

**Academic programme  
component**

**31.05.01 General Medicine  
programme**

**B1.0.21  
discipline code**

## **SYLLABUS**

**Discipline**      **Normal Physiology**

---

Author(s):  
Poludnyakova L.V.

Associate Professor

Advance Doctor in Biological Sciences,  
Docent

Approved at the meeting of the  
Clinical Medicine Department

Record no. 7 dated 12.03.2024

Head of the Department  
Krivenko O.G.

\_\_\_\_\_  
signature

**Murmansk  
2024**

## Clarification

Discipline volume: 8 credit points

- 1. Discipline (module) training results** correlated with the indicators of competencies achievement determined by the educational programme

Competency	Indicators of competency achievement	Discipline (module) training results
<p><b>ОПК-5</b> Can analyse morpho-functional and physiological indicators as well as pathological processes in human body to achieve professional goals</p>	<p>ИД - 4 - ОПК-5. Determines and analyzes morphological, functional, physiological states and pathological processes of the human body based on knowledge about body systems, their functions, regulation of activity</p>	<p><b>To know:</b></p> <ul style="list-style-type: none"> <li>- moral and ethical standards, rules, and principles for organizing scientific research on humans and experimental animals;</li> <li>- basic patterns of development and vital activity of the body based on the structural organization of cells, tissues, and organs;</li> <li>- anatomical-physiological, age-sex and individual structural features and the development of a healthy and sick organism;</li> <li>- functional systems of the human body, their regulation, and self-regulation when interacting with the external environment in normal and pathological conditions;</li> <li>- basic physiological constants of the human body and their changes during pathological processes.</li> </ul> <p><b>To be able to:</b></p> <ul style="list-style-type: none"> <li>- make calculations based on research results, statistical processing of experimental data;</li> <li>- interpret the results of the most common functional diagnostic methods used to identify pathologies of the blood, heart and blood vessels, lungs, kidneys, liver and other organs;</li> <li>- evaluate the results of electrocardiography, spirometry, thermometry, and hematological parameters.</li> </ul> <p><b>To have:</b></p> <ul style="list-style-type: none"> <li>- skills of an integrated approach to assessing the functions of body systems in normal conditions and in pathology;</li> <li>- skills in using medical instruments (phonendoscope, neurological hammer, tonometer, electrocardiograph, etc.).</li> </ul>

## **2. Discipline (module) contents**

### **Unit 1. Physiology of Excitable Tissues.**

#### **Topic 1 “Subject, Research Methods and the Definition of Physiology. Properties of Life”**

The subject of Physiology and the physiological disciplines. Stages of the physiology development. The relation of Physiology to other sciences. The importance of the Normal Physiology discipline for medicine. Physiological research methods. The equipment used in the physiological experiment. Excitability measurement. Indicators of excitability. The all-or-none law. Membrane potential: definition, meaning, theory of its origin. Action potential (AP): definition, phases and origin, meaning. The critical level of depolarization. Excitability. Definition. The ratio of the phases of excitability to the phases of the action potential.

#### **Topic 2 “Properties of Peripheral Nerves and Myoneural Synapses”**

A, B, C type nerve fibres: characteristics of their excitability and lability. Excitation propagation of along myelinated and unmyelinated fibres. The laws of conducting excitation along nerve fibres and nerve trunks. Parabiosis according to Nikolai Vvedensky. Physiology of synapses. Structural features and classification. Mechanisms of signal transmission in chemical and electrical synapses. Functional properties of synapses. Features of the neuromuscular junction. Mediators, their synthesis, secretion, interaction with receptors.

#### **Topic 3 “Physiology of Muscles”**

The structure of the muscles. The concept of a motor unit. Physiological properties of muscles. Muscle pain and its registration methods. Single muscle contraction. A change in the excitability of a muscle fibre. Summation and tetanus.

Tetanus causes. Optimum and pessimum of muscle contraction. The modern theory of muscle contraction and relaxation. Muscle tone. Muscle strength and work. Dynamometry. Isolated muscle fatigue and general fatigue.

The physiological basis of active recreation, according to I.M. Sechenov. Muscle hypertrophy and atrophy from inactivity. Electromyography (EMG) and its role. Physiological features of smooth muscles.

