

**THE DATE-THEMATIC PLAN OF PRACTICAL CLASSES ON THE DISCIPLINE OF NORMAL
 PHYSIOLOGY FOR ENGLISH-SPEAKING STUDENTS OF THE GENERAL MEDICINE
 FACULTY FOR THE 3d SEMESTER OF 2020-2021 ACADEMIC YEAR**

Course 2

Class venues - sanitary building

№	Topic	Competences	Content of the theme	Knowledge	Skills	Hours
1	Introduction in physiology 1.09.2020-7.09.2020	GC - 1,5, GPC - 1,5, 7 PC - 15, 16	Subject and tasks of physiology. Physiology as the basis for the formation of a healthy lifestyle. Methodology and methods of physiology. Physiological function. Age periodization.	The learners should know the basic definitions in physiology: basic cybernetic principles, principles of self-regulation of functions, principles of system approach in the analysis of physiological processes	The learners should be able to use this knowledge for the explanation of the human body behavior under different conditions, to understand principles and organization of physiological functions and their role in body homeostasis	3
2	General physiology of excitable tissues 8.09.2020-14.09.2020	GC - 1,5, GPC - 1,5, 7 PC - 15, 16	Mechanisms of membrane potential formation. Laws of irritation. Refractoriness. Accommodation. Laws of polar irritation	The learners should know the concept of biopotentials and main laws of excitable tissues irritation	The learners should be able to use this knowledge for explanation of the central nervous system (CNS) activity, to understand the CNS role in maintenance of body homeostasis	3
3	General physiology of the nervous	GC - 1,5, GPC - 1,5, 7 PC - 15, 16	General characteristics of the Central nervous system. Neurons, their classification and	The learners should know the structural and functional	The learners should be able to use this knowledge for	3

	system. Neurons and gliocytes. 15.09.2020-21.09.2020		functions. Synapses, classification, transmission mechanisms. The occurrence of excitation in the neuron. EPSP, IPSP. Conduction of excitation. Trophic function of neurons. Functional role of neuroglia.	peculiarities of neuron, functions of glia	explanation of the CNS processes as well as behavior of organisms in different conditions of their existence; to understand the role of the nervous system in maintenance of body homeostasis	
4	Reflex activity. Nerve centers and their interaction 22.09.2020-28.09.2020	GC - 1,5, GPC - 1,5, 7 PC - 15, 16	The concept of reflex and its structural basis. Classification of reflexes. Excitatory and inhibitory neural circuits. Nerve center, its properties. The interaction of the nervous centres. Clinical and physiological methods for studying Central nervous system.	The learners should know the structural and functional peculiarities of reflex principle of the nervous system activity, nerve centers, processes of excitation and inhibition in the CNS	The learners should be able to use this knowledge for explanation of the CNS processes as well as behavior of the organisms in various conditions of their existence; to understand the role of the nervous system in the maintenance of body homeostasis	3
5	Physiology of muscles 29.09.2020-5.10.2020	GC - 1,5, GPC - 1,5, 7 PC - 15, 16	Physiology of muscles. General characteristics of the muscles. Muscle contraction and relaxation. Physiological features of skeletal muscles. Strength and muscle work. Physiological characteristics of smooth muscles.	The learners should know the physiological properties of muscle types and contractions, single-phase contraction, tetanus, the theory of muscle contraction and relaxation	The learners should be able to use this knowledge to understand the functions of striated and smooth muscle in the whole organism and its physiological systems; conduct dynamometer	3
6	Autonomic nervous system	GC - 1,5, GPC - 1,5, 7 PC - 15, 16	Functional features of the ANS. The main departments. Mediators,	The learners should know the functional	The learners should be able to use this	3

	6.10.2020-12.10.2020		receptors, and physiological effects. Vegetative reflexes. Types of interactions between departments. Higher Central regulation of vegetative functions.	peculiarities of ANS, influence of sympathetic, parasympa-thetic and metasympa-thetic departments on the innervated organs	knowledge for explanation of autonomic components of behavior of organism in different conditions of its existence, to understand the ANS role in maintenance of homeostasis of organism	
7	Control 'Excitable tissues. The Central nervous system' (themes 1-6) 13.10.2020-19.10.2020	GC - 1,5, GPC - 1,5, 7 PC - 15, 16	Oral survey, problem solving, discussion of responses, correction	The learners should know the basic principles of organization and functioning of excitable tissues	The learners should be able to use this knowledge for the explanation of physiological systems activity	3
8	General physiology of the endocrine system 20.10.2020-26.10.2020	GC - 1,5, GPC - 1,5, 7 PC - 15, 16	General characteristics of the endocrine system. Physiological organization of endocrine function. Production of hormones. Circulatory transport of hormones. Physiological effects of hormones. Regulation of endocrine function. Methods of research of the endocrine system.	The learners should know the structural and functional organisation of the endocrine system; formation, allocation, transmission and decay of hormones, their basic mechanisms of activity, self-control of the endocrine system	The learners should be able to estimate a role of endocrine mechanisms in regulation of homeostasis, adaptation of an organism to environmental conditions, in higher nervous activity and behaviour processes	3
9	Physiological functions of the heart 27.10.2020-2.11.2020	GC - 1,5, GPC - 1,5, 7 PC - 15, 16	The circulatory system, its elements. Circulatory functions. Physiological properties of the myocardium. Automaticity. Conductivity. Excitability. Contractility and its features.	The learners should know the basic concept of circulation system, its mechanisms: circulation functions, physiological properties of myocardium, automaticity, conductivity,	The learners should be able to estimate the total cardiac contractions rate according to pulse and apical beats	3

