

Level : PhD		
Course title: Diagnostic radiology - physics and medical aspects		
Status: elective		
ECTS: 15		
Requirements: -		
Learning objectives The main aim of his course for students is to acquire fundamental and applied knowledge in the field of diagnostic methods used in radiology. This course consists mainly of the physical principles of diagnostic methods, instrumentation and optimization of imaging systems used in diagnostic radiology and also includes diagnostic radiology as an important medical tool.		
Learning outcomes <ul style="list-style-type: none"> - General Skills: Student will develop general skills in professional literature overview and understanding. - Specific Competencies: Obtaining scientifically based understanding of the physical processes and interpretation of physical phenomena in the field of diagnostic radiology, overview of latest medical advances in the field of diagnostic radiology. 		
Syllabus <i>Theoretical instruction:</i> 1. Overview of diagnostic methods used in radiology; 2. Review of basic imaging concepts and their correlation; 3. The source of X-rays and interaction of diagnostic X-rays with human tissues; 4. Characteristics of radiographic films and screen-film system; 5. Physical description of electro-optical devices which are used in fluoroscopy; 6. computer and digital radiography; 7. Design and optimization of equipment for X-ray imaging; 8. Physics of ultrasound; 9. Physical principles of computer tomography (CT). <i>Practical instruction:</i> Practical training for working with diagnostic devices in medical institutions.		
Literature 1. Diagnostic Radiology Physics: A Handbook for Teachers and Students, Editors: D.R. Dance, S. Christofides, A.D.A. Maidment, I.D. McLean, K.H. Ng, International Atomic Energy Agency, 2014, ISBN: 978-92-131010-1. 2. Radiation Protection, J. Shapiro, Harvard University Press, 2002. ISBN0-674-00740-9 3. Radiation Physics for Medical Physicists, Ervin B. Podgoršak Springer, 2010. ISBN 9783642008740.		
Weekly teaching load	Lectures: 4	Exercises: 6