

*Federal State Autonomous Educational Institution of Higher Education "Peoples'
Friendship University of Russia"*

Medical Institute

Recommended by ISSC

THE WORKING PROGRAM OF THE DISCIPLINE

Name of the discipline

Normal physiology - physiology of the maxillofacial area

Recommended for the direction of training / specialty

05.31.03 Dentistry

(the code and name of the direction of training / specialty are indicated)

Focus of the program (profile)

Dentistry

1. Goals and objectives of the discipline.

The discipline " Normal physiology - physiology of the maxillofacial area " is aimed at obtaining basic knowledge about the functioning of the human body .

The purpose of studying the discipline " Normal physiology - physiology of the maxillofacial area" is the acquisition of knowledge by the student about the development of structures and functions of various body systems based on modern achievements of physiological science, necessary for the formation of a natural scientific worldview and practical activities of a dentist.

The objectives of the discipline are:

1. The formation of students' professional and general cultural competence in matters of the structural and functional organization of the human body and its individual systems, the functioning of the organs of the maxillofacial region in interaction with other systems of the body.
2. Teaching the most important methods of analyzing physiological mechanisms and the work of functional systems that maintain the homeostasis of the human body.
3. Acquisition of knowledge about the physiological foundations of clinical and physiological methods for studying body functions.

2. Place of discipline in the structure of EP VO:

The discipline " Normal physiology - physiology of the maxillofacial area" refers to the basic component of block 1 of the curriculum .

Table 1 shows the previous and subsequent disciplines aimed at the formation of discipline competencies in accordance with the competence matrix of EP HE.

Table No. 1

Prior and subsequent disciplines aimed at the formation of competencies

No. p / p	Code and name of competence	Preceding disciplines	Parallel disciplines	Subsequent disciplines
General professional competencies				
	OPK-9. Able to appreciate the morphological and functional states and pathological processes in the human body to solve professional problems	Human Anatomy - Head and Neck Anatomy	Biological chemistry - Biochemistry of the oral cavity, Human Anatomy - Head and Neck Anatomy, Histology, embryology, cytology - Histology of the oral cavity Microbiology, Virology - Oral Microbiology	Pathological anatomy, pathological anatomy of the head and neck Pathophysiology - Pathophysiology of the Head and Neck Forensic Medicine Topographic anatomy and operative surgery of the head and neck

3. Requirements for the results of mastering the discipline:

The process of studying the discipline " Normal physiology - physiology of the maxillofacial area" is aimed at the formation of the following competencies:

table 2

Formed competencies

Competencies	Competency name	Competence achievement indicators
OPK - 9	OPK-9. Able to assess morphological and functional states and pathological processes in the human body to solve professional problems	<p>OPK-9.1 Uses the algorithm of clinical, laboratory and functional diagnostics are addressing the professional problems.</p> <p>OPK 9.2 Evaluates the results of clinical, laboratory and functional diagnostics are addressing the professional problems.</p> <p>OPK 9.3 Determines morphological and functional status, physiological conditions and pathological processes in the human body.</p>

4. Scope of discipline and types of educational work

The total complexity of discipline is 5 credits.

Type of educational work for full-time education	Total hours	Semesters / module			
		2	3		
Classroom lessons (total)	122	54	68		
Including:					
<i>Lectures</i>	35	18	17		
<i>Practical lessons</i>	-	-	-		
<i>Seminars</i>	-	-	-		
<i>Laboratory work</i>	87	36	51		
Independent work (total)	58	18	40		
Including:					
Total labor intensity hours	180	72	108		
Credits	5	2	3		