#### **Topic 4 Final class “General Properties of Excitable Tissues” Neuromuscular Physiology” Colloquium.**

### **Unit 2. Physiology of the Central Nervous System**

#### **Topic 5 “Reflex as the Main Form of Nervous Activity. The reflex arc”**

Nerve centres and their properties. Features of excitation in the nerve centres.

The concept of the nervous system. Reflex. Reflex of the nervous system. The reflex arc. A neuron as a structural and functional unit of the central nervous system. Features of a neuron excitation. Nerve centre. Nerve centres and their properties.

#### **Topic 6 “Inhibition in the Central Nervous System. General Principles of Coordination Activities in the Central Nervous System”**

Inhibitory synapses and their mediators. Central inhibition according to I.M. Sechenov. The main types of inhibition and its role. Excitation in the central nervous system. Coordination in the central nervous system.

#### **Topic 7 “Spinal Cord and its Functions”**

Spinal cord. Spinal cord and the regulation of the musculoskeletal system and vegetative functions of the body. Characteristics of spinal animals. Spinal shock. The function of the anterior and posterior roots of the spinal cord. Segmental and inter segmental principle of spinal cord operation. Spinal (somatic and vegetative) reflexes. Spinal cord pathways.

**Topic 8 “Brain Stem: Oblongated Marrow, Pons Varolii, Midbrain, Reticular Formation. Brain Stem Reflexes. The Cerebellum and its Functions”**

Oblongated marrow and pons Varolii, the participation of their centres in the regulation of vegetative functions. The physiology of the oblongated marrow, its reflex activity and the processes of vegetative functions regulation. Decerebrate rigidity and the mechanism of its occurrence. Static and statokinetic reflexes (R. Magnus). Physiology of the cerebellum. Cerebellum in the regulation of movements. Afferent inputs and descending paths. Features of the neural organization of the brain stem reticular formation.

**Topic 9 “Interbrain and its Functions. Physiology of the Vegetative Nervous System”**

Hypothalamus. Characteristics of the main nuclear groups. Hypothalamus as part of the regulation of vegetative functions and the formation of emotions and motivations. The thalamus. Functional characteristics of the main cell nuclear groups. Comparative characteristics of the sympathetic and parasympathetic divisions of the vegetative nervous system. Synergism and relative antagonism of their influence.

**Topic 10 Final class “Central Nervous System Physiology” Colloquium.**

**Unit 3. Physiology of analysers, higher nervous activity.**

**Topic 11 “Physiology of Analysers. Visual Analyser”**

Pavlov I.P. on analysers. Visual analyser, receptor apparatus. Photochemical processes in the retina in the light. The formation of a visual image. The role of subcortical structures and hemispheres in visual perception. Modern ideas about the perception of colour. The main forms of colour vision impairment. Physiological mechanisms of eye accommodation. Adaptation of the visual analyser.

**Topic 12 “Physiology of Analysers (Auditory, Vestibular, Somatosensory, Olfactory, and Gustatory Senses)”**

An auditory analyser. Vestibular analyser. The structure of the function. Physiological characteristics of the taste analyser. The receptor, conductor and cortical areas Classification of taste sensations. Physiological characteristics of the olfactory analyzer. The receptor, conductor and cortical areas Classification of odours. Somatosensory analyser: structure and functions.

**Topic 13 “Innate and Acquired Behaviours. Higher Mental Functions of a Person”**

An innate form of behaviour (unconditioned reflexes and instincts), their significance for adaptive activity. Comparative characteristics of conditioned and unconditioned reflexes. Conditioned reflex as a form of adaptation of animals and humans to changing conditions of existence. Inhibition in higher nervous activity. I.P. Pavlov's theory on the types of higher nervous activity, their classification and characteristics. The biological role of emotions. Emotional tension and stress. Memory and its importance in the formation of holistic adaptive reactions. Types of memory and mechanisms of memory formation.

**Topic 14 Final class “Physiology of Analysers. Innate and Acquired Behaviours. Higher Mental Functions of a Person” Colloquium.**

**Unit 4. Humoral Regulation of Body Functions. Body Fluids.**

**Topic 15 “Physiology of the Endocrine Glands”**

The hormones formation and secretion, their transport by blood, effect on cells and tissues. The endocrine glands' interaction. Pituitary hormones. Functional connections of the hypothalamus and the pituitary gland. The role of the pituitary gland in regulating the activity of endocrine organs. Thyroid hormones of the thyroid gland. The effect of calcitonin, parathyroid hormone and

calcitriol on calcium and phosphate metabolism. Regulation of the synthesis and secretion of these hormones. Endocrine function of the pancreas. The role of hormones of the cortex and adrenal medulla in the regulation of body functions. Endocrine function of the reproductive glands. Endocrine functions of the pineal and thymus glands.

