(Table 5.2) Course unit description

Study program: Physics				
Type and level of studies: master studies				
Course unit: Quantum fields and symmetries				
Teacher in charge: Momir Arsenijevic, assistant professor				
Language of instruction: English				
ECTS: 7				
Prerequisites: Basic knowledge of theoretical physics courses: classical and quantum mechanics, statistical physics, electrodynamics				
Semester: summer semester				
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 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, 2nd edition, 2010 2. V. Radovanović, *Problem Book in Quantum Field Theory*, Springer, 2nd edition, 2007				
Number of active teaching hours				
Lectures: 28	Practice:	Other forms of classes: mentoring system for small groups of students	Independent work: 28	Other classes:
Teaching methods				

Examination methods (maximum 100 points)			
Exam prerequisites	**No. of points**	**Final exam**	**No. of points**
Practical classes		Written examination	50
Tests		Oral examination	
Homework	50	Other	
Seminars			
Project			

Grading system		
Grade	**No. of points**	**Description**
10	>= 91	Excellent
9	81-90	Exceptionally good
8	71-80	Very good
7	61-70	Good
6	51-60	Passing

5	<=50	Failing