5. Content of the discipline

5.1. Contents of discipline sections

P / p No.	The name of the discipline section	Section content (topics)
1.	Physiology of excitable tissues	General physiology and physiology of the cell. Cell membranes, transport of substances across the cell membrane. Excitability and its parameters. Membrane potential. Action potential. Physiology of the synapse. Physiology of the nerve fiber, nerve. Physiology of muscle contraction.
2.	Physiology of the central nervous system. Physiology of higher nervous activity	Reflex and its characteristics. Inhibition in the central nervous system. Basic properties of nerve centers. Private physiology of the central nervous system. Sympathetic, parasympathetic, metasymphathetic NS. The role of the ANS in the development of adaptive responses. Physiology of VND. Conditioned reflex. Dynamic stereotype. Memory. Sleep.
3.	Physiology of sensory systems	General physiology of analyzers. Skin analyzer. Physiology of vision. Physiology of hearing and vestibular apparatus. Physiology of taste and smell.
4.	Physiology of blood	Function and composition of blood. Corpuscular elements of blood. Blood groups. Buffer systems of blood. The system of regulation of the aggregate state of blood .
4.	Digestive physiology	Digestive tract functions. Motor functions of the digestive tract. Secretory function and digestion in the oral cavity. Secretory function and digestion in the stomach, small and large intestines. The role of the liver in digestion. Absorption of nutrients in the gastrointestinal tract.
6.	Excretion, renal physiology	Excretory system. Urine formation in the kidneys. The kidneys as an organ of homeostasis. Non-urinary functions of the kidneys. The role of the kidneys in the development of adaptive reactions of the body. Bladder and urination. Methods for studying renal function.

7.	Physiology of the cardiovascular system	Physiology of the cardiovascular system. Cardiac cycle. Spread of excitement in the heart. Conductive system of the heart. Properties of the heart muscle. Nervous and humoral regulation of the heart. Physiology of blood vessels. Basic laws of hemodynamics. Microcirculation and lymph flow. Methods for the study of blood circulation.
8.	Respiratory physiology	Respiration physiology. External respiration. Pulmonary volumes and capacities. Respiration regulation. Carriage of gases by blood.
9.	Physiology of the endocrine glands	Endocrine regulation of physiological functions . General properties of hormones, the hierarchy in the activity of WBC. Physiology of the endocrine glands .
10.	Metabolism and energy. Thermoregulation	Human metabolism. Energy exchange. Determination of metabolic rate. Basal metabolism, daily energy consumption. Metabolism of proteins, fats and carbohydrates. Regulation of metabolism. Physiological foundations of nutrition. Basic principles of the preparation of food rations. Thermoregulation and thermoreception .
11.	Physiology of the maxillofacial region	The composition and properties of saliva. Physiological significance of oral and gingival fluid. The structure and functions of the organs of the maxillofacial region. Sensory system of the maxillofacial area.

5.2. Sections of disciplines and types of classes

P / p No.	The name of the discipline section	Lectures	Lab. work	CPC	Total hour.
1.	Physiology of excitable tissues	4	9	4	17
2.	Physiology of the central nervous system. Physiology of higher nervous activity	8	11	8	27
3.	Physiology of sensory systems	4	10	3	17
4.	Physiology of blood	2	6	3	11
4.	Digestive physiology	2	8	6	16
6.	Excretion, renal physiology	2	8	6	16
7.	Physiology of the cardiovascular system	2	9	7	19

8.	Respiratory physiology	2	8	6	16
9.	Endocrine regulation of physiological functions	2	4	6	12
10.	Metabolism and energy. Thermoregulation	4	14	7	25
11.	Physiology of the maxillofacial region	3		2	5

6. Laboratory workshop

P / p No.	The name of the discipline section	Name of laboratory work	Labor intensity (hour.)
1.	Physiology of excitable tissues	Dynamometry. Study of the maximum voluntary strength and strength endurance of muscles. "The influence of various types of rest on the effectiveness of recovery of muscle performance." Analysis and solution of problems on the topic of classes.	9
2.	Physiology of the central nervous system . Physiology of higher nervous activity	"Research of human unconditioned reflexes". "Electroencephalography". " Study of cerebellar control of skeletal muscle motor activity." "An approximate assessment of the vegetative tone of a person by the method of questionnaires." "Assessment of vegetative tone according to the Kerdo index ." "Study of switching attention" "Dependence of the amount of memory on the degree of meaningfulness of the material." "Determination of the psychological characteristics of a person using the EPI personality questionnaire (G. Eysenck's method)." Analysis and solution of problems on the topic of classes.	11
3.	Physiology of sensory systems	"Study of tactile sensitivity (esthesiometry)". "Determination of visual acuity", "Determination of the visual field (perimetry)" , "Comparison of air and bone conduction (Rinne test)". "Determination of the thresholds of gustatory sensitivity." "Determination of the role of smell in the emergence of taste sensations"	10

