Course Unit Descriptor

Study Programme: Physics	
Course Unit Title: Radioecology	
Course Unit Code: M18RE	
Name of Lecturer(s): Associate Professor Jovana Nikolov	
Type and Level of Studies: Master Academic Degree	
Course Status (compulsory/elective): Compulsory	
Semester (winter/summer): Winter	
Language of instruction: English	
Mode of course unit delivery (face-to-face/distance learning): Face-to-face	
Number of ECTS Allocated: 8	
Prerequisites: -	

Course Aims:

This course will introduce to students main aspects of radioecology as a modern research discipline. Radioecology includes radioactive sources in the environment, accidents and radiocontamination, as well as application of radioisotopes in other research areas.

Learning Outcomes:

General Skills:

This course will help students to develop ecological thinking as a basis for future behavior and protecting environment.

Specific Competencies:

Understanding of all useful and dangerous aspects of radioactivity and ionizing radiation. Students will develop critical opinion about present radioecological problems.

Syllabus:

Theory

Radionuclides in the environment. Ionizing radiation - biological effects and dosimetry. Detection of ionizing radiation. Gamma spectrometry. Alpha/beta spectrometry. Liquid Scintillation Counter. Transport of radionucleides through eco-system. Radon and measuring methods for radon measurement. NORM materials. Industrial activities that produce NORM. Modeling of NORM from building material. Nuclear forensic.

Practice

Experimental work – alpha, beta and gamma spectroscopy. Term paper.

Required Reading:

1. "Handbook of Radioactivity Analysis", L'Annunziata, Michael

2. "Practical Applications of Radioactivity and Nuclear Radiations", G.C.Lowenthal, P.L.Airey.

3. "Radioactivity, Radionuclides, Radiation", Joseph Magill, Jean Galy, Springer Berlin Heidelberg New York.

Weekly Contact Hours:	**Lectures:** 3	**Practical work:** 2

Teaching Methods:

Lectures, seminars and practical work.

Knowledge Assessment (maximum of 100 points):

Pre-exam obligations	points	**Final exam**	points
Active class	5	written exam	20

participation			
Practical work	5	oral exam	50
Preliminary exam(s)	-	…….	
Seminar(s)	20		
The methods of knowledge assessment may differ; the table presents only some of the options: written exam, oral exam, project presentation, seminars, etc.			