

Study program : DENTISTRY
Type and level of studies: Integrated academic studies, Level 1/2
Course unit: BIOLOGY
Teacher in charge : Professor Olivera Milošević-Djordjević, DSc
Language of instruction : ENGLISH
ECTS: 3
Prerequisites: Completed course in biology
Semester: WINTER SEMESTER
Course unit objective: Acquiring knowledge and skills in biology.
<p>Learning outcomes of Course unit:</p> <p>Upon completion of the Biology course, the student is expected to acquire basic knowledge about:</p> <ul style="list-style-type: none"> • Cell structure and structure, Differences between prokaryotic and eukaryotic cells, The role of the nucleus in the inheritance of traits and the development of the organism, Transport of matter across the cell membrane • Biologically important elements and compounds of the cell, The mechanism of DNA molecule duplication, Processes in protein synthesis, Regulatory mechanisms of gene expression • Reproduction of molecules, viruses, bacteria, somatic cells, Gamete reproduction and gametogenesis, The process of fertilization and the basics of embryonic development of mammals
<p>Course unit contents</p> <p><i>Theoretical classes</i> <i>Organization of prokaryotic and eukaryotic cells - cell organelles. Cell membrane - structure, transport of molecules through the cell membrane. Nucleus- structure, chromatin (types of chromatin, packing of chromatin to metaphase chromosome), nucleolus. Chemical composition of the cell - important chemical elements, water and organic compounds: Nucleic acids - DNA and RNA. DNA replication. Genetic code, codon, anticodon. Protein synthesis- transcription and translation. Regulation of transcription and translation. Reproduction of molecules, viruses, bacteria. Mitosis and modifications of mitosis. Gamete reproduction, phases in gametogenesis, Meiosis and the importance of meiosis. Spermatogenesis, sperm structure, sperm biology, hormonal regulation of spermatogenesis, anomalies of spermatogenesis. Mammalian oogenesis, egg biology, sexual cycle of female mammals. Fertilization, modifications of the fertilization process. Embryogenesis, the embryonic development of a mammal.</i></p> <p><i>Practical classes</i> <i>Similarities and differences in the organization of prokaryotic and eukaryotic cells. Cell membrane - structure and transport of molecules. Nucleus-structure of the nucleus, role in the process of inheritance. DNA replication- animation of replication and solving problems from base complementarity. Transcription-stages in the synthesis of RNA molecules-animation of transcription and solving problems. Translation-stages in the translation process, animation of the translation process. Cell division – mitosis, meiosis. Gametogenesis-spermatogenesis and oogenesis-solving problems. Fertilization in mammals. Mammalian embryonic development.</i></p>
<p>Literature</p> <p>Epstein J.E. Human molecular biology, Cambridge University press, UK, 2003. Balinsky B.I. An introduction to embryology, 5th edition, Saunders College, Philadelphia, 1981.</p>

Number of active teaching hours				Other classes
Lectures: 15	Practice: 15	Other forms of classes:	Independent work:	
Teaching methods: Lectures, practice in a clinic, clinical problems solving				
Examination methods (maximum 100 points)				
Exam prerequisites	No. of points:	Final exam	No. of points:	
Student's activity during lectures	40	oral examination		
practical classes/tests		written examination	60	
Seminars/homework				
Project				
Other				

Grading system		
Grade	No. of points	Description
10	91-100	Excellent
9	81-94	Exceptionally good
8	71-84	Very good
7	61-74	Good
6	51-64	Passing
5	< 51	Failing

Course unit description