

(Table 5.2) Course unit description

Study program : BIOLOGY				
Type and level of studies: MASTER ACADEMIC STUDY OF BIOLOGY – MOLECULAR BIOLOGY				
Course unit: Genotoxicology				
Teacher in charge: Dr Darko Grujičić, Ph.D., Assistant Professor				
Language of instruction (<i>English or other foreign language</i>): <i>English</i>				
ECTS: 6				
Prerequisites: enrollment in the 1st year of study				
Semester: <i>Summer Semester</i>				
Course unit objective				
Getting to know the mechanisms of genotoxicity of environmental agents and to acquire knowledge about the basic principles of creating and performing of the genotoxic tests in laboratories, monitoring the genetic structure of natural populations, as well as understanding of the principles of evaluation of genotoxicity and antigenotoxicity.				
Learning outcomes of Course unit				
Students will gain knowledge and insight into the mechanisms of genotoxicity and antigenotoxicity of various agents present in the environment, as well as the ability to find, use and presentation of scientific information and knowledge from genotoxicology and ecogenotoxicology.				
Course unit contents				
<i>Theoretical classes</i>				
Mutations and mechanisms of mutations. Physical genotoxic agents. Chemical genotoxic agents. Biological genotoxic agents. The association of genotoxic and mutagenic effects. Mutagenesis and carcinogenesis. Antimutagenesis and antimutagens. The pollutants and xenobiotics (overview). Ratio of toxicity and genotoxicity. Principles of detection and evaluation of the effects of genotoxic agents. The division tests and genotoxicological strategy in accordance with international rules and regulations. Methods and model organisms in monitoring of environmental pollution genotoxic agents. Molecular biology methods in the detection of genotoxic agents. Contemporary approaches to genotoxicology, application of new technologies and the development of new disciplines (pharmacogenomics, toxicogenomics).				
<i>Practical classes</i>				
Biological methods in genetic toxicology. Detection of genotoxicity using plant model organisms (<i>Allium cepa</i> , <i>Tradescantia</i> , <i>Zey mays</i> , <i>Vicia faba</i>). Detection of genotoxicity using animal model organisms (<i>Mytilus edulis</i> ; <i>Lumbricidae</i> , <i>Danio rerio</i> , <i>Mus musculus</i> , <i>Rattus norvegicus</i>). Evaluation of genotoxic effects of agents analysis of human material (application comet assay in human peripheral blood lymphocytes and buccal cells).				
Literature				
Phillip L. Williams, Robert C James, Stephen M Roberts. Principles of toxicology: environmental and industrial applications. 2nd edition, 2000. Selected review articles published in international scientific journals in this field.				
Number of active teaching hours				Other classes
Lectures: 30	Practice: 30	Other forms of classes:	Independent work:	
Teaching methods				
Examination methods (maximum 100 points)				
Exam prerequisites	No. of points:	Final exam	No. of points:	
Student's activity during lectures	5	oral examination	50	
practical classes/tests	5	written examination	20	
Seminars/homework	20	.....	
Project				
Other				
Grading system				
Grade	No. of points	Description		
10	....	Excellent		
9	....	Exceptionally good		
8	....	Very good		
7	....	Good		
6	....	Passing		
5	....	Failing		

