THEMATIC LESSON PLAN OF LECTURES IN THE DISCIPLINE «NORMAL PHYSIOLOGY – PHYSIOLOGY OF THE MAXILLOFACIAL REGION» FOR STUDENTS OF THE EDUCATIONAL PROGRAM SPECIALIST IN THE SPECIALTY 31.05.03, FOR THE 2025-2026 ACADEMIC YEAR

№	Topics of lectures	Hours (academic)
	2 semester	
1	**Normal physiology and its importance in the future professional activity of dentists. Physiology of excitable tissues**[1] General and specific properties of excitable tissues. Biological membranes, their structure and functions. Resting membrane potential. Action potential and its phases. Excitability. Changes of excitability during excitation, phases of excitability. Synapse, classification of synapses. Electrical synapses: structure and properties. Chemical synapses, structure. Physiological properties of chemical synapses. Physiology of excitable tissues. Physical and physiological properties of skeletal muscles. The submicroscopic structure of the myofibril. The concept of sarcomere. Contractile and regulatory proteins[2]	2
2	**Physiology of central nervous system. Practical aspect of a dentist's work**[1] Functional organization of the central nervous system. Neuron as a structural and functional unit of the central nervous system, structure, properties. The concept of reflex. Classification of reflexes. Reflex arc as a morphological substrate of the reflex. Nerve center. Properties of nerve centers. Physiology of autonomic nervous system. Sympathetic division of autonomous nervous system, its structural and functional features (centers, characteristics of fibers and ganglia, mediators, receptors to them, objects of innervation and influence on them). Parasympathetic division of autonomous nervous system, its structural and functional features (centers, characteristics of fibers and ganglia, mediators, receptors to them, objects of innervation and influence on them). Metasympathetic division of autonomic nervous system, its structural and functional features, its role in regulating the activity of internal organs[2]	2

3	**Physiology of human behavior. Motivation. Emotions. Memory. Higher nervous activity**[1] Unconditional and conditional reflexes, their comparative characteristics. Inhibition of conditioned reflexes: types and their characteristics. First and second signaling systems in humans, their role. Structure and functional significance of individual regions of the cerebral cortex. Sleep: types of sleep, sleeping patterns, understanding the mechanisms of sleep. Emotions: functions, types, theories, mechanisms of emotions. Physiology of sensory systems. General principles of analyzers structure. Main functions of the analyzers: detection, signal discrimination, signal conversion, encoding and conducting information, detection and identification of images. Pain sensory system: receptor, conduction and cortical divisions. Tactile sensory system: receptor, conduction and cortical divisions. Temperature sensory system: receptor, conductor and cortical divisions. Taste sensory system: receptor, conduction and cortical divisions. Olfactory sensory system: receptor, conduction and cortical divisions[2]	2
3 semester		
1	**Physiology of the digestive system. Practical aspect of a dentist's work**[1] A functional system that maintains a constant level of nutrients in the blood. Methods of studying the functions of the digestive glands. Adaptive nature of salivation to various food and rejected substances. Digestion in the stomach. Digestion in the duodenum and small intestine. Structure and functions of the pancreas and liver. Digestion in the large intestine. Absorption. Thirst, hunger and satiety[2]	2
2	**Body fluids. Excretion. Kidney physiology**[1] Quantity and composition of blood. Plasma and formed elements, their quantity, characteristics and functions. Hemopoiesis. Regulation of hemopoiesis. Leukocyte formula. Phagocytosis. Hemostasis. Blood groups and Rh factor. Excretory organs. Structure and functions of the kidneys, ureters and bladder. Nephron. Features of blood supply and innervation of the kidneys. The process of urine formation. Glomerular filtration. Clearance. Tubular reabsorption and secretion. Regulation of kidney activity. Amount and composition of urine. The role of the kidneys in the elimination of drugs[2]	2

3	**Physiology of the cardiovascular system and respiration. External respiration.** Physiology of the heart. Structure and function of the heart. Physiological properties of the myocardium. Excitability, conductivity, contractility. Conduction system of the heart. The nature of heart automaticity. Blood vessels physiology. Arterial, venous and lymphatic systems. Functional classification of blood vessels. Basic laws of hydro- and hemodynamics. Blood pressure. Arterial pulse. Microcirculatory bed. Innervation of blood vessels. Vasomotor center. Neural and humoral regulation of vascular tone. Vasoconstrictor and vasodilator substances. Blood depot. Structure and functions of the respiratory tract. Biomechanics of inhalation and exhalation. Vital capacity of the lungs and its components. Effective pulmonary ventilation. Gas exchange in the lungs. Transport of gases by blood. Exchange of gases in tissues. Modern concept about the structure and localization of the respiratory center. Automatism of the respiratory center of the medulla oblongata[2]	2
	TOTAL	12

[1] - subject
[2] - essential content

Considered at the meeting of the department of normal physiology
«20» мая 2025, protocol № 10

Head of the Department  С.В. Клаучек