

Study program: Basic academic studies Physics / Integrated master studies Professor of Physics		
Course title: Radiation and life		
Course status: Elective		
Number of ECTS: 6		
Requirement: Fundamentals of nuclear physics		
Course goal Introduction with sources of ionizing radiation in the environment, radiation protection, interaction of ionizing radiation with tissue, dose limitation, optimization of radiation protection, regulation in radiation protection, risk assessment.		
Outcome - General skills: Radiation and living matter is the subject in which students gain knowledge about sources of ionizing radiation in the environment, interaction of radiation with living matter as well as measures of protection against ionizing radiation. - Specific abilities: Students acquire knowledge of general principles of dosimetry, radiation protection, regulations in this field, radiation measurement and control, biological effect of radiation, radiation risk assessment, radiation safety and security.		
Contents Theoretical Fundamentals of ionizing radiation. Sources of ionizing radiation. Interaction of ionizing radiation with matter (interaction of a photons, neutrons, charged particles). Dosimetric quantities and units. Exposure to ionizing radiation. Biological effects of ionizing radiation. Radiation Protection. Medical prevention. Measurement and control of ionizing radiation. The use of ionizing radiation in medicine and scientific research. Nuclear weapons and nuclear disaster. Assessment of radiation risk. Legislation. Practical lessons: Experimental and computational exercises.		
Literature 1. Jacob Shapiro, Radiation Protection, Harvard University Press, 2002.		
Number of active teaching	Theoretical classes: 3	Study research: 2
Methods of teaching Lectures (3 times a week, during the term), computing practice (2 time per week during the term), the practical teaching (1 time per week during the term).		