

Level: PhD				
Course title: Nuclear analytical techniques				
Status: elective				
ECTS: 15				
Requirements: Contemporary experimental physics III, Nuclear physics				
Learning objectives To introduce students to the basic nuclear analytical techniques.				
Learning outcomes Students should develop: - Basic abilities: become familiar with principles of nuclear analytical techniques; - Specific abilities: since some technologies are studied in detail, the knowledge could be applied for practical purposes.				
Syllabus Generation and detection of X-rays. X-ray fluorescence analysis. X-ray emission induced by charged particles (PIXE). Basic analysis using muons. Nuclear reactors as neutron sources. Neutron generators. High-resolution gamma spectrometry. Neutron activation analysis. Nuclear magnetic resonance. Nuclear quadrupole resonance. Mössbauer spectroscopy. Specifics of application of nuclear analytical techniques in different materials (soil, water, atmosphere, biological samples, fuels) and areas (industry, medicine, environmental protection, trace elements, archaeology, criminology).				
Weekly teaching load				Other:
Lectures: 6	Exercises:	Other forms of teaching:	Student research: 4	