

<b>Study Programme:</b> Physics		
<b>Course Unit Title:</b> Diagnostic radiology - physics and medical aspects		
<b>Course Unit Code:</b> FD18DR		
<b>Name of Lecturer(s):</b> Associate Professor Jovana Nikolov, Full Professor Viktor TII		
<b>Type and Level of Studies:</b> PhD Degree		
<b>Course Status (compulsory/elective):</b> Elective		
<b>Semester (winter/summer):</b> Summer		
<b>Language of instruction:</b> English		
<b>Mode of course unit delivery (face-to-face/distance learning):</b> Face-to-face		
<b>Number of ECTS Allocated:</b> 15		
<b>Prerequisites:</b> -		
<p><b>Course Aims:</b></p> <p>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 consist 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.</p>		
<p><b>Learning Outcomes:</b></p> <ul style="list-style-type: none"> <li>- General Skills:</li> </ul> <p>Students will develop general skills in professional literature overview and understanding.</p> <ul style="list-style-type: none"> <li>- Specific Competencies:</li> </ul> <p>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..</p>		
<p><b>Syllabus:</b></p> <p><i>Theoretical instruction:</i></p> <p>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 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).</p> <p><i>Practical instruction:</i></p> <p>Practical training for working with diagnostic devices in medical institutions.</p>		
<p><b>Required Reading:</b></p> <p>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.</p> <p>2. Radiation Protection, J. Shapiro, Harvard University Press, 2002. ISBN0-674-00740-9</p> <p>3. Radiation Physics for Medical Physicists, Ervin B. Podgoršak Springer, 2010. ISBN 9783642008740.</p>		
<b>Weekly Contact Hours:</b>	<b>Lectures:</b> 4	<b>Practical work:</b> 6
<p><b>Teaching Methods:</b></p> <p>Lectures, seminars and practical work.</p>		

<b>Knowledge Assessment (maximum of 100 points):</b>			
<b>Pre-exam obligations</b>	points	<b>Final exam</b>	points
Active class participation	5	written exam	-
Practical work	25	oral exam	70
Preliminary exam(s)	-	.....	
Seminar(s)	-		
The methods of knowledge assessment may differ; the table presents only some of the options: written exam, oral exam, project presentation, seminars, etc.			