4.	Physiology of blood	" Determination of blood group and Rh factor ." " Determination of bleeding time ." "Determination of clotting time".	6
4.	Digestive physiology	"Digestion of starch by enzymes of human saliva" , "Determination of the active reaction of saliva (pH) using a universal indicator paper" , "Study of the enzymatic properties of gastric juice". "Effect of bile on fats"	8
6.	Excretion, renal physiology	"Study of some components of urine using diagnostic strips." Solving problems on the topic of the lesson. Analysis of the RAAS scheme.	8
7.	Physiology of the cardiovascular system	"Registration of an electrocardiogram. Interpretation of a normal electrocardiogram. " "Assessment of the parameters of the cardiovascular system at rest and during exercise"	9
8.	Respiratory physiology	"Spirometry". "Conducting hypoxemic tests of Stange and Genchi "	8
9.	Endocrine regulation of physiological functions	"Determination of the concentration of glucose in human blood", "Construction of the glycemc curve during the glucose tolerance test"	4
10.	Metabolism and energy. Thermoregulation	"Calculation of basal metabolic rate and daily energy expenditure." "Assessment of the state of human metabolism by analyzing body weight (calculations of body mass index and ideal body weight)." "Assessment of the distribution of body fat in a person according to the waist / hip index." "Evaluation of human body fat mass by caliperometry ". "Formulation and evaluation of food rations." "Study of temperature sensitivity (thermoesthesiometry)"	14

7. Practical lessons (seminars) are *not provided*

8. Material and technical support of the discipline:

For classes, group and individual consultations, monitoring and intermediate certification, classrooms 114, 116 and 126 and a lecture hall are used, located at the address: Moscow, st. Miklukho-Maclay, 8.

Technical support: complex for laboratory work (BIOZHEZL), universal stand, a set of tables, universal indicator paper (pH), test strips for determining urine components, neurological hammer, set of tuning forks, carpal dynamometer, multimedia installation, Colyclons Anti-A Anti-B and anti-AB for determining blood groups according to the ABO system, colyclons Anti-

D for determining the Rh factor according to the Cde system, electrocardiographs EK1T-O7 and Axion, sphygmomanometer, phonendoscope, air spirometer, stopwatch, Forster perimeter, Sivtsev tables, portable glucometer, electroencephalograph.

Classroom equipment: a set of specialized furniture, chalk board; a projection screen, a multimedia projector, computers with software that allows you to show slides, and conduct a milestone and final survey and multimedia projectors.

Audiovisual teaching aids: educational films.

Educational computer programs used in practical classes: program for testing " Mytest ".

Visual aids: tables on the topics studied (more than 50 pieces).

9. Information support of the discipline

a) software :

Volume Licensing Program (Microsoft Subscription) Enrollment for Education Solutions (EES) No. 56278518 dated 04/23/2019 (renewed annually, the program is assigned a new number).

b) databases, information and reference and search systems:

1. EBS of RUDN University and third-party EBS to which students have access on the basis of concluded agreements:

- Electronic library system RUDN - EBS RUDN <http://lib.rudn.ru/MegaPro/Web>

- EBS "University Library Online"

<http://www.biblioclub.ru>

- EBS Yurayt <http://www.biblio-online.ru>

- EBS "Student Consultant" www.studentlibrary.ru

- EBS "Doe" <http://e.lanbook.com/>

- TUIS: <http://esystem.pfur.ru/course/view.php?id=46>

2. Database of medical and biological publications:

- **NCBI:** <https://p.360pubmed.com/pubmed/>

- **RUDN University Bulletin:** access mode from the RUDN University territory and remotely <http://journals.rudn.ru/>

- **Library Elibrary.ru:** access on IP-addresses of People's Friendship University of address: <http://www.elibrary.ru/defaultx.asp>

- **ScienceDirect (ESD), " FreedomCollection ", "Cell Press" ID "Elsevier".** There is remote access to the database, access by IP-addresses of RUDN University (or remotely by individual login and password).

