BISHKEK INTERNATIONAL MEDICAL INSTITUTE | GENERAL MEDICINE

APPROVED
EMD decision
"13" 09 2021
Protocol No. 4
Chairman of the EMC, Vice-Rector,
candidate of pedagogical sciences,
associate professor Apezova D.U.

SYLLABUS
by discipline

Б.3.1.4. NORMAL PHYSIOLOGY

For students of the educational program, higher professional education in the specialty 560001 "General Medicine" (5-year education) in the specialty "Doctor"

Type of study work	Total hours
course	1
Semester	2
Number of weeks	13
Credits	9
The total complexity of the discipline	270
Classroom/practical studies (PS)	162/108
Student Independent Work (SIW)	108
Forms of control	
current control	Testing, oral questioning, written test
Frontier control	Testing
Midterm	Testing
Final control	exam
Semester rating by discipline:	Point-rating system

Information about the teacher of the academic discipline

Full Name	Otorbaev Chagatai Kaipovich
Post	Teacher
Academic degree	
Academic title	
Email address	
Location of the department (address)	KR, Bishkek, st. Shabdan Baatyr 128, floor 2, room 6
Telephone	0554148xxx
Consultation hours	11.00-13.30

Characteristics of the academic discipline

The purpose of studying the discipline: «Normal Physiology" refers to the basic part and is a compulsory discipline. The objectives of mastering the academic discipline "Normal Physiology" are the knowledge of the functioning of individual organs and systems, as well as the study of their interaction, understanding the mechanisms of regulation of the functions of a healthy body in order to master the control of protective and adaptive processes in a healthy and diseased body, aimed at strengthening or restoring human health. Students should know the basics of the teachings of a healthy lifestyle; environmental influence; positive and negative factors on human health. Students should be able to identify and characterize the factors that have a positive and negative impact on the body in specific conditions of human life; apply the acquired

theoretical knowledge and practical skills in the organization and preparation of research projects, studies; formulate research objectives; to distinguish physiological, age-sex normal indicators of a healthy patient from pathological ones. Upon completion of the course, students master the methods for assessing the main morphological and functional indicators of an adult and a child, methods that allow to establish existing violations of the processes of growth and development of the human body.

Discipline Prerequisites:

• Normal anatomy;
• Histology, embryology, cytology

Postrequisites of the discipline:

• Microbiology, virology, immunology
• Pathological anatomy
• Pathological physiology

Learning outcomes of the discipline according to the RO GPP

The study of the discipline of microbiology, virology and immunology will contribute to the achievement of learning outcomes of the GEP:

RE-1, describe and distinguish between the normal structure (morphology) and function (physiology) of the body as a whole, organs and systems, as well as pathological changes that are observed in various diseases and conditions.

Within the framework of this discipline, it is expected to achieve the following learning outcomes of the discipline, which are implemented as part of the achievement of competencies:

PC-15 is able and ready to analyze the patterns of functioning of individual organs and systems, use knowledge of anatomical and physiological features, basic methods of clinical and laboratory examination and assessment of the functional state of the body of an adult and children, for the timely diagnosis of diseases and pathological processes.

Content of the discipline

№№	Name of topics
1.	Introduction. The internal environment of the body. Physiology of blood. humoral regulation.
2.	Introductory. levels of organization of the body. properties of a living system. Homeostasis.
3.	Basic principles of regulation of functions, self-regulation. Transport of substances and liquids. Composition and functions of blood.
4.	Composition and functions of blood.
5.	The system of humoral regulation, endocrine functions. Local self-regulation (metabolites, biologically active substances). The system of hormonal regulation.
6.	General physiology of the nervous system and excitable structures
7.	Introduction to the physiology of nerves and synapses. Types of nerve cells. Structure of the central and nervous system.
8.	Biomembranes. Transport of substances, excitability, measurement measures.
9.	Membrane potentials. PP, action potential, graded potentials.
10.	Biocurrents, their characteristics. Excitation characteristic.
11.	Physiology of nerves and synapses.
12.	Reflex regulation of somatic and vegetative functions.
13.	Functions of sensory systems. General physiology of reception.
14.	Visual and auditory analyzer systems.
15.	Somato-visceral reception. Taste and olfactory systems.
16.	Physiology of the muscular system
17.	Physiology of muscle tissues (smooth and skeletal muscles).
18.	Types, properties and functions of muscles. The structure of skeletal muscles. The structure of filaments.
19.	The mechanism of muscle contraction. Skeletal muscle innervation. The mechanics of muscle contraction.
20.	Types and types of muscle contraction. Tetanus. Muscle strength and its work.
21.	Physiology of the heart and cardiovascular system
22.	Physiological properties of the myocardium - automatism, conductivity.

