

Interaction of Radiation with Matter

Master studies in the field of Physics

University of Bucharest (Universitatea din București)
Faculty of Physics (Facultatea de Fizică)
Master studies field – Physics (Domeniul de studii de masterat- Fizică)
Specialization – Interaction of Radiation with Matter
Title at the graduation – Master of Sciences - Physics
Studies duration – 2 years (Durata studiilor - 2 ani)
Study form – Day (Forma de învățământ – zi)

First year

C = course; L = laboratory; S = seminar; E = exam; C = tutorial; V = verification; CRD. = Number of transferred credits; Ob.xxxx = compulsory discipline; Op.xxxx = optional discipline; Of.xxxx= facultative discipline

No	Code	Compulsory and Optional Disciplines	Semester I			CRD Sem I	Semester II			CRD SemII	
			C	L/S	V		C	L/S	V		
1	Ob101MF	Experimental Methods in Atomic and Nuclear Physics and Environment Monitoring Techniques	2	2	E	4				Associate Professor Dr. Mircea BERCU Associate Professor Dr. Mihai DIMA Lecturer Dr. Vasile BERCU	
2	Ob102MF	Light Interaction with Solid State	2	2	E	4				Professor Dr. Daniela DRAGOMAN	
3	Ob103MF	Advanced Quantum Mechanics	2	2	E	4				Professor Dr. Virgil BĂRAN, Professor Dr. Claudia TIMOFTE	
4	Ob104MF	Soft Materials and Nanotechnologies with Applications					2	2	E	4	Lecturer Dr. Valentina BARNA
5	Ob105MF	Electromagnetic Waves					2	2	E	4	Associate Professor Dr. Liviu GIURGIU
6	Ob106MF	Quantum Electrodynamics					2	2	E	4	Lecturer Dr. Cristian STOICA Professor Dr. Claudia TIMOFTE Lecturer Dr. Mădălina BOCA
7	Op107_DI	Optional discipline from the courses package DI	2	2	E	4					
8	Op108_DII	Optional discipline from the courses package DII	2	2	E	4					
9	Op109_DIII	Optional discipline from the courses package DIII	2	2	E	4					
10	Op110_DI	Optional discipline from the courses package DI					2	2	E	4	
11	Op111_DII	Optional discipline from the courses package DII					2	2	E	4	
12	Op112_DIII	Optional discipline from the courses package DIII					2	2	E	4	

13	Ob113MF	Research activities for Dissertation Thesis	5 V	6	5 V	6	
Total hours per week Total Credits			29 hours, 6E, 1V	30	29 hours, 6E, 1V	30	

Second year

C = course; L = laboratory; S = seminar; E = exam; C = tutorial; V = verification; CRD. = Number of transferred credits; Ob.xxxx = compulsory discipline; Op.xxxx = optional discipline; Of.xxxx= facultative discipline

No	Code	Compulsory and Optional Disciplines	Semester I			CRD. Sem I	Semester II			CRD. Sem.I I	
			C	L/S	V		C	L/S	V		
1	Ob201MF	Experimental Methods in High Energy Physics and Astrophysics	2	2	E	4					Professor Dr. Ionel LAZANU Professor Dr. Octavian DULIU Professor Dr. Alexandru JIPA
2	Ob202MF	Interaction of Light with Biological Tissues	2	2	E	4					Professor Dr. Aurel POPESCU Professor Dr. Doina GĂZDARU Lecturer Dr. Claudia CHILOM
3	Ob203MF	Laser and Optical Physics and Technologies	2	2	E	4					
7	Op204_DI	Optional discipline from the courses package DI	2	2	E	4					
8	Op205_DII	Optional discipline from the courses package DII	2	2	E	4					
9	Op206_DIII	Optional discipline from the courses package DIII	2	2	E	4					
10	FI_F.1	Facultative discipline from the package F.1-F.4					2	2	E	4	
11	FII_F.2	Facultative discipline from the package F.1-F.4					2	2	E	4	
12	FIII_F.3	Facultative discipline from the package F.1-F.4					2	2	E	4	
13	Ob113MF	Research activities for Dissertation Thesis	5	V		6	15	V		15	
Total hours per week Total Credits											
Dissertation Thesis presentation			29 hours, 6E, 1V				15 hours, 1V			15	

Optional Courses - package DI

	Nr. crt.	Code	Course title	Observations
DI	1	Op.I_1	Computer Simulation in Condensed Matter Physics	Lecturer Dr. Cătălin BERLIC
	2	Op.I_2	Computational and Simulation Methods in Experimental Nuclear Physics	Professor Dr. Octavian SIMA Professor Dr. Alexandru JIPA Professor Dr. Ionel LAZANