basis of research methods of the human digestive system	4
2.	Topic 2. Preparation for the seminar on topic 2. The physiological role of the taste and smell systems in the digestion process. The role of the stomach in the physiological processes of digestion. The role of pancreatic juice, bile, juice of the small and large intestines in digestion processes. Study of the mechanisms of neuro-humoral regulation of digestion. The role of APUD system components in digestion processes. Physiological basis of hunger and satiety.	12
3.	Topic 3. Preparation for the seminar on topic 3. Mechanisms of supporting immune protection of the body by the human gastrointestinal tract.	4
4.	Topic 4. Preparation for lectures and practical classes on topic 4. Physiological foundations of the study of the main, working metabolism and processes of human thermoregulation.	4
5.	Topic 5. Preparation for the seminar on topic 5.	2
Content module 2. Physiological value of food nutrients		
6.	Topic 6. Preparation for the seminar on topic 6.	2
7.	Topic 7. Preparation for the seminar on topic 7.	2
8.	Topic 8. Preparation for the seminar on topic 8.	2
9.	Topic 9. Preparation for the seminar on topic 9.	2
10.	Topic 10. Preparation for the seminar on topic 10.	2
11.	Topic 11. Preparation for the seminar on topic 11.	2
Content module 3. Differentiated nutrition of different population groups		
12.	Topic 12. Preparation for the seminar on topic 12. Evaluation of the nutritional status of a person. Peculiarities of drawing up food rations under the conditions of public catering. Norms, regimes of public catering.	6
13.	Topic 13. Preparation for the seminar on topic 13. Peculiarities of food rations under different conditions of physical activity and sports. Peculiarities of food rations for people of different ages.	6
14.	Topic 14. Preparation for the seminar on topic 14. Specific effect of products and dishes. Characteristics of dietary products. The use of vegetables and fruits in dietary nutrition.	4
15.	Topic 15. Preparation for the final control in the discipline.	6
	Together	60

7. Teaching methods

Seminars:

- verbal methods: conversation, explanation, discussion, discussion of problem situations;
- visual methods: illustration (including multimedia presentations);
- practical methods: case method, business game, partial search method (heuristic), performance of test tasks, solution of situational tasks (including calculation).

Independent work:

- independent work with methodical developments, schemes, tables, recommended basic and additional literature, information resource of the department, preparation for classroom classes;
- independent performance of an individual task, preparation of a presentation to defend an individual task.

8. Forms of control and assessment methods (including criteria for evaluating learning outcomes)

Current control:

- oral control of theoretical knowledge: individual survey on questions of the relevant topic (including questions for independent preparation on the topic);
- control of practical tasks: assessment of the solution of situational tasks (including calculation tasks) on the subject of the lesson;
- written test control: evaluation of the performance of test tasks according to the subject of the lesson.

Final control: balance

Evaluation of the current educational activity at the seminar:

1. Evaluation of oral theoretical knowledge on the subject of the lesson:
 - methods: individual survey on questions of the relevant topic (including questions for independent preparation on the topic), participation of applicants in the discussion of problem situations
 - maximum score – 5, minimum score – 3, unsatisfactory score– 2.
2. Evaluation of written tasks by the subject of the lesson:
 - methods: evaluation of the performance of test tasks according to the relevant topic
 - maximum score – 5, minimum score – 3, unsatisfactory score– 2.
3. Evaluation of practical tasks on the subject of the lesson:
 - methods: evaluating the solution of situational tasks (including calculation tasks) according to the relevant topic
 - maximum score – 5, minimum score – 3, unsatisfactory score– 2.

