

Course Unit Descriptor

Study program: MSc Biology			
Course Unit Title: Genomics			
Course Unit Code: MB034			
Name of Lecturer: Prof. Dr. Mihajla Djan			
Type and Level of Studies: Master's studies			
Course Status: elective			
Semester: Winter			
Language of instruction: English			
Mode of course unit delivery (face-to-face/distance learning):			
Number of ECTS Allocated: 7			
Prerequisites:			
Course Aims:			
The aim of this course is to introduce students to genome sequencing and bioinformatic approaches to genome analyses.			
Learning Outcomes:			
After successful fulfilling of pre-exam and exam obligations student can explain the key concepts of genomics and gain skills in applying bioinformatic tools in genome analyses.			
Syllabus:			
<i>Theoretical instruction</i>			
Introduction to Genomics. Mapping genomes. The Human genome project. Minimal genome. Genome sequencing. Genome annotation. Gene expression and transcriptomics. SNPs and variation. Applications of SNP technology. SNP genotyping. Integrative genomics.			
<i>Computer laboratory</i>			
Tools and databases available for bioinformatic analysis. NGS technologies. Sequence reads archive. Data gathering and quality assessment. Genome assembly algorithms. Estimation of draft genome sequence quality.			
Literature			
Gibson G., Spencer M.V. A Primer of Genome Science. Sinauer Associates, Inc. Publ. USA, 2004.			
Mike S., Elaswarapu R. Genomics: Essential Methods, John Wiley & Sons, Ltd. UK, 2011.			
Deonier R.C., Tavaré S., Waterman M.S. Computational Genome Analysis: An Introduction, Springer, 2005.			
Primose S.B., Twyman R.M. Principles of Genome Analysis and Genomics. Blackwell Publ. UK, 2003.			
Barnes M.R., Gray I.C. Bioinformatics for geneticists. John Willey & Sons Ltd. UK, 2003.			
Weekly teaching load	Lectures: 2	Teaching laboratory: 2+4	
Teaching methods			
lectures, practical lectures, computer labs, tuition			
Evaluation of knowledge (maximum score 100)			
Pre-exam obligation	points	Final exam	points
Student engagement in lectures		Written exam	
Seminar	Up to 40	Oral exam	up to 50
Tests			
Practical laboratory	up to 10		