				excitability, contractility and their characteristics		
10	Regulation of heart activity. 3.11.2020-9.11.2020	GC - 1,5, GPC - 1,5, 7 PC - 15, 16	Characteristics of cardiac activity. Myogenic mechanisms of self-regulation. Intracardiac peripheral reflexes. Nervous regulation. Humoral extracardial regulation. Blood supply to the myocardium.	The learners should know the characteristics of the heart activity: myogenous mechanisms of self-control, endocardiac peripheric reflexes, nervous control, humoral regulation, and myocardium blood supply	The learners should be able to estimate the heart contraction rate changes at orthostatic test and test of Shalkov	3
11	Pump function of the heart. 10.11.2020-16.11.2020	GC - 1,5, GPC - 1,5, 7 PC - 15, 16	Heart cycle, its periods and phases. Changes in pressure in the vascular bed and the heart chambers during the cardiac cycle. Heart work.	The learners should know the structure of the heart cycle, systolic and minute volume of blood, the origin of cardiac sounds, ECG genesis of the heart cycle; cardiac performance; methods of cardiac forcing function assessment, heart sounds; research techniques	The learners should be able to detect the heart contractions rate on pulse. To analyze ECG of a healthy person	3
12	Vascular system and hemodynamics 17.11.2020-23.11.2020	GC - 1,5, GPC - 1,5, 7 PC - 15, 16	Basic laws of hemodynamics. Functional characteristics of blood vessels. Vascular tone and its regulation. Blood pressure as an indicator of systemic hemodynamics. Regulation of systemic hemodynamics.	The learners should know the factors spotting quantity of blood pressure, a key role of microcirculation in hemodynamics, value of the basic reflexogenic regions	The learners should be able to spot correctly arterial pressure, arterial pulse; to use this knowledge to explain the changes in the functions of individual organs and the organism as a	3

					whole	
13	Physical and chemical properties of blood. Red blood cell system 24.11.2020-30.11.2020	GC - 1,5, GPC - 1,5, 7 PC - 15, 16	The concept of blood system. Blood composition. The most important physical and chemical indices of blood, their regulation. Red blood cell system. Hemoglobin, its types and ligands. Neuro-humoral regulation of erythropoiesis.	The learners should know the concept about blood, its composition, the functional role of electrolytes and plasma proteins; osmotic and oncotic pressure; age changes of the physicochemical properties of blood	The learners should be able to use this knowledge for functions of the circulatory system in an integrated organism under internal environmental requirements, for the assessment of laboratory indexes of the erythrocyte system	3
14	The leukocyte system. Immunity. 1.12.2020-7.12.2020	GC - 1,5, GPC - 1,5, 7 PC - 15, 16	The concept about leukocyte system. Leukocytic formula. Humoral and cellular immunity. Neurohumoral regulation of the immune response.	The learners should know types and quantity of leukocytes, their functions, the leukocyte formula, physiological leukocytosis, the causes and mechanisms of their development; the excitatory and humoral regulation of leucopoiesis; immunodefence, the immune response, its regulation	The learners should be able to apply this knowledge to the analysis of processes of body vital activity and the assessment of laboratory indexes of the leukocyte system of a healthy person	3
15	System of blood coagulation and anticoagulation. Blood groups 8.12.2020-14.12.2020	GC - 1,5, GPC - 1,5, 7 PC - 15, 16	General characteristics of blood clotting and anticoagulation system. The role of vascular, tissue, and chemical factors. Phases and mechanisms of hemostasis. Methods of the hemostasis system research. The blood groups in people. The definition of blood group.	The learners should know coagulating and anticoagulant systems of blood providing maintenance of its liquid state and ability to thrombus formation; the factors	The learners should be able to apply this knowledge to an assessment of a state and regulation of systems of coagulation and blood anticoagulation in an organism,	3

				accelerating and retarding a fibrillation; regulation of system of hemostasis, its senescent changes and physiological indexes	for the research analysis of hemostasis system and blood groups	
16	Control for the themes № 9-15. 15.12.2020-21.12.2020	GC - 1,5, GPC - 1,5, 7 PC - 15, 16	Oral survey, problem solving, discussion of responses, correction	The learners should know the basic principles of circulatory and blood systems organization, mechanisms of their regulation	The learners should be able to assess the state of these systems, to get practical skills of different laboratory tests	3
17	Physiology of respiration. External respiration. Blood gases, their transport. Gas exchange between blood and tissues 22.12.2020-28.12.2020	GC - 1,5, GPC - 1,5, 7 PC - 15, 16	General characteristics of the respiratory system. Pulmonary ventilation. Methods of external respiration research. Airway functions of the respiratory tract. Gas exchange in the lungs. Transport of gases by blood. Non-gas exchange lung functions.	The learners should know the importance of the respiratory system for the body, basic respiration stages, respiratory cycle, mechanisms of inhalation and exhalation, pulmonary ventilation, pulmonary volumes and capacities, methods of definition of pulmonary volumes and capacities, functions of respiratory ways, pulmonary clearance regulation	The learners should be able to use this knowledge for explanation of the functional parameters of external breath and gas transport in a healthy person	3