23.	Excitability, contractility.
24.	Phase analysis of the cardiocycle. External manifestations of the activity of the Heart
25.	Basic laws of hemodynamics.
26.	Characteristics of the movement of blood through the vessels.
27.	Mechanisms of regulation of systemic circulation.
28.	Features of regional hemodynamics.
29.	Regulation of tone
30.	vessels. circulatory centers. Reflex regulation of the activity of the heart and vascular tone.
31.	Physiology of the respiratory system
32.	The structure of the respiratory system. The main functions and stages of breathing.
33.	External respiration. Mechanisms of inhalation and exhalation. Gas exchange in the lungs, factors. Lung volumes and capacities.
34.	Transport of gases by blood. Gas exchange in tissues. Breathing regulation.
35.	Regulation of breathing. Localization and properties of respiratory neurons.
36.	Physiology of the endocrine system
37.	Characteristics, properties, classification and functions of hormones.
38.	Types and mechanisms of action of hormones. Receptors for hormones.
39.	The hypothalamic-pituitary system. pituitary hormones. epiphysis
40.	Particular physiology of the endocrine glands. Thyroid. Parathyroid glands. Adrenals. Pancreas. Sex glands. Placenta. thymus
41.	Physiology of the digestive system
42.	Structure and functions of the gastrointestinal tract. Digestion in the mouth. Digestion in the stomach.
43.	Digestion in the small intestine. Liver. Pancreas. Digestion in the large intestine. Motility of the digestive tract.
44.	Absorption in the gastrointestinal tract. Regulation of the gastrointestinal tract. Gastrointestinal hormones.
45.	Physiological basis of hunger and satiety.
46.	Physiology of metabolism, energy and thermoregulation. Physiology of excretion
47.	Basic exchange. Protein metabolism. Fat metabolism. The exchange of carbohydrates.
48.	Exchange of water and minerals. Regulation of metabolism and energy.
49.	Physiological basis of nutrition. Determination of the level of metabolism. Basic principles of food rations.
50.	Isotherm. Physical and chemical thermoregulation. System 8 13 thermoregulation. Reflex and humoral mechanisms of thermoregulation. Thermoregulation when the ambient temperature changes. Adaptation to temperature changes
51.	Excretory organs. The structure and function of the kidneys. Juxtaglomerular apparatus.
52.	Glomerular filtration. tubular reabsorption. Concentration and dilution of urine. tubular secretion.
53.	Neurohumoral regulation of kidney activity. Regulation by the kidneys of the constancy of the internal environment of the body. Regulation of urination and urination
54.	Physiology of higher nervous activity
55.	Development of the doctrine of GNI. The role of I.P. Pavlova. Unconditioned reflexes and instincts.
56.	Conditioned reflexes. Rules for the development and mechanism for the formation of conditioned reflexes. Inhibition of conditioned reflexes
57.	Temperament. Types of VND. The first and second signal systems. Speech. needs and motivations. Emotions.
58.	Consciousness. Physiology of sleep and wakefulness. functional asymmetry. Theory of functional systems.

List of main and additional literature:

Main literature:

1. Guyton and Hall Textbook of Medical Physiology, John E. Hall, Ph.D. Arthur C. Guyton Professor and Chair Department of Physiology and Biophysics Associate Vice Chancellor for Research University of Mississippi Medical Center Jackson, Mississippi (1091 c.), 2018.

2. Essentials of Medical Physiology, K. Sembulingam, PhD, and Prema Sembulingam, PhD, Madha Medical College & Research Institute, Kundrathur Main Road, Kovur, Thandalam (Near Porur), Chennai, Tamil Nadu, India (1092 c.), 2018.

Additional literature:

Normal Physiology Lecture Notes. Kaplan Medical (2019) Editor: L. Britt Wilson, PhD, Professor, Department of Pharmacology, Physiology, and Neuroscience, University of South Carolina School of Medicine, Columbia, SC. Contributors: Raj Dasgupta, MD, FACP, FCCP, FAASM, Assistant Professor of Clinical Medicine, Department of Medicine, Division of Pulmonary, Critical Care and Sleep Medicine, Keck School of Medicine of USC, University of Southern California, Los Angeles, CA, Frank P. Noto, MD, Assistant Professor of Internal Medicine, Site Director, Internal Medicine Clerkship and Sub-Internship, Icahn School of Medicine at Mount Sinai, New York, NY (428 c.)