Current assessment criteria at the seminar session

Rating	Evaluation criteria
Perfectly «5»	The recipient takes an active part in the seminar class; demonstrates deep knowledge, gives complete and detailed answers to questions; takes an active part in discussing problem situations, uses additional educational and methodological and scientific literature; knows how to form his attitude to a certain problem; expresses his own reasoning, gives appropriate examples; knows how to find the most adequate forms of conflict resolution. The test tasks are completed in full, all 100% of the answers to the questions are correct, the answers to the open questions are complete and justified. The student freely solves situational tasks (including calculations), confidently demonstrates practical skills on the topic of the lesson and correctly interprets the data obtained, expresses his own creative opinion on

	the topic of the task, demonstrates creative thinking.
Okay «4»	<p>The applicant participates in a seminar class; knows the material well; demonstrates the necessary knowledge, but gives answers to questions with some errors; participates in the discussion of problem situations, uses basic educational and methodological and scientific literature; expresses his own opinion on the subject of the lesson.</p> <p>The test tasks are completed in full, at least 70% of the answers to the questions are correct, the answers to the open questions are generally correct, but there are some errors in the definitions.</p> <p>The student correctly solves situational tasks (including calculations), but allows minor inaccuracies and demonstrates more standardized practical skills on the subject of the lesson with the correct interpretation of the received data, expresses his own opinion on the topic of the task, demonstrates critical thinking.</p>
Satisfactorily «3»	<p>The recipient sometimes participates in a seminar class; partially speaks and asks questions; makes mistakes when answering questions; shows passive work in seminar classes; shows fragmentary knowledge of the conceptual apparatus and literary sources.</p> <p>The testing was carried out in full, at least 50% of the answers are correct, the answers to the open questions are not logical, with obvious significant errors in the definitions.</p> <p>The applicant does not have sufficient knowledge of the material to solve situational tasks (including calculations), shows unconfidently practical skills on the subject of the lesson and interprets the obtained data with significant errors, does not express his opinion on the topic of the situational task.</p>
Unsatisfactorily «2»	<p>The recipient does not participate in the seminar class, is only an observer; never speaks or asks questions, disinterested in learning the material; gives wrong answers to questions, shows unsatisfactory knowledge of conceptual apparatus and literary sources.</p> <p>Testing not done.</p> <p>Situational task not completed.</p>

Evaluation of an individual task:

1. Assessment of the quality of individual task performance:
 - maximum score – 5, minimum score – 3, unsatisfactory score– 2.
2. Evaluation of the presentation and defense of the individual task, participation of applicants in the evaluation of the individual assignment of other applicants and its critical analysis:
 - maximum score – 5, minimum score – 3, unsatisfactory score– 2.

The grade for one seminar session is the arithmetic average of all components and can only have a whole value (5, 4, 3, 2), which is rounded according to the statistical method.

Evaluation criteria of an individual task

Rating	Evaluation criteria
Perfectly «5»	The individual task and presentation were completed independently and originally, the design meets the requirements and was developed according to the proposed structure; the analysis is thorough and independent, the acquirer freely presents the material; the content of the presentation is not overloaded with slides with text material; the applicant formulates independent sound judgments supported by factual evidence and calculations, the information on the slides is presented mainly schematically using self-developed schemes, drawings, graphs, contains references to

	sources that are appropriately designed and are relevant. The winner takes an active part in evaluating the presentation of the individual task of other winners and is able to critically analyze it.
Okay «4»	The individual task and presentation were completed independently, the design meets the requirements and was developed according to the proposed structure with minor violations; the analysis is independent, but contains minor inaccuracies; the applicant explains the material well, formulates independent conclusions; the information in the presentation is presented mainly with the use of self-developed schemes, drawings, graphs, contains links to sources that are appropriately designed and are relevant. The applicant participates in the assessment of the presentation of the individual task of other applicants, but is not fully capable of critically analyzing it.
Satisfactorily «3»	The individual task and presentation were completed independently, the design meets the requirements with minor violations and is partially developed according to the proposed structure; the analysis is only theoretical, descriptive and contains inaccuracies; the acquirer explains the material uncertainly, formulates only general conclusions (or cannot formulate them at all), the information in the presentation is provided with references to sources, but they are formatted with errors. The winner takes a passive part in evaluating the presentation of the individual task of other winners, he is not able to critically analyze it.
Unsatisfactorily «2»	The individual task has not been completed. Individual tasks and presentations that were not completed independently or borrowed from the Internet are not counted.

Evaluation of independent work of applicants:

The independent work of the students is evaluated during the current control of the topic in the corresponding lesson. Mastery of topics that are presented only for independent work is checked during classroom classes and during final control.