**Topic 16 “Blood Physiology. Physico-chemical Properties of Blood. The Physiology of Red Blood Cells. The Respiratory Function of Blood. Physiology of Leukocytes”**

The concept of the blood system and its functions. Physiological parameters of blood. Electrolyte composition of blood plasma, osmotic blood pressure. Plasma proteins, their characteristics and functional significance, oncotic blood pressure and its role. Red blood cells and their functions. Erythrocyte Sedimentation Rate (ESR) Humoral and nervous regulation of erythropoiesis. Types of hemoglobin, its compounds, and their physiological significance. Types and mechanism of hemolysis. Leukocytes, their types, leukocyte formula, functions of various types of leukocytes. Humoral and nervous regulation of leucogenesis.

**Topic 17 “Blood Physiology. Platelet Physiology. Blood Clotting. Blood Groups”**

Platelets and their functions. Vascular-platelet hemostasis and its stages. The hemostasis system. Enzymatic coagulation hemostasis and its stages. Factors that accelerate and slow down blood clotting. Fibrinolytic and anticoagulation systems of the blood. Blood groups. The Rhesus (Rh) factor. Rules of blood transfusion.

**Topic 18 Final class “Physiology of the Endocrine Glands”, “Blood Physiology” Colloquium.**

**Unit 5. Visceral functions.**

**Topic 19 “Blood Circulation Physiology. Heart Physiology. Cardiac Muscle Properties. Phases of the Cardiac Cycle. Heart Activity Regulation. Methods of Studying the Heart Activity”**

The importance of blood circulation for the body. The structure of the circulatory system. The heart, the significance of its chambers and valvular apparatus. Physiological properties and features of the myocardium. Modern ideas about the substrate, nature, and gradient of automation. The action potential of the cardiac conductive system. Cardiac conduction. Excitation of heart. Ionic mechanisms of cardiomyocyte action potential. Myocardial contractility. Extrasystoles, and the mechanism of compensatory pause. The ratio of excitation, excitability, and contractility in different phases of the cardiac cycle. Heart Activity Regulation. Cardiac cycle. Systolic and minute blood volume. The tones of the heart, their origin, and auscultation. Phonocardiography (PCG). Electrocardiography (ECG).

**Topic 20 “Blood Circulation Physiology. Blood pressure. Regulation of vascular tone”**

Principles of hemodynamics. Linear and volume flow rates in the circulatory system. Functional classification of blood vessels. Factors ensuring the blood flow through high and low pressure vessels. Types of blood pressure. Blood pressure in the circulatory system. Factors determining its level. Methods of blood pressure research. Arterial and venous pulse, their origin. Analysis of the sphygmography. Capillary blood flow, microcirculation. Physiological mechanisms of vascular tone regulation (local, nervous, humoral). Vasomotor centre. Physiological mechanisms ensuring the blood pressure stability.

**Topic 21 “Physiology of Respiration. External Respiration. Gas Exchange in the Lungs. Transport of Gases in Blood. Respiration Regulation”**

Respiration phases. Inhalation and exhalation mechanism. Spirometry. Gas exchange in the lungs. The composition of inhaled, exhaled and alveolar air. Transport of gases in blood. Oxygen-hemoglobin dissociation curve: factors affecting the course of the curve. Gas exchange in tissues. Respiratory Center, according to N.A. Mislavsky. Respiratory centre automation. Reflex

self-regulation of respiration, the role of chemo- and mechanoreceptors of the lungs. Respiratory response to changing altitudes. Protective respiratory reflexes. Functional respiratory system, ensuring the gas composition stability in blood.

**Topic 22 Final class “Physiology of Blood Circulation and Respiration”. Colloquium.**

**Topic 20 “Digestion Physiology. Methods of Studying the Functions of the Gastro-intestinal Tract. Digestive System: Mouth and Stomach”**

The importance of digestion, the functions of the digestive tract. Digestion is the main component of functional system, which maintains a constant level of nutrition in the body. Types of digestion. Methods of studying the functions of the digestive tract. Digestion in the oral cavity. The composition and physiological role of saliva. Salivation and its regulation. Self-regulation of chewing. Swallowing, its phases, and regulation. Digestion in the stomach. Gastric juice, its composition and properties.