Internet resources:

http//www.edu.ru
http//www.medicina.ru
Dr. Najeeb Video Lectures by normal physiology
(link: https://youtu.be/Z1vp0bNFovU)
Introductory Normal Physilogy, Emma Jakoi (link: https://coursera.com)
http //www.journals. uchicago.edu/JAD/home.html

Monitoring and evaluation of learning outcomes

The content of the rating system for assessing student performance

The rating assessment of students' knowledge in each academic discipline, regardless of its total labor intensity, is determined on a 100 (one hundred) - point scale and includes current, boundary, intermediate and final control.

The distribution of rating scores between types of control is established in the following ratio (according to the table of the score-rating system of assessments):

Form of control				
current (CC)*	boundary control (BC)**	mid-term exams (MC)***	Final /exam (FE)	Discipline Rating (RD)
0-100 points	0-100 points	0-100 points	0-100 points	0-100 points, with the translation of points into a letter designation

Note:

* ТК$(middle) = \frac{\sum_1^n \times point}{\sum_1^n}$, where n is the number of types of classroom and extracurricular work of students in the discipline;

**РК $(middle) = \frac{\sum_1^n credit \times point}{\sum_1^n credits}$, where n is the number of modules (credits) in the discipline;

***ПК $(middle) = \frac{\sum_1^n \times point}{\sum_1^n}$, where n is the number of intermediate controls (2 controls per semester: in the middle and at the end of the semester) by discipline;

****ИК – examination conducted at the end of the study of the discipline

;

*****РД = $\frac{\text{ТКср+РКср+ПКср+ИК}}{4}$, the final rating of the results of all types of control at the end of the discipline;

GPA= $\frac{\sum_1^n \times \text{балл}}{\sum_1^n}$ where, n is the number of disciplines in the semester (for the past period of study).

A student who has not passed the current, boundary and intermediate controls to the final control (exam) is not allowed.

The current control is carried out during the period of classroom and independent work of the student on time according to the schedule, at the end of the study of the discipline, the average score of the current control (CC) is calculated**.** *Forms of current control can be*:

- testing (written or computerized);
- performance of individual homework assignments, abstracts and essays;

- student's work in practical (seminar) classes;
- various types of colloquia (oral, written, combined, express, etc.);
- control of performance and verification of reporting on laboratory work;
- visiting lectures and practical (seminar, laboratory) classes;
- Incentive rating (up to 10 points).

Other forms of current monitoring of results are also possible, which are determined by the teachers of the department and recorded in the work program of the discipline.

The frontier control is carried out in order to determine the results of the student's development of one credit (module) as a whole. *Frontier control* should be carried out only in writing, at the end of the study of the discipline, the average score of boundary control (BC) is calculated. As forms *of frontier control* of the training module, you can use:

- testing (including computer testing);
- interview with written fixation of students' answers;
- test.

Other forms of intermediate control of results are also possible.

Intermediate control (mid-term exams) is carried out in order to check the completeness of knowledge and skills in the material in the middle and end of the semester (2 times per semester) of studying the discipline, by the end of the study of the discipline, the average score of intermediate control (PCsr) is calculated, *forms of intermediate control (mid-term exams) can be:*

- testing (including computer testing);
- interview with written fixation of students' answers;
- test.

Other forms of intermediate control of results are also possible.

The final control is carried out during the session, by conducting an exam, it can be carried out in the following forms:

- testing (including computer testing);
- written exam (ticketing system).