Types and forms of independent work at the department	Forms of control and reporting
<i>Preparation for current classroom classes</i>	
Study of mandatory and additional literature, lecture texts, etc	Active participation in various classroom activities
Doing homework	Checking the correctness of tasks
Preparation for practical classes	Active participation in practical classes
<i>Practical training</i>	
Performing situational tasks, working out practical skills	Checking the correctness of tasks
<i>Scientific research work</i>	
Participation in scientific conferences and seminars	Approbation of the results of scientific research at scientific conferences
Preparation of scientific publications	Discussion with the teacher of the prepared materials, submitting the results of scientific research for publication
Performance of tasks within the department's research projects	Using the results of scientific research in the report on the GDR, preparing the work for the competition of scientific works

Test awarded to a student who completed all the tasks of the work program of the

academic discipline, took an active part in seminar classes, completed an individual assignment and has an average current grade of at least 3.0 and has no academic debt: the grade "passed" is awarded to a student of higher education who completed curriculum of the discipline, has no academic debt; the level of competence is high (creative); the grade "failed" is given to a student of higher education who has not completed the curriculum of the discipline, has academic debt (average grade below 3.0 and/or missed classes); the level of competence is low (receptive-productive).

Assessment is carried out: at the last lesson before the beginning of the examination session - with the tape system of learning, at the last lesson - with the cyclical system of learning. The credit score is the arithmetic mean of all components according to the traditional four-point scale and has a value that is rounded according to the statistics method with two decimal places after the decimal point.

9. Distribution of points received by higher education applicants

The obtained average score for the academic discipline for applicants who have successfully mastered the work program of the academic discipline is converted from a traditional four-point scale to points on a 200-point scale, as shown in the table:

Conversion table of a traditional assessment into a multi-point scale

Traditional four-point scale	Multipoint 200-point scale
Excellent ("5")	185 – 200
OK («4»)	151 – 184
Satisfactory ("3")	120 – 150
Unsatisfactory ("2")	Below 120

A multi-point scale (200-point scale) characterizes the actual success of each applicant in learning the educational component. The conversion of the traditional grade (average score for the academic discipline) into a 200-point grade is performed by the information and technical department of the University.

According to the obtained points on a 200-point scale, the achievements of the applicants are evaluated according to the ECTS rating scale. Further ranking according to the ECTS rating scale allows you to evaluate the achievements of students from the educational component who are studying in the same course of the same specialty, according to the points they received.

The ECTS scale is a relative-comparative rating, which establishes the applicant's belonging to the group of better or worse among the reference group of fellow students (faculty, specialty). An "A" grade on the ECTS scale cannot be equal to an "excellent" grade, a "B" grade to a "good" grade, etc. When converting from a multi-point scale, the limits of grades "A", "B", "C", "D", "E" according to the ECTS scale do not coincide with the limits of grades "5", "4", "3" according to the traditional scale. Acquirers who have received grades of "FX" and "F" ("2") are not included in the list of ranked acquirers. The grade "FX" is awarded to students who have obtained the minimum number of points for the current learning activity, but who have not passed the final examination. A grade of "F" is assigned to students who have attended all classes in the discipline, but have not achieved a grade point average (3.00) for the current academic activity and are not admitted to the final examination.

Applicants who study in one course (one specialty), based on the number of points scored in the discipline, are ranked on the ECTS scale as follows:

Conversion of the traditional grade from the discipline and the sum of points on the ECTS scale

Evaluation on the ECTS scale	Statistical indicator
A	Top 10% achievers

IN	The next 25% of earners
S	The next 30% of earners
D	The next 25% of earners
Well	The next 10% of earners

10. Methodical support

- Working program of the academic discipline
- Syllabus of the academic discipline
- Educational and methodical literature
- Multimedia presentations
- Situational tasks
- Methodical development of seminars
- Methodological developments of the SRS
- The electronic bank of test tasks by subdivisions of the discipline on the information website of the department - <https://app.odmu.edu.ua/chair/program/#/13/files/219>