Regulation of gastric secretion. Gastric secretory nerves. The influence of humoral factors on the functioning of the gastric glands. The adaptive nature of gastric secretion. Motor and evacuation activity of the stomach, and its regulation.

**Topic 24 “Digestion Physiology. Digestion in the Intestine. Pancreatic and Liver Functions. Absorption in Various Parts of the Gastro-intestinal Tract”**

The composition and properties of pancreatic juice. Regulation of pancreatic secretion. The role of the liver in digestion. The composition and properties of intestinal juice. Regulation mechanism of intestinal secretion. Cavity and membrane hydrolysis of food substances. Motor activity of the small intestine and its regulation. Features of digestion in the colon, motility of the colon. Colon microflora of the colon. Absorption of substances in various parts of the digestive tract. Types and mechanism of absorption of substances through biological membranes of enterocytes.

**Topic 25 Final class “Digestion Physiology” Colloquium.**

**Topic 26 “Metabolism and energy. Thermoregulation”**

Methods of studying the energy expenditure of the body. The main exchange, the meaning of its definition for the clinic. The energy balance of the body. Basic metabolism. The energy expenditure of the body in different types of work. Body surface area. Protein metabolism. The plastic and energy role of proteins. Nitrogen balance. Regulation of protein metabolism. Fat metabolism. The plastic and energy role of fat. Regulation of fat metabolism. Carbohydrate metabolism. The plastic and energy role of carbohydrates. Regulation of carbohydrates metabolism. The importance of minerals in the body (the role of  $\text{Na}^+$ ,  $\text{K}^+$ ,  $\text{Ca}^{2+}$ ,  $\text{Cl}^-$ , Fe, phosphate ions). The importance of vitamins in the body. Human body temperature and its daily fluctuations. The temperature of various areas of the skin and internal organs. Heat generation (chemical thermoregulation). Heat loss (physical thermoregulation). A functional system that maintains a constant temperature of the internal environment of the body.

**Topic 27 “Elimination Physiology.**

Elimination as a component of systems ensuring the constancy of the internal environment of the body. Organs of elimination. Kidney function. Nephron as a structural and functional unit of the kidney, its structure, blood supply. The mechanism of formation of primary urine, its quantity and composition. The concept of clearance. Tubular reabsorption, and the mechanism of its regulation. The rotary-countercurrent system of the nephron. The processes of tubular secretion, the mechanisms of its regulation. Urinalysis. Kidney regulation. Endocrine function of the kidneys. Kidneys and respiratory organs' role in maintaining the pH of the blood. Kidneys as part of func-

tional system ensuring the osmotic blood pressure and body fluid volume stability. The process of urination, and its regulation.

## **Topic 28 Final class “Metabolism and energy. Thermoregulation. Elimination Physiology” Colloquium.**

### **3. Training support materials**

- multimedia presentations on the discipline (module) are available at “Normal Physiology” course on MAU LMS Moodle;
- practical training manuals are available on MAU LMS Moodle;
- learning materials are available on MAU official website at «Информация по образовательным программам, в том числе адаптированным».

### **4. Discipline assessment materials**

Discipline assessment materials is a separate document within the educational programme, it includes:

- a list of competencies indicating the stages of their achievement within the discipline (module);
- formative assessment tasks;
- interim assessment tasks;
- tasks for internal assessment of education quality.

### **5. The list of main and supplementary literature** (printed sources, electronic textbooks and (or) resources of Digital Library Systems)

