

Level: PhD				
Course title: High Energy Physics				
Status: elective				
ECTS: 15				
Requirements: Modern experimental physics III, Nuclear physics				
Learning objectives Introducing students to high energy physics.				
Learning outcomes Acquiring knowledge from high energy physics theory. Practical application of some specific parts of the course.				
Syllabus				
<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.				
Weekly teaching load				Other:
Lectures: 6	Exercises:	Other forms of teaching:	Student research: 4	