

Course Unit Descriptor

<b>Study Programme:</b> Physics			
<b>Course Unit Title:</b> Alpha and beta spectroscopy			
<b>Course Unit Code:</b> FD18FVE			
<b>Name of Lecturer(s):</b> Full Professor Miroslav Vesković			
<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> -			
<b>Course Aims:</b> Introducing students to high energy physics.			
<b>Learning Outcomes:</b> Acquiring knowledge from high energy physics theory. Practical application of some specific parts of the course.			
<b>Syllabus:</b> <i>Theoretical instruction:</i> History and basic concepts. Detectors and accelerators in high energy physics. Existing and planned installations. The principle of invariance of the laws of conservation. Quantum chromodynamics. The theory of electroweak interactions. The standard model. Experimental tests of the standard model; experimental confirmation of the existence of three generations, the experimental confirmation of quantum chromodynamics; experimental confirmation of electroweak theory. Beyond the standard model. Cosmic radiation. Cosmic rays on Earth and in interstellar space. The mechanisms of acceleration of cosmic radiation. Ultrahigh energy cosmic rays. New results in high energy physics. <i>Practical instruction:</i> Individual research work in the form of seminars – presentations.			
<b>Required Reading:</b> 1. D.H. Perkins, Introduction to High Energy Physics, Addison-Wesley Publishing Company, 1982. 2. W.R. Rolnick, The Fundamental Particles and Their Interactions, Addison-Wesley Publishing Company, 1994. 3. H.V. Klapdor-Kleingrothaus and A. Staudt, Non-accelerator Particle 4. Physics, IOP Publishing, London 1995 5. W.E. Burcham and M.Jobs, Nuclear and Particle Physics, Longman Scientific & Technical, 1995 6. V.S. Berezinskij et al.: Astrophysics of cosmic rays, North-Holland, Amsterdam, 1990.			
<b>Weekly Contact Hours:</b>	<b>Lectures:</b> 4	<b>Practical work:</b> 6	
<b>Teaching Methods:</b> Lectures, seminars and practical work.			
<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	20	oral exam	50
Preliminary exam(s)	-	.....	
Seminar(s)	25		
The methods of knowledge assessment may differ; the table presents only some of the options: written exam, oral exam, project presentation, seminars, etc.			