Study program: MSc Biology

Study level: Master's studies

Course title: Medical genetics

Course code: MB36

Teacher: Assoc. Prof. Dr. Mihajla Đan

Course status: elective

ECTS: 7

Requirements:

Course objectives:
The aim of this course is to introduce students to the principles of diagnostics and the underlying mechanisms of hereditary disorders.

Learning outcomes
After successfully realized pre-exam and exam obligations student can understand the function of human genome and the importance of genetics for the origin of diseases in human populations, and procedure of screening and molecular diagnostics.

Syllabus
Theoretical instruction
Introduction to medical genetics. Chromosomal structure and number, normal and deviant karyotypes. Cytogenetics. Single-gene disorders. X-linked disorders. Polygenic and multifactorial inheritance. Biochemical genetics. Hemoglobinopathies. Pharmacogenetics. Immunogenetics. Cancer genetics. Screening for genetic diseases. Prenatal testing and techniques in prenatal diagnosis. Risk calculation. Gene therapy. Ethical issues in medical genetics.

Practical laboratory
Pedigree analysis. Cytogenetics. FISH. PCR diagnostics of monogenic diseases. Genotyping of monogenic disorders. Use of web based medical genetics databases and tools for genetic testing. Case-study problems.

Literature
Turnpenny P. Ellard S. Емеријеви основи медицинске генетике. Датастатус, Београд, 2009.
Станков К. Биохемија и генетика наследних болести. Универзитет у Новом Саду, Медицински факултет, 2016.
Tollefsbol T. Handbook of Epigenetics: The New Molecular and Medical Genetics.
Harper JC. Preimplantation Genetic Diagnosis. Second Edition. Cambridge University Press. 2009.

Weekly teaching load	Lectures: 2	Teaching laboratory**:**	Other forms of teaching: 3

Teaching methods
lectures, seminar, practical laboratories, projects, tuition

Evaluation of knowledge (maximum score 100)

Pre-exam obligation	points	**Final exam**	points
Student engagement in lectures		Written exam	
Seminar	Up to 20	Oral exam	Up to 70
Tests			
Practical laboratory	Up to 10		