

(Table 5.2) Course unit description

Study program : ECOLOGY				
Type and level of studies: MASTER ACADEMIC STUDY OF ECOLOGY				
Course unit: Medical aspects of environmental protection				
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>Winter Semester</i>				
Course unit objective				
Introducing the genotoxic and toxic pollutants and biological effects of xenobiotics on humans and health implications.				
Learning outcomes of Course unit				
Students will gain knowledge and insight into the mechanisms of action of different genotoxic agents, as well as the mechanisms of action of toxic agents present in the environment on humans and understand their application in the assessment of risk to human health. On the other hand, students will be introduced in modern genotoxicological and toxicological tests to assess the health risk.				
Course unit contents				
<i>Theoretical classes</i>				
The presence of harmful agents in the natural and human environment and their effect on the genetic structure of the population. The mutations and carcinogenesis. Antimutagenesis and antimutagens. The pollutants and xenobiotics (overview). Xenobiotics in organism and the influence of gene polymorphisms. The toxic effects (modified physiological reactions, tissue damages, inflammation, susceptibility to infections, neoplasia). Ratio of toxicity and genotoxicity. The pollutants and xenobiotics, and organ /organ systems. Exposure and health standards (reference, permissible, recommended doses). Assessment of health risk (hazard identification, evaluation of toxicity, exposure assessment, risk characterization). Epidemiological studies. Health risks of environmental pollution, climate change, occupational exposure.				
<i>Practical classes</i>				
Principles of detection and evaluation of the effects of genotoxic agents. Biological methods in genetic toxicology. Application of molecular biology techniques in the detection of genotoxic agents. Detection of genotoxicity using plant and animal bioassays. Evaluation of genotoxic effects of applying the comet assay in human lymphocytes and buccal cells. Methods for improve the assessment of health risks (toxicity experimental models, biological markers).				
Literature				
Thompson &Thompson Genetics in medicine, 7 th ed. Nussbaum, McInnes, Willard, Saunders Elsevier, 2007 Selected review articles published in international scientific journals in this field.				
Number of active teaching hours				Other classes
Lectures: 3	Practice: 2	Other forms of classes: 0	Independent work:	
Teaching methods				
Examination methods (maximum 100 points)				
Exam prerequisites	No. of points:	Final exam	No. of points:	
Student's activity during lectures	2.5	oral examination	25	
practical classes/tests	2.5	written examination	10	
Seminars/homework	60	.....	
Project				
Other				
Grading system				
Grade	No. of points	Description		
10	....	Excellent		
9	....	Exceptionally good		
8	....	Very good		
7	....	Good		
6	....	Passing		
5	....	Failing		