#### ***Main literature:***

1. Normal'naya fiziologiya. Tom 1: uchebnik / pod red. M. M. Lapkina, A. V. Kotova, V. I. Torshina. - Moskva : GEOTAR-Media, 2023. - 560 s. - ISBN 978-5-9704-7875-2, DOI: 10.33029/9704-7875-2-NF1-2023-1-560. - Elektronnaya versiya dostupna na saite EBS "Konsul'tant studenta": [sait]. URL: <https://www.studentlibrary.ru/book/ISBN9785970478752.html>
2. Normal'naya fiziologiya. Tom 2 : uchebnik / pod red. M. M. Lapkina, A. V. Kotova, V. I. Torshina. - Moskva : GEOTAR-Media, 2023. - 544 s. - ISBN 978-5-9704-7876-9, DOI: 10.33029/9704-7876-9-NF2-2023-1-544. - Elektronnaya versiya dostupna na saite EBS "Konsul'tant studenta": [sait]. URL: <https://www.studentlibrary.ru/book/ISBN9785970478769.html>
3. Nozdrachev, A. D. Normal'naya fiziologiya: uchebnik / A. D. Nozdrachev, P. M. Maslyukov. - Moskva : GEOTAR-Media, 2023. - 1088 s. - ISBN 978-5-9704-7492-1. - Tekst : elektronnyi // EBS "Konsul'tant studenta" : [sait]. - URL : <https://www.studentlibrary.ru/book/ISBN9785970474921.html>
4. Sudakov, K. V. Fiziologiya cheloveka. Atlas dinamicheskikh skhem : uchebnoe posobie / K. V. Sudakov [i dr. ] ; pod red. K. V. Sudakova. - 2-e izd. , ispr. i dop. - Moskva : GEOTAR-Media, 2020. - 416 s.: il. - 416 s. - ISBN 978-5-9704-5880-8. - Tekst : elektronnyi // EBS "Konsul'tant studenta" : [sait]. - URL : <https://www.studentlibrary.ru/book/ISBN9785970458808.html>
5. Degtyarev, V. P. Normal'naya fiziologiya : uchebnik / Degtyarev V. P. , Sorokina N. D. - Moskva : GEOTAR-Media, 2019. - 480 s. - ISBN 978-5-9704-5130-4. - Tekst : elektronnyi // EBS "Konsul'tant studenta": [sait]. - URL :

<https://www.studentlibrary.ru/book/ISBN9785970451304.html>

### ***Supplementary literature:***

1. Физиология эндокринной системы: учебное пособие / составитель I. A. Chastoedova. — Kirov : Kirovskii GMU, 2022. — 85 s. — Текст: электронный // Lan' : электронно-библиотечная система. — URL: <https://e.lanbook.com/book/340466>
2. Физиология эндокринной системы: учебное пособие / T. A. Pogrebnyak, E. V. Zubareva, E. N. Khorol'skaya, M. Ya. Al'-Shammari. — Belgorod: NIU BelGU, 2020. — 128 s. — ISBN 978-5-9571-2910-3. — Текст: электронный // Lan': электронно-библиотечная система. — URL: <https://e.lanbook.com/book/329297>
3. Virtual'nyi praktikum po normal'noi fiziologii : metodicheskie rekomendatsii / perevod s angliiskogo V. B. Studnitskogo [i dr.]. — 2-e izd. pererab. i dop. — Tomsk : SibGMU, 2022. — 200 s. — Текст : электронный // Lan' : электронно-библиотечная система. — URL: <https://e.lanbook.com/book/283451>
4. Profil'nye voprosy po normal'noi fiziologii i metody fiziologicheskikh issledovaniy, materialy dlya podgotovki k ekzamenam: uchebno-metodicheskoe posobie / S. S. Lazuko, V. I. Kuznetsov, N. M. Yatskovskaya [i dr.]. — Vitebsk: VGMU, 2022. — 139 s. — ISBN 978-985-580-124-6. — Текст : электронный // Lan': электронно-библиотечная система. — URL: <https://e.lanbook.com/book/302576>
5. Физиология энергетического обмена: учебное пособие / A. F. Kayumova, O. S. Kiseleva, L. N. Shafieva, G. E. Insarova. — Ufa: BGMU, 2021. — 68 s. — Текст : электронный // Lan' : электронно-библиотечная система. — URL: <https://e.lanbook.com/book/320738>
6. «Физиология на себе». Учебно-методическое пособие для практических занятий / Dorokhov V. B. [i dr.]: pod redaktsiei Sveshnikova D. S., Torshina V. I.- M.: Izdatel'stvo «Kim L.A.», 2019 – 212 s.