Correspondence of the point-rating system of assessments used by the institute and the assessments of the European system for the transfer of credit units, labor intensity (ECTS)

Grade						Criterion
System of letters	digital system	Traditional system	Points (%)	Scored points (max - 100)	Evaluation by discipline without an exam	
A	4	5	95-100	95-100	Credited/ passed	"Excellent" - deserves a student who has shown a deep, systematic and comprehensive knowledge of the educational material, who freely performs practical tasks, who has mastered the recommended basic and additional literature on the discipline
A-	3,67		90-94	90-94		"Excellent" - deserves a student who has shown a deep, systematic and comprehensive knowledge of the educational material, who freely performs practical tasks, who has mastered the recommended basic literature on the discipline, but is not familiar with additional literature
B+	3,33	4	85-89	70-89		"Good" - exhibited to a student who has shown a systematic and comprehensive knowledge of the educational material, able to independently replenish and update this knowledge in the course of training, performing practical tasks, familiar with the main literature on the discipline
B	3,0		80-84			"Good" is given to a student who has shown a systematic and comprehensive knowledge of the educational material, who is able to independently replenish this knowledge in the course of training, performing practical tasks, but not fully familiar with the main literature on the discipline
B-	2,67		75-79			"Good" - is given to a student who has shown the systematic nature of knowledge in the discipline, who is able to independently replenish this knowledge in the course of training, performing practical tasks, but not fully familiar with the main literature on the discipline
C+	2,33	3	70-74			"Satisfactory" - is given to a student who does not have a systematic nature of knowledge in the discipline, who is not capable of independently replenishing and updating knowledge in the course of further education, performing practical tasks with errors

C	2,0		65-69	50-69		"Satisfactory" - is given to a student who made mistakes in completing assignments, but who has the necessary knowledge to eliminate them under the guidance of a teacher
C-	1,67		60-64			"Satisfactory" - is set to a student who made errors in the performance of tasks, but who has the possible knowledge to eliminate them under the guidance of a teacher
D+	1,33		55-59			"Satisfactory" - is set to a student who made errors in the performance of tasks, who does not have the necessary knowledge to eliminate them
D-	1,0		50-54			Satisfactory" - is given to a student who has made significant errors in the performance of tasks, who does not have the necessary knowledge to eliminate them
FX	0,5	2	25-49	Less of 50	not credited/not passed	"Unsatisfactory" - is set to a student who has not completed the task, does not have the necessary knowledge to eliminate them
F	0		0-24			"Unsatisfactory" - is set to a student who has not completed the task, does not have the necessary knowledge to eliminate them, even under the guidance of a teacher

Academic achievement requirements:

Attendance by students of all classroom classes without delay is mandatory.
In case of absence, classes are worked out in the order established by the dean's office.
If there are three passes, the teacher has the right not to allow the student to attend classes until the issue is administratively resolved.
If the absence of classes is more than 20.0% of the total number of classes, the student automatically enters the summer semester.

Note to the student:

- ✓ regularly review lecture material;
- ✓ Do not be late and do not miss classes;
- ✓ work off missed classes if you have permission from the dean's office;
- ✓ Actively participate in the classroom (individually and in groups;)
- ✓ timely and fully complete homework assignments;
- ✓ submit all assignments within the time specified by the teacher;
- ✓ independently study the material in the library and at home;
- ✓ timely and accurately fulfill the tasks of the teacher, individual tasks for the IWS to achieve learning outcomes;
- ✓ to master the basic and additional literature necessary for the study of the discipline;
- ✓ performing tasks, the student should not copy or reproduce the work of other students, scientists, practitioners, plagiarism;
- ✓ develop their intellectual and oratory skills;

In case of non-compliance with the requirements of the Memo, the student will be penalized in the form of deducting points (one point for each violated item).

If the requirements of the Memo are fully met, the student is encouraged in the form of an additional 10 points to the final control in the discipline.

Academic Integrity, Conduct and Ethics Policy:

- turn off your cell phone during class;
- Be polite;
- respect other people's opinions;
- formulate objections in the correct form;
- do not shout or raise your voice in the audience;
- independently complete all semester assignments;
- Eliminate plagiarism from your practice;

Methodical instructions.

It is recommended to organize the time required to study the discipline as follows:
When preparing for a practical lesson, you must first read the abstract with the teacher's explanations.
When performing exercises, you must first understand what you want to do in the exercise, then proceed to its implementation.
Literature work. The theoretical material of the course becomes more understandable when books are studied in addition to the abstract. After studying the main topic, it is recommended to perform several exercises.

Preparation for boundary and intermediate controls. In preparation for the boundary and intermediate control, it is necessary to study the theory: the definitions of all concepts before understanding the material and independently do several exercises.

Independent work of students is organized on all studied topics of each section. Independent work is carried out in the form of:

- work in Internet sites;
- work with basic and additional literature;
- fulfillment of written assignments;
- preparation of reports, abstracts, tables and posters on