11. Questions for preparing for the final control

1. Functions of food. Energy and plastic needs of the physiological functions of the human body.
2. Physiological characteristics of basic food products.
3. Importance of water, products of animal and vegetable origin in human nutrition.
4. Basic methods of research of the human digestive system.
5. Physiological characteristics of the digestion process.
6. Physiological types and types of digestion.
7. Physiology of digestion in the oral cavity.
8. The physiological role of the taste and smell systems in the digestion process
9. Composition of saliva, mechanisms of salivation, chewing and swallowing reflexes.
10. The physiological role of the stomach in digestion processes.
11. Physiological characteristics of gastric juice.
12. Physiological mechanisms of HCl secretion and its functions.
13. Phases and mechanisms of gastric secretion.
14. Neuro-humoral stimulation and inhibition of gastric secretion.
15. Types and mechanisms of gastric motility and its regulation.
16. Composition, functions of pancreatic juice.
17. Physiological mechanisms and regulation of pancreatic juice secretion.
18. Composition and functions of bile.
19. Neuro-humoral mechanisms and regulation of bile secretion.
20. Composition and functions of intestinal juice.
21. Neuro-humoral mechanisms and regulation of intestinal juice secretion.
22. The role of APUD system components in digestion processes.
23. Physiological mechanisms of supporting immune protection of the body by the human gastrointestinal tract. The role of microflora.
24. Characteristics of the motor function of the intestines.
25. Methods of studying gastrointestinal motility.
26. Mechanisms of absorption of nutrients in different departments of the gastrointestinal tract.
27. Physiological mechanisms of hunger and satiety.
28. Characteristics and methods of studying energy exchange.
29. Characteristics of the main exchange and methods of its assessment.
30. Labor exchange and methods of its assessment.
31. Respiratory rate. Its physiological significance.
32. Physiological features of protein metabolism
33. Physiological features of carbohydrate metabolism

34. Physiological features of fat metabolism
35. The role of vitamins in human metabolism.
36. The role of minerals in human metabolism.
37. Physiological mechanisms of water-salt balance.
38. Physiological mechanisms of acid-alkaline balance.
39. Toxic food components and protective factors.
40. Principles of individual balanced nutrition.
41. Methods of assessing the nutritional status of a person.
42. Modes of human nutrition and their physiological significance.
43. Peculiarities of drawing up food rations under the conditions of public catering. Norms, regimes of public catering.
44. Peculiarities of food rations for people of different ages.
45. Peculiarities of food rations in people of different sexes.
46. Peculiarities of food rations for people of different professional groups.
47. Peculiarities of preparing food rations under different conditions of physical activity and sports.
48. Physiological bases of preventive and therapeutic nutrition.
49. Specific action of products and dishes. Characteristics of dietary products.
50. Physiological significance of the use of vegetables and fruits in dietary nutrition.

List of practical skills, the acquisition of which is controlled during the final control

1. Evaluate the results of the taste analyzer study.
2. Evaluate the results of the olfactory analyzer study.
3. Interpret the results of the study of gastric juice.
4. Interpret the results of a study of a person's enzymatic status.
5. Assess the nutritional status of a person.
6. Calculate the level of basic metabolism in a person according to tables and nomograms.
7. Assess the level of the respiratory coefficient and interpret its value.
8. Make individual food rations of a healthy person.
9. Make individual food rations for people of different ages.
10. Make individual food rations for people of different sexes.
11. Make individual food rations for people of different professional groups.
12. Make individual food rations for the prevention of various diseases.

List of individual tasks:

1. Physiological characteristics of the main food products and their role in maintaining homeostasis (the importance of water, dietary salt, products of animal and plant origin).
2. Basic and working exchange, methods of its assessment and meaning. Nutritional status of a person.
3. Physiological mechanisms of hunger and satiety, their regulation.
4. Physiological influence of circadian rhythms on the processes of digestion and nutrition.
5. Physiological role of microbiota in the processes of digestion and nutrition.
6. Physiological role of proteins and peculiarities of their metabolism.
7. Physiological role of carbohydrates and features of their metabolism.
8. Physiological role of fats and peculiarities of their metabolism.
9. The physiological role of vitamins in human metabolism.
10. The role of minerals in human metabolism.
11. Physiological mechanisms of water-salt balance.
12. Physiological mechanisms of acid-alkaline balance.
13. Principles of individual balanced rational nutrition of a healthy person.

