Level: master

Course title: Radiological Physics

Status: elective

ECTS: 9

Requirements: Nuclear Physics, Contemporary Experimental Physics III

Learning objectives

Students should gain theoretical and practical knowledge in the area of Radiological Physics.

Learning outcomes

After finishing the Radiological Physics course, students should be qualified to work in the area of application of radiation.

Syllabus

Electromagnetic radiation in classical physics and quantum mechanics. Gamma radiation emission and electromagnetic transitions. Production of x-rays. Characteristic and continual x-radiation. Roentgen tube. Cherenkov radiation. Bremsstrahlung. Charged particles accelerators (Cockroft – Walton accelerator. Electrostatic, linear and orbital accelerators.) Sources of neutron radiation (Cf-252, (α,n) reactions, low-voltage neutron generators). X-ray and neutron radiography. Neutron activation analysis. Radiation sterilization. Industrial application of radiation (level and thickness measurements, density gauges, well logging). Radioisotope dating. Radioisotopes as tracers. External beam radiotherapy. Brachitherapy. Positron emission tomography.

Weekly teaching load				Other:
Lectures: 3	Exercises: 1	Other forms of teaching: 1	Student research:	