

Study program : Physics-				
Type and level of studies: Master				
Course unit: Quantum fields and symmetries				
Teacher in charge : Miroljub Dugić				
Language of instruction English				
ECTS: 7				
Prerequisites: Basic knowledge of theoretical physics courses: classical and quantum mechanics, statistical physics, electrodynamics				
Semester 10				
Course unit objective Students will be familiarized with the foundations of quantum theory of symmetries and fields.				
Learning outcomes of Course unit Students will be trained for independent work in solving the basic problems of interest and critical assessment of the literature.				
Course unit contents <i>Theoretical classes</i> Geometry of symmetries. Galilean and Poisson symmetry groups. Classical fields and conservation laws (Noether's theorem). The concept of quantization. Quantization of scalar field(s). Dirac equation and Dirac field quantization. Quantization of electromagnetic field. S-matrix formalism. The Feynman rules for quantum electrodynamics.				
Literature 1. F. Mandl, G. Shaw, "Quantum Field Theory", Wiley, 2 nd edition, 2010 2. V. Radovanović, "Problem Book in Quantum Field Theory", Springer, 2 nd edition, 2007				
Number of active teaching hours				Other classes
Lectures:	Practice:	Other forms of classes mentor system 90	Independent work:	
Teaching methods				
Examination methods (maximum 100 points)				
Exam prerequisites	No. of points:	Final exam	No. of points:	
Student's activity during lectures		oral examination	35	
practical classes/tests		written examination	35	
Seminars/homework	30		
Project				
Other				
Grading system				
Grade	No. of points		Description	
10	91-100		Excellent	

9	81-90	Exceptionally good
8	71-80	Very good
7	61-70	Good
6	51-60	Passing
5	<51	Failing

(Table 5.2) Course unit description