

SYLLABUS

<b>Subject:</b>	<b>Medical and Human Biology 1</b>		
<b>Study Programme:</b>	<i>Dental Medicine</i>	<b>Study Period:</b>	<i>1. semester</i>
<b>Evaluation:</b>	<i>passing</i>	<b>Subject Type:</b>	<i>mandatory(compulsory)</i>
<b>Content:</b>	<i>2 lecture and 2 exercise hours /week</i>		<i>Total 56 hours</i>

Department: Department of Medical Biology

<i>Week</i>	<i>Lectures</i>	<i>Practical Lessons</i>
1.	<b>Introduction to biology</b> <b>Biomacromolecules</b> – common characteristics, the structure and function of saccharides, lipids, proteins and nucleic acids	<b>Microscopy I.</b> – introduction, light microscope, construction of microscope, optical pathway in a compound microscope, adjustment and use of microscope
2.	<b>Cell structure</b> – prokaryotic and eukaryotic cells	<b>Microscopy II.</b> – microscopic examination of simple objects (printed letters, air bubbles, fingerprint, the use of oil immersion objective)
3.	<b>Cell structure</b> – cellular organelles, their structure and function	<b>Preparing samples for light microscopy</b> – wet mount, microscopic examination of Protozoa - vital staining, blood smear and print preparation
4.	<b>General characteristic of biomembranes</b> – molecular structure of biomembranes, transport of molecules through the membrane	<b>Biomacromolecules</b> – structure and function of biomacromolecules, purification of nucleic acids, solving tasks and problems.
5.	<b>The structural organization of genome</b> – organization of DNA in genomes, the basic principles of human cytogenetics	<b>Cell structure I.</b> – structure and function of prokaryotic and eukaryotic cell, cell organelles – examination of chloroplasts, cell inclusions, vacuoles, mitochondria
6.	<b>Cell cycle I.</b> – cell cycle, replication and repair of DNA	<b>Cell structure II.</b> – examination of nuclei and nucleoli; evaluation of blood smear
7.	<b>Cell cycle II.</b> – cell cycle, control of cell cycle, mitosis	<b>Cell physiology</b> – transport across membranes, osmosis, plasmolysis and deplasmolysis

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8.	<p><b>Cell signaling</b></p> <p><b>TEST 1</b></p>	<p><b>The structural organization of genome</b> – organization of DNA in genomes, making a human karyotype, FISH method</p>
9.	<p><b>Cell cycle III.</b> – meiosis, spermatogenesis, oogenesis, fertilization in human</p>	<p><b>Cell cycle I.</b> – cell cycle stages, replication, solving tasks and problems</p>
10.	<p><b>Cell differentiation, cell ageing and cell death</b></p>	<p><b>Cell cycle II.</b> – mitosis, examination of mitotic stages on squashed preparations, examination of human metaphase chromosomes</p>
11.	<p><b>Gene expression I.</b> – gene structure and function, transcription, post-transcriptional RNA processing</p>	<p><b>Cell cycle III.</b> – meiosis, genetic consequence of meiosis, gametogenesis, microscopic examination of meiotic stages on fixed mounts</p>
12.	<p><b>Gene expression II.</b> – translation, synthesis of proteins, posttranslational modifications, regulation of gene expression</p>	<p><b>Microscopic analysis of cells and tissues I.</b> – cell measurement, counting, and analysis</p>
13.	<p><b>The basic principles of epigenetics</b></p> <p><b>TEST 2</b></p>	<p><b>Microscopic analysis of cells and tissues II.</b> – cell measurement, counting, and analysis</p>
14.	<p><b>Genomics and medicine</b></p>	<p><b>Physical and chemical properties of living substances/dermatoglyphics</b></p>