UNIVERSITÀ DI PAVIA

Anno Accademico 2017/2018

QUANTUM ELECTRODYNAMICS

Enrollment year	2017/2018
Academic year	2017/2018
Regulations	DM270
Academic discipline	FIS/02 (THEORETICAL PHYSICS, MATHEMATICAL MODELS AND METHODS)
Department	DEPARTMENT OF PHYSICS
Course	
Curriculum	Fisica teorica
Year of study	1°
Period	1st semester (02/10/2017 - 19/01/2018)
ECTS	6
Lesson hours	48 lesson hours
Language	Italian or English upon request (English friendly course - http://fisica.unipv.it/dida/English-friendly-programme.pdf). Study material in English.
Activity type	ORAL TEST
Teacher	BACCHETTA ALESSANDRO (titolare) - 6 ECTS
Prerequisites	Quantum mechanics and Special Relativity
Learning outcomes	Introducing the basic concepts of relativistic quantum field theories. Reach the ability to compute Feynman diagrams, through the derivation of Feynman rules.
Course contents	The course treats the following main topics: - Klein-Gordon equation and Dirac equation - Field theories and their quantization - Field interactions and Feynman diagrams - Computation of some scattering processes at tree level
Teaching methods	Traditional lectures with blackboard calculations. Eight/ten hours of additional exercise sessions.

Reccomended or required readings	- Lecture notes (see http://www.pv.infn.it/~bacchett/teaching.html) - F. Mandl, G. Shaw, "Quantum Field Theory - Second Edition" (Wiley, 2010) Further references: - L. Ryder, "Quantum Field Theory", Cambridge - M. Peskin, Schroeder, "An Introduction to Quantum Field Theory", - I.J.R. Aitchison, A.J.G. Hey, “Gauge theories in particle physics – A practical introduction”, Vol I, Fourth edition
Assessment methods	Written exam, mainly devoted to the computation of Feynman diagrams and of the cross section for a scattering process at tree level. Oral exam concerning the formalism of quantum field theory and the derivation of Feynman rules.
Further information	Written exam, mainly devoted to the computation of Feynman diagrams and of the cross section for a scattering process at tree level. Oral exam concerning the formalism of quantum field theory and the derivation of Feynman rules.
Sustainable development goals - Agenda 2030	$lbl_legenda_sviluppo_sostenibile