

SYLLABUS

<b>Subject:</b>	<i>Physiology I</i>		
<b>Study Programme:</b>	<i>Dental Medicine</i>	<b>Study Period:</b>	<i>3<sup>rd</sup> semester</i>
<b>Evaluation:</b>	<i>Credit</i>	<b>Subject Type:</b>	<i>Compulsory course</i>
<b>Content:</b>	<i>3h. lectures and 3 h. pract. lessons / week</i>		<i>Total 84 hours</i>

Department: Department of Medical Physiology

<i>Week</i>	<i>Lectures</i>	<i>Practical Lessons</i>
1.	Introduction to physiology. Homeostasis, the body fluids.	<b>Seminars:</b> Subject matter of physiology. Principles of the experimental work – observation, experiment, clinical research. History of physiology. <b>Practical lessons:</b> Instructions to the practical lessons. Safety in the laboratory – safety instructions for students. The first aid.
2.	The cell, cell membrane, transport of molecules across cell membranes, membrane potentials. Physiology of blood.	<b>Seminars:</b> The basic physiological terms and factors influencing physiological functions. Homeostasis. Body fluids: distribution, composition, measurement. Exchange of substances and transport of molecules across cell membranes, membrane potential and action potential. <b>Practical lessons:</b> Manners of blood samples taking. Determination of hematocrit value. Erythrocyte sedimentation rate and factors affecting the sedimentation. Determination of haemoglobin value, types of haemoglobin.
3.	Blood cells I. Blood cells II.	<b>Seminars:</b> Blood functions and general blood attributes. Blood plasma and its content Red blood cells. White blood cells. <b>Practical lessons:</b> Manners of blood samples taking. Determination of the red blood cell count. Determination of the white blood cell count.
4.	Blood groups. Hemostasis and its phases. Physiology of the heart, its properties and metabolism of myocardium. Electrophysiology of the heart I.	<b>Seminars:</b> Platelets – morphology, production, account, function. Blood clotting, haemocoagulation factors. Group antigens, blood transfusion. Physiology

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		<p>of immune system</p> <p><b>Practical lessons:</b> Blood smear, differential leukogram, Hynk's number. Determination of the platelet count.</p>
5.	<p>Electrophysiology of the heart II. The heart cycle.</p>	<p><b>Seminars:</b> The basic properties of the myocardium. Excitation and conduction of the heart impulse, function of cardiac conduction system. Basics of electrocardiography. Metabolism and energetics of the heart.</p> <p><b>Practical lessons:</b> Determination of the blood groups. Determination of the Rh-factor. Blood clotting time. Bleeding time. Determination of the prothrombin time. Red blood cell values.</p>
6.	<p>The heart as a pump – its control mechanism. General haemodynamics.</p> <p><b>1<sup>st</sup> midterm test: Physiology of blood</b></p>	<p><b>Seminars:</b> The heart contraction. Heart cycle. Mechanical and acoustic manifestations of the heart activity, examining methods.</p> <p><b>Practical lessons:</b> Evaluation of ECG.</p>
7.	<p>Peculiarities of the haemodynamics in some organs. Control of the blood volume and blood pressure.</p>	<p><b>Seminars:</b> Control of the heart activity.</p> <p><b>Practical lessons:</b> Percussion of the heart. Auscultation of the heart. Phonocardiography. Examination of the arterial pulse.</p>

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8.	<p>Physiology of respiratory system. Mechanisms of breathing.</p>	<p><b>Seminars:</b> Haemodynamics in the high-pressure system. Haemodynamics in venous and capillary network. Regulation of blood circulation. Peculiarities the lymphatic system. <b>Practical lessons:</b> Measurements of the blood pressure, control mechanisms of blood pressure. FILM : Korotkoff sounds (40'). Computer model of the blood pressure.</p>
9.	<p>Pulmonary ventilation, parameters determining ventilation. Exchange and transport of the respiratory gases.</p>	<p><b>Seminars:</b> Meaning and functions of respiratory system. Functional morphology of respiratory system. Ventilation - mechanisms and determining parameters. Mechanism of breathing. <b>Practical lessons:</b> Autonomic reflexes acting on the heart. Model of the blood vessel elasticity. Resistance of blood capillaries.</p>
10.	<p>Control of the breathing. Hypoxia. Hypoxemia.  <b>2<sup>nd</sup> midterm test: Physiology of the cardiovascular system</b></p>	<p><b>Seminars:</b> Gas properties. Respiratory gases exchange in lungs. Transport of the respiratory gases by blood. <b>Practical lessons:</b> Muller manoeuvre. Valsalva manoeuvre. Spirography - testing by VOLUTEST. Voluntary apnoea.</p>
11.	<p>Renal physiology. Control mechanisms of homeostatic kidney function I.</p>	<p><b>Seminars:</b> Regulation of the respiratory activity (brainstem control of breathing, chemical mechanisms of breathing, reflex reactions, suprapontine mechanisms) Hypoxia, hyperoxia, hypobaria, hyperbaria. <b>Practical lessons:</b> Percussion of the lungs. Auscultation of the lungs. Testing by EUTEST. Testing by ventilometer VM1. Computer spirography.</p>

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12.	Control mechanisms of the homeostatic kidney function II. The functions of the gastrointestinal system I.	<p><b>Seminars:</b> Renal physiology.</p> <p><b>Practical lessons:</b> Urine examination - density, pH, proteins, glucose. Urine examination - ketone bodies, bile stains, blood, pus. Examination of the native urine sediment.</p>
13.	The functions of the gastrointestinal system II. The functions of the gastrointestinal system III.  <b>3<sup>rd</sup> midterm test: Physiology of the respiratory system</b>	<p><b>Seminars:</b> Physiology of the digestion and absorption I.</p> <p><b>Practical lessons:</b> Chemical test for HCL. Bill of fare (Menu).</p>
14.	Control of digestion and absorption. Thermoregulation.	<p><b>Seminars:</b> Physiology of the digestion and absorption II. Function of the liver</p> <p><b>Practical lessons:</b> Evaluation of the practical lessons.</p>