- **Google Academy (eng. Google Scholar) -** a free search engine for full texts of scientific publications of all formats and disciplines. Indexes full texts of scientific publications. Access mode: <https://scholar.google.ru/>

- **Scopus -** scientometric database of the publishing house " Elsevier ". There is remote access to the database.

Access by IP-addresses of RUDN University and remotely by login and password (Grant of the Ministry of Education and Science). Access mode: <http://www.scopus.com/>

- **Web of Science .** There is remote access to the database. Access to the platform is carried out by IP-addresses of the RUDN University or remotely. Remote access to WOS is activated without administrator intervention after registering on the platform from RUDN University <http://login.webofknowledge.com/>

10. Educational and methodological support of the discipline:

a) main literature

1. Fundamentals of human physiology : textbook. In 2 volumes. T. 1 / N.A. Aghajanyan, I. G. Vlasova, N.V. Ermakova [and others]; Ed. IN AND. Torshina. - 5 th ed. Rev . and add. ; Electronic text data. - M.: Publishing house of RUDN University, 2017 .-- 524 p. : ill. - ISBN 978-5-209-06817-4. - ISBN 978-5-209-06816-7: 138.36. http://lib.rudn.ru/MegaPro/UserEntry?Action=Rudn_FindDoc&id=460159&idb=0,
2. Fundamentals of human physiology : textbook. In 2 volumes. Vol. 2 / N.A. Aghajanyan, I. G. Vlasova, N.V. Ermakova [and others]; Ed. IN AND. Torshina. - 5 th ed. Rev . and add. ; Electronic text data. - M.: Publishing house of RUDN, 2017 .-- 456 p. : ill. - ISBN 978-5-209-06817-4. - ISBN 978-5-209-07434-2: 138.36. http://lib.rudn.ru/MegaPro/UserEntry?Action=Rudn_FindDoc&id=460012&idb=0

b) additional literature

1. Collection of control tasks in physiology for testing and independent work of a student: a textbook for practical exercises and independent work of students / V.I. Torshin, N.V. Ermakova, Z. V. Bakaeva, O. V. Mankaev ; Under total. ed. V.I. Torshina , N.V. Ermakova . - Electronic text data. - M.: Publishing house of RUDN University, 2017 .-- 533 p. - ISBN 978-5-209-08013-8 : 450.00. http://lib.rudn.ru/MegaPro/UserEntry?Action=Rudn_FindDoc&id=461714&idb=0
2. Brin V.B. Human physiology in diagrams and tables: textbook / V.B. Brin. - SPb . : Publishing house "Lan", 2017. - 608 p. - (Textbooks for universities. Special literature). - ISBN 978-5-8114-2054-4 http://lib.rudn.ru/MegaPro/UserEntry?Action=Rudn_FindDoc&id=465025&idb=0

11. Methodical instructions for students on mastering the discipline (module)

Each laboratory session includes:

- topic and questions for study;
- a specific list of skills and abilities that a student must master;
- control questions and tasks that allow you to determine the success of the assimilation of the studied material;
- questions for self-examination and tasks for independent work on topics are presented in the methodological developments for each section and posted on the TUIS platform: <http://esystem.pfur.ru/>

Detailed information, including theoretical material, a glossary and a list of recommended literature for students wishing to get acquainted with the topic under study in more detail, can be found on the TUIS platform: <http://esystem.pfur.ru> .

At the beginning of each laboratory lesson, it is planned to conduct a test control of the student's theoretical preparedness on the topic of the lesson.

At the end of each laboratory lesson, a student's Workbook is filled in, the file from which is available for download on the TUIS platform.

The passage section s completed a landmark knowledge control in the form of test control and delivery of completed reports of laboratory works on the subjects covered . In the process of midterm control, the student must show his knowledge and skills on the topic covered.

Examples of test items for preparation for classes, colloquia and exam are posted on the TUIS platform in the corresponding section of the discipline .

