

Course Unit Descriptor

Study Programme: Forensics			
Course Unit Title: Animal forensic genetics			
Course Unit Code: FB-02			
Name of Lecturer(s): Mihajla Dan, Nevena Veličković			
Type and Level of Studies: Master Academic Degree			
Course Status (compulsory/elective): elective			
Semester (winter/summer): summer			
Language of instruction: English			
Mode of course unit delivery (face-to-face/distance learning): face-to-face			
Number of ECTS Allocated: 6			
Prerequisites: -			
Course Aims: The aim of the course is to provide knowledge about processing and analyses of samples of animal origin using molecular methods for forensics purposes.			
Learning Outcomes: After successful finalizing of pre-exam and exam obligations, student is able to: <ol style="list-style-type: none"> Analyse and process animal samples Present gained knowledge about processes and mechanisms of genetic information transmission at molecular, cellular, organism and population levels in animals Apply adequate computer packages for genetic data analyses in forensics Define advantages and disadvantages of different DNA technologies methods in animal forensics 			
Syllabus: <i>Theory</i> Nuclear and mitochondrial genomes. Genetic polymorphism in animal populations. Comparative overview of different DNA extraction protocols in animal tissue analyses. DNA analyses methods: RFLP, PCR-RFLP, VNTR, STR in animal forensics. DNA barcoding. Nuclear genes sequences analyses in animal tissue identification. DNA based sex determination in different animals. DNA barcoding in poaching, illegal animal trafficking, illegal interpopulation translocations, stomach content analyses, metabarcoding (animal products, pharmaceutical products, industry). Pedigree analyses. Acent DNA analyses. Software and statistical methods in genetic data analyses. <i>Practice</i> Lab work: DNA and RNA extraction from animal tissues: muscle tissue, blood, feces, bone, feather, saliva. PCR amplification of selected set of molecular markers for identification of animal species. Metabarcoding in animals. Computer lab: STR genotyping and profile analyses in animals,: Peak Scanner, Gene Marker, Arlequin. Pedigree analyses. DNA barcoding: BioEdit, BLAST, BOLD. Databases of DNA sequences for different organisms and online tools.			
Required Reading: <ol style="list-style-type: none"> Goodwin NJ., Linacre A., Hadi S. An Introduction to Forensic Genetics. John Willey & Sons Ltd. UK, 2007 Sambrook J, Russel DW. Molecular Cloning: A Laboratory Manual. 3rd Edition, CSHL, New York, 2001. 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 Contact Hours: 5 (75)		Lectures: 3 (45)	
		Practical work: 2 (30)	
Teaching Methods: Lectures, lab practical lectures, computer practical lectures			
Knowledge Assessment (maximum of 100 points):			
Pre-exam obligations	points	Final exam	Points
Active class participation	5	written exam	
Practical work	5	oral exam	60
Preliminary exam(s)		
Seminar(s)	30		
The methods of knowledge assessment may differ; the table presents only some of the options: written exam, oral exam, project presentation, seminars, etc.			