### **6. Professional databases and information reference systems**

- 1) The state legal information system - the official website of legal information. Online access at <http://pravo.gov.ru>
- 2) Information system “Single window of access to educational resources”. Online access at <http://window.edu.ru>
- 3) Jaypeedigital, an online medical resource platform from Jaypee Brothers Medical Publishers. An introduction to working with the platform (video in English): [https://disk.yandex.ru/i/K3Q61Zerp\\_x5Kw](https://disk.yandex.ru/i/K3Q61Zerp_x5Kw). Online access at <https://www.jaypeedigital.com/home>
- 4) S Ebooks (Medical & Science) (<https://eduport-global.com/>). Electronic library of medical literature from CBS Publishers & Distributors Pvt. Ltd.
- 5) Legal reference system "Consultant Plus". Online access at <http://www.consultant.ru/>
- 6) University Library Online at <https://biblioclub.ru> (available until May 29, 2025)
- 7) Electronic library system “Yurait”, open until December 30, 2024.
- 8) Electronic library system “Lan” at <https://e.lanbook.com/> (Open since October 1, 2025)
- 9) Electronic library system “Student Consultant” at <http://www.studentlibrary.ru/> (open until May 24, 2025). Access to collections [Медицина. Здравоохранение \(ВО\)](#)» издательства «ГЭОТАР-Медиа» and [«Медицина \(ВО\) ГЭОТАР-Медиа. Books in English»](#).

### **7. The list of licensed and openly distributed software, including domestic software**

- 1) Microsoft Office Service Pack



- 2) ABBYY FineReader Optical text recognition system
- 3) "PowerGraph" software
- 4) "Virtual Workshop on Human and Animal Physiology" simulation software for practical work on Physiology. Kotor Gabriel (Bucharest), a Russified version produced by INTER – NICHE. (The licence agreement gives the right to use this program with accompanying materials for educational purposes free of charge, as well as copying and free distribution).

### 8. Ensuring mastering the discipline for people with special needs

Students with special needs are provided with printed and (or) electronic educational resources adapted to their needs.

**9. The material and technical support of the discipline (module)** is presented in the appendix to the academic programme "Material and technical conditions for the implementation of the academic programme" and includes:

- technically equipped classrooms for conducting training sessions provided for the Specialist programme;
  - spaces for self-study work equipped with computer, Internet connection and access to MAU LMS Moodle;
- Replacement of the equipment with its virtual counterparts is allowed.

### 10. Study load distribution by the type of educational activity

Table 1 - Study load distribution

Type of educational activity	The discipline (module) study load distribution by the forms of training		
	Full-time		
	Semester		Total hours
	3	4	
Lectures	28	28	56
Seminars	56	56	112
Self-study	60	24	84
Preparation for interim assessment		36	36
<b>Total hours on the discipline / in the form of seminars</b>	<b>144/56</b>	<b>144/56</b>	<b>288</b>

Interim and formative assessment

Examination		+	
-------------	--	---	--

### The list of seminars by the forms of education

no.	Seminar topics
<b>1</b>	<b>2</b>
	<b>Full-time</b>
1	Subject, Research Methods and the Definition of Physiology. Properties of Life.
2	Properties of Peripheral Nerves and Myoneural Synapses
3	Muscle Physiology
4	Reflex as the Main Form of Nervous Activity. The Reflex Arc
5	Inhibition in the Central Nervous System. General Principles of Coordination Activities in the

	Central Nervous System
6	Spinal Cord and its Functions
7	Brain Stem: Oblongated Marrow, Pons Varolii, Midbrain, Reticular Formation. Brain Stem Reflexes. The Cerebellum and its Functions
8	Interbrain and Its Functions Physiology of the Vegetative Nervous System
9	Analysers Physiology Visual Analyser
10	Physiology of Analysers (Auditory, Vestibular, Somatosensory, Olfactory, and Gustatory Senses)
11	Innate and Acquired Behaviours. Higher Mental Functions of a Person
12	Physiology of the Endocrine Glands
13	Blood Physiology. Physico-chemical Properties of Blood. The Physiology of Red Blood Cells. The Respiratory Function of Blood. Physiology of Leukocytes
14	Blood Physiology. Platelet Physiology. Blood Clotting. Blood Groups
15	Blood Circulation Physiology. Heart Physiology. Cardiac Muscle Properties. Phases of the Cardiac Cycle. Heart Activity Regulation. Methods of Studying the Heart Activity
16	Blood Circulation Physiology. Blood pressure. Regulation of Vascular Tone
17	Respiration Physiology
18	Digestion Physiology. Methods of Studying the Functions of the Gastro-intestinal Tract. Digestive System: Mouth and Stomach
19	Digestion Physiology. Digestion in the Intestine. Pancreatic and Liver Functions. Absorption in Various Parts of the Gastro-intestinal Tract
20	Metabolism and energy. Thermoregulation
21	Elimination Physiology