

Study program	Level of studies		Third cycle	
	Title of the study program		Doctoral studies in physics	
Course title	ADVANCED MEDICAL PHYSICS			
Course ID	Semester	Course status	ECTS credits	Teaching hours
PAP7021	I /II	Elective	10	30
Course aims and expected learning outcomes	<p>Aim: To acquire advanced knowledge in medical radiation physics and radiation protection.</p> <p>Outcomes: Understand the basics of ionizing radiation dosimetry and radiation biology; master and understand the methods and techniques used in modern radiotherapy, diagnostic radiology, and nuclear medicine, and apply them in medical practice.</p>			
COURSE CONTENT				
<p>1. PHYSICS IN RADIOTHERAPY: Physical, radiobiological and clinical aspects of hadron therapy, Accelerator technology, equipment and room design in hadron therapy, Radiation delivery in hadron therapy, Radiotherapy planning, Quality assurance in hadron therapy, Artificial intelligence in radiotherapy</p> <p>2. PHYSICS IN NUCLEAR MEDICINE: Production of radionuclides, Radiopharmaceuticals in diagnostic and therapeutic nuclear medicine, Internal dosimetry in clinical practice, Quantitative nuclear medicine, Advanced imaging systems in nuclear medicine, Artificial intelligence in nuclear medicine</p> <p>3. PHYSICS IN RADIOLOGY: Advanced imaging systems in diagnostic and interventional radiology, Image quality in radiology, Phantoms for evaluating image quality in diagnostic and interventional radiology, Artificial intelligence in radiology</p>				
LITERATURE			ASSESSMENT OF LEARNING	
<p>DOSANJH, Manjit; BERNIER, Jacques (ed.). Advances in Particle Therapy: A Multidisciplinary Approach. CRC Press, 2018.</p> <p>Saha GB. Physics and radiobiology of nuclear medicine. Springer Science & Business Media; 2012 Sep 28.</p> <p>DENDY, Philip Palin; HEATON, Brian. Physics for diagnostic radiology. CRC press, 2011.</p>			Assessment Method	Points
			Seminar paper	45
			Final exam	55
			Total	100
Remarks				