

Level: PhD				
Course title: Nuclear Methods in Medicine				
Status: elective				
ECTS: 15				
Requirements: Modern Experimental Physics III, Nuclear Physics				
Learning objectives To introduce students to skills in the applied nuclear physics in medicine.				
Learning outcomes Students should develop: - General skills: application of nuclear physics. - Specific skills: certain technologies will be further developed, so that the knowledge could later be applied in practice.				
Syllabus <i>Theoretical instruction</i> Radioisotopes in medicine. Production of radioisotopes. The interaction of radiation with matter. Basic principles of measuring radioisotope irradiation. Basic diagnostic procedures. Measurement techniques: linear scanner, gamma camera, PET. Quality assurance. The effect of ionizing radiation on living organisms. Fundamentals of radiobiology radiation therapy, open sources. Fundamentals of dosimetry. Physical protection from radiation. Radiological Physics. Production and basic properties of X-rays. Interaction of low-energy x-rays with matter. The physical principles of x-ray diagnostics. Production of high energy electromagnetic radiation: therapeutic radioisotopes, betatron, linear accelerators. The interaction of radiation with matter. Absorption and measurement of radiation in radiotherapy, absorbed dose. Physical principles and planning of radiation therapy. Quality assurance. <i>Practical instruction</i>				
Weekly teaching load				Other:
Lectures: 4	Exercises:	Other forms of teaching:	Student research: 6	