14. Peculiarities of food rations in healthy people of different ages, sexes, and professional groups.
15. Physiological basis of preventive nutrition. Characteristics of dietary products, their specific effect. Physiological significance of the use of vegetables and fruits in dietary nutrition.
16. Peculiarities of digestion and nutrition processes in different climatic conditions.
17. Physiological features of nutrition for the purpose of reducing human body weight. Are unloading days always useful?
18. Physiological features of nutrition for the purpose of increasing human body weight.
19. Features of rational nutrition of children of preschool and school age.
20. Dangerous influence on human physiological functions of food products that are falsely considered useful (low-fat, sugar-free, breakfast cereals, industrial yogurts, etc.)
21. Physiological features of nutrition during various types of physical exertion and sports training.
22. Physiological features of rational nutrition during pregnancy.
23. The effect of toxic food components on the physiological state of the human body (extra products, food additives, poisonous, beyond the expiration date).
24. Peculiarities of nutrition during travel and migration.
25. Peculiarities of sailors' diet.
26. Peculiarities of nutrition under the conditions of the night mode of operation.
27. Advantages and disadvantages of popular dietary rations.
28. Improper combinations of food products.
29. Types and physiological role of food biologically active additives.

12. Recommended Books

Basic

1. Costanzo L. S. Physiology / L. S. Costanzo. - Elsevier Health Sciences. - 7th ed., 2021. - 528 p.
2. Ganong's Review of Medical Physiology / K. E. Barrett, S. M. Barman, H. L. Brooks., J. Yuan, - McGraw Hill Medical. – 26th edition, 2019. –752 p.
3. Guyton A. Textbook of Medical Physiology / A. Guyton, J. E. Hall. - Elsevier. - 14th Edition, 2021. – 1820 p.

Additional

1. Koeppen B. M. Berne and Levy Physiology / B. M. Koeppen, B. A. Stanton. - Elsevier Health Sciences. - 8th edition, 2023. - 864 p.
2. Sembulingam K. Essentials of Medical Physiology / K. Sembulingam, P. Sembulingam. – Jaypee Brothers Medical Publishers. – 9th ed., 2022. –1022 p.

13. Electronic information resources

1. The official site of the Department of Physiology and Biophysics of ONMedU <https://app.odmu.edu.ua/chair/program/#/13/files>

2. The testing center is a database of "Step-1" license test tasks <https://www.testcentr.org.ua/uk/>
3. National Scientific Medical Library of Ukraine <http://library.gov.ua/>
4. National Library of Ukraine named after V.I. Vernadskyi <http://www.nbu.gov.ua/>
5. Ministry of Health of Ukraine: official website. URL: <https://moz.gov.ua/>.
6. National Health Service of Ukraine: official website. URL: <https://nszu.gov.ua/pro-nszu>
7. National Academy of Medical Sciences of Ukraine. URL: www.amnu.gov.ua.
8. Official web portal of the Verkhovna Rada (legislation on higher medical education) <http://zakon4.rada.gov.ua/laws>
9. World Health Organization - www.who.int
10. European Regional Office of the World Health Organization. URL: www.euro.who.int
11. Branch classifier "Directory of medical procedures (services) and surgical operations". URL: <http://www.garvis.com.ua/dovidnyk/nsi/help/ru.html>.
12. Department of Management and Quality Control of Medical Services of the Ministry of Health of Ukraine: official website. URL: <https://moz.gov.ua/en/struktura>.
13. European base "Health for all". URL: <http://medstat.gov.ua/ukr/statreports.html>.
14. Medical information system: the official website of the Med-expert company. URL: <http://medexpert.ua/ua/medichnij-zaklad/31-medichnij-zaklad/pro-rynku-v-iznoho-medychnoho-turyzmu-v-ukraini>
15. Ukrainian medical journal: medical journal. URL: www.umj.com.ua.
16. Medical world: professional newspaper. URL: www.medsvit.org.
17. Ukrainian Medical Council. URL: <http://www.medicalcouncilukraine.org>.
18. Global Health Expenditure Database. URL: <https://apps.who.int/nha/database/ViewData/Indicators/en>
19. Health Strategy. European Commission: official web-site. URL: <https://ec.europa.eu/health/policies/background/review/strategy>.
20. Global health security Index. URL: <https://www.ghsindex.org/about/>