In the process of mastering the discipline within the framework of independent work, the student works with literature in the RUDN University library and uses the resources of the information and communication network "Internet".

Features of the implementation of discipline for people with disabilities and people with disabilities.

Training in the discipline of disabled people and persons with disabilities (hereinafter HIA) is carried out by the teacher, taking into account the characteristics of psychophysical development, individual capabilities and health status of such students.

For students with musculoskeletal disorders and hearing disabilities, lectures will be accompanied by multimedia and handouts.

For students with visual disabilities, the use of technical means for enhancing residual vision is provided, as well as the possibility of developing audio materials.

In this discipline, training of disabled people and persons with disabilities can be carried out both in the classroom and remotely using the capabilities of the electronic educational environment (TUIS) and e-mail.

In the course of classroom training, various means of interactive learning are used, including group discussions, brainstorming, business games, project work in small groups, which makes it possible to include all participants in the educational process in active work on mastering the discipline. Such teaching methods are aimed at joint work, discussion, group decision-making, contribute to group cohesion and provide opportunities for communication not only with the teacher, but also with other students, cooperation in the process of cognitive activity.

Training of disabled people and persons with disabilities can be carried out according to an approved individual schedule, taking into account the characteristics of their psychophysical development and health status, which implies the individualization of the content, methods, pace of the student's learning activity, the ability to follow the specific actions of the student when solving specific problems, making the need, the required adjustments in the training process.

It provides for individual consultations (including counseling via e-mail), the provision of additional educational and methodological materials (depending on the diagnosis).

Methodological materials for the organization and conduct of laboratory work

Laboratory work as a type of training is carried out in specially equipped educational laboratories (classrooms). Duration - at least two academic hours. The necessary structural elements of laboratory work, in addition to the independent activities of students, are instructing conducted by the teacher, as well as the organization of discussion of the results of the laboratory work.

The performance of laboratory work is preceded by a test of the students' knowledge (their theoretical readiness to complete the task).

Laboratory work can be of a reproductive, part-search and exploratory nature.

Works that are of a reproductive nature are distinguished by the fact that when they are carried out, students use detailed instructions, which indicate: the purpose of the work, explanations (theory, main characteristics), equipment, materials and their characteristics, the procedure for performing the work, tables, conclusions (without wording), control questions, educational and special literature.

Works that are partially exploratory in nature are characterized by the fact that when they are carried out, students do not use detailed instructions, they are not given a detailed algorithm for performing the necessary actions, and require students to independently choose ways to perform work in the instructive and reference literature.

When performing work of a search nature, students must solve a new task (problem), relying on their theoretical knowledge.

When planning laboratory work, the developer finds the optimal ratio of reproductive, partial prospecting and prospecting work in order to ensure a high level of intellectual activity.

Forms of organization of students during laboratory work: frontal, team and individual.

With the frontal form of organizing classes, all students perform the same work at the same time.

In the case of a team-based organization of classes, the same work is performed by teams of 2-5 people.

With an individual form of organization of classes, each student performs his own individual task.

To increase the efficiency of laboratory work, the following are carried out:

- preparation of collections of tasks, tasks and exercises;
- development of control and diagnostic materials (funds of appraisal funds);
- combination of individual and group forms of work.

Grades for laboratory work, the results of which are entered into the student's workbook, are taken into account as part of the current control of the student's knowledge, which is carried out at the expense of the time allotted by the work curriculum for the study of the academic discipline).

12. Fund of assessment tools for intermediate certification of students in the discipline (module):

Materials for assessing the level of mastering the educational material of the discipline "Normal physiology - physiology of the maxillofacial area" (assessment materials), including a list of competencies indicating the stages of their formation, description of indicators and criteria for assessing competencies at various stages of their formation, description of the assessment scales, standard test assignments or other materials necessary to assess knowledge, skills and (or) experience, characterizing the stages of competencies formation of in process of mastering the educational program, methodological materials that determine the procedures for assessing knowledge, skills and (or) experience, characterizing the stages of competencies formation, are developed in full and are available for students on the discipline page in TUIS RUDN

The program has been drawn up in accordance with the requirements of the OS of VO RUDN .

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