

1.	Subject	HUMAN GENETICS			
2.	Code	MLD – 216			
3.	Study program:	Three-year professional studies of medical laboratory diagnostics			
4.	Conducted by	UKIM – Medical Faculty Department of Human Genetics			
5.	Degree of education (first or second cycle)	First cycle			
6.	Academic year/semester	II/III	7.	Credits	2
8.	Professor	Prof. d-r Aleksandar Petlichkovski The lessons are held by all the members of the Department			
9.	Prerequisite	None			
10.	Goals	<p>The students will be able to:</p> <ul style="list-style-type: none"> - Define the basic terms of the human genetics field - Explain Mendel's and non-Mendel's laws of inheritance - List particular types of congenital and genetic diseases, distinguish between different mutations - List the consequences of mutations on the cells, the phenotype, the growth and the development of the living being - Explain the meaning of different laboratory methods 			
11.	Content summary:	<p>Theoretical lessons: Basics of human genetics – organization of the prokaryotic and eukaryotic DNA, cell nucleus DNA and non-nucleus DNA, basic processes of replication, transcription and translation, regulation of genetic expression and signalization, foundations of cytogenetics, chromosomes organization, types of chromosomal aberrations, cell and molecular base of inheritance, Mendel's genetics, non-Mendelian, complex and multifactorial inheritance, genetic factors of common disorders. Genetic mapping and identification for monogenic disorders. Mutations – types, ways of occurring and correction systems, molecular and biochemical foundation of genetic disorders, new technologies for genetic therapy, foundations of oncogenetics and immunogenetics. Methods of discovering genetic changes – pre- and postnatal, basic principles of genetic counseling, ethical aspects of genetic testing.</p> <p>Practical lessons:</p> <ul style="list-style-type: none"> • Methods of genetic analysis – DNA extraction • Methods of discovering familiar and unfamiliar mutations, analysis of polymorphism • Writing and interpreting results in case of morbidity assessment • Basics of cytogenetics – making a karyotypem staining methods, FISH technique, recognizing chromosomal aberrations • Methods of prenatal and postnatal detection of malformations, genetic counseling 			
12.	Teaching methods:	Interactive lessons, practical lessons			
13.	Total classes:	60			
14.	Organization	30 theoretical lessons, practical lessons, seminars 30 lessons learning at home			
15.	Types of teaching activities	15.1	Lessons: theoretical classes	15	
		15.2	Practical lessons,	15	

			seminars	
16.	Other types of activities		16.1	Training
			16.2	Self-supporting practice
			16.3	Learning at home
17.	Knowledge assessment		Points	
	17.1	Tests		
	17.2	Final exam	Written form test	points 24-40 (min.-max.)
			Oral exam	points 18-30 (min.-max.)
	17.3	Active participation	Min. – Max.	
			Theoretical lessons	6 - 10
			Practical lessons	12 - 20
18.	Grading criterion (points/grades)	Up to 59	5 (five) F	
		60-68	6 (six) E	
		69-76	7 (seven) D	
		77-84	8 (eight) C	
		85-92	9 (nine) B	
		93-100	10 (ten) A	
19.	Requirements for obtaining a signature and attending the final examination	<p>To obtain a signature the student must gain minimum points from visiting the theoretical and practical lessons.</p> <p>To attend the final (oral) exam, the student must pass the mid-term exams or gain at least 30% of the total number of points of the mid-term exams. In the exam session, the student first attends the mid-term exams and then the final exam.</p> <p>The final grade for the subject is formed according to the table for grading, and is based on the sum of the points from all the activities, mid-term exams and final exam.</p>		
20.	Language	Macedonian		
21.	Method of evaluating the quality of the lessons	Students' anonymous evaluation of the subjects, the professors and collaborators who hold the lessons.		
22.	Literature:			
	22.1	Mandatory literature		
		1.	Prof. d-r Kochova et al., Medical Genetics, University Ss. Cyril and Methodeus, Medical Faculty Skopje, 2013	
		2.	Prof. d-r A. Petlichkovski, Genetics – Authorized lectures, 2019	
		3.	Prof. d-r M.Spiroski, Human Genetics Practicum 1, University Ss. Cyril and Methodeus, Medical Faculty Skopje. 2009	
		4.	Prof. d-r Kochova et al., Human Genetics Practicum 2, University Ss. Cyril and Methodeus, Medical Faculty Skopje, 2009	
	22.2	Additional literature		
		1. Peter Russel, iGenetics, 3 rd ed., Pearson, 2009		