

SYLLABUS

<b>Subject:</b>	<b>Medical and Human Biology 2</b>		
<b>Study Programme:</b>	<i>Dental Medicine</i>	<b>Study Period:</b>	<i>2. semester</i>
<b>Evaluation:</b>	exam	<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>Mutations I</b> - classification of mutations, mechanisms of mutagenesis, gene (point) mutations	<b>Gene expression</b> – gene structure and function, transcription, translation, genetic code
2.	<b>Mutations II</b> - structural and numerical chromosome mutations	<b>Mutations I</b> – gene mutations and chromosome aberrations, consequences of mutations
3.	<b>Mendelian inheritance</b> - historical overview, general characteristics, Mendel's laws of inheritance	<b>Mutations II</b> – nomenclature and karyotype explanation
4.	<b>Gene linkage</b> <b>Heredity and sex</b>	<b>Mendel's laws of inheritance</b> – genotype and phenotype, gene, allele, locus, laws of segregation and independent assortment, Mendelian inheritance in humans
5.	<b>Inheritance of blood group systems I</b> – ABO, H, Rh, MNS	<b>Gene linkage</b> – linkage group, crossing over and power of linkage
6.	<b>Inheritance of blood group systems II</b> – Lewis, Secretor, Kell, Duffy. MHC (HLA)	<b>Heredity and sex</b> - chromosomal determination of sex, sex-linked inheritance, sex-limited and sex-influenced traits
7.	<b>Quantitative genetics</b> - polygenic inheritance, heritability, multifactorial diseases <b>1<sup>st</sup> written test</b>	<b>Inheritance of blood group systems I</b> – ABO system, Rh system, MNS, Lewis, haemolytic disease of the newborns

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8.	<b>Population genetics</b> – Hardy-Weinberg law, panmixis, population equilibrium, inbreeding, genetic drift, eugenics, euphenics	<b>Inheritance of blood group systems II</b> – HLA antigens, gene interactions, epistasis and hypostasis
9.	<b>Genealogy and genetic counselling</b>	<b>Population genetics</b> – Hardy-Weinberg equilibrium, influence of mutations, migration, selection and genetic drift
10.	<b>Genetics of cancer</b>	<b>Genealogy</b> – pedigree analysis, construction of pedigree, autosomal and sex-linked inherited traits in pedigree, dominant and recessive inheritance
11.	<b>Mutations and their role in pathogenesis of human diseases – selected disorders</b>	<b>Genetic counselling I</b> – purpose, aim and general characteristics of genetic counselling, prenatal diagnosis of genetic diseases
12.	<b>Molecular biology methods in human genetics – basic principles and techniques</b>	<b>Genetic counselling II</b> – solving model problems
13.	<b>Molecular biology methods in clinical practice</b> <b>2<sup>nd</sup> written test</b>	<b>Molecular biology methods</b> – PCR, electrophoresis, restriction endonucleases, DNA sequencing, hybridization of nucleic acids
14.	<b>Ethical issues in human genetics</b>	<b>Evaluation of prerequisites and compensations</b>