

<b>Study program:</b> Environmental Protection			
<b>Course title:</b> Radiation and Global Changes			
<b>Professor/assistant:</b> Boban Cvetanović			
<b>Type of course:</b> elective			
<b>ECTS credits:</b> 6			
<b>Pre-requisites:</b> -			
<b>Aims of the course:</b> Prepare students to: learn the theoretical bases and practical examples that illustrate these principles, understand the basic principles of protection from harmful radiation, learn the physical and biological basics of protection from harmful radiation, basic concepts of dosimetry and measurement, concepts of risk, learn basic standards from the field of protection from harmful radiation, learn international conventions in the field of global changes, follow consequences of the global climate change in the world and in our country.			
<b>Learning outcomes:</b> Student will be able to: perform measurement and analysis of various types of harmful radiation, independently determine and apply protection measures against harmful radiation, apply law regulations in the field of harmful radiation, define different types of global changes, apply protection measures against global changes.			
<b>Syllabus</b>			
<u>Theoretical part</u> The concept of radiation. Types of radiation and sources of ionizing radiation. Natural and artificial radioactivity. Radioactive isotopes. Interaction of radiation with matter. Detection of ionizing radiation. Mechanisms of the interaction of radiation with matter. Principles of detection. Dosimetric values and units. Measuring instruments: gas, scintillation and semiconductor detectors, personal dosimetry. Biological effects of ionizing radiation. The concept of risk. Exposure limits. Standards in radiation protection. Basic principles of radiation protection. Protection against external and internal exposure. Use of radiation sources: in industry, medicine, science. Radiation in the environment. Migration of radionuclides in the environment. Protection from non-ionizing radiation. Presentation of the accidents from history of radiation protection. Global changes as a result of environmental pollution. International organizations, conventions, recommendations and legislation in the field of global climate changes. The impact of global changes to the environment.			
<u>Practical part</u> Practical and demonstration exercises.			
<b>Literature</b>			
<ol style="list-style-type: none"> <li>1. G. F. Knoll, <i>Radiation Detection and Measurement, third edition</i>, John Wiley &amp; Sons, Inc., 1999.</li> <li>2. D. Popović, <i>Hemijski parametri radne i životne sredine</i>, Fakultet zaštite na radu Niš, 2009.</li> <li>1. R. Vučetić, <i>Zdravlje životne sredine i promene klime</i>, SMEITS, 1994</li> </ol>			
<b>Number of active classes</b>			Other forms of teaching:
Lectures: 2	Practical classes: 2	Research work:	
<b>Teaching methods</b> Teaching is auditory, interactive with solving practical examples.			
<b>Grading system</b> (maximum 100 points), <b>grading scale</b> from 5 to 10: below 51 points grade 5, grade 6 from 51-60 points, grade 7 from 61-70 points, grade 8 from 71-80 points, grade 9 from 81-90 points, grade 10 from 91-100 points.			
<b>Pre-exam obligations</b>	<b>points</b>	<b>Final exam</b>	<b>points</b>
activity during theoretical lectures	<b>10</b>	written exam	<b>30</b>
practical training	<b>20</b>	oral exam	-
colloquium(s)/seminar papers	<b>40</b>		
<b>Sum</b>	<b>70</b>	<b>Sum</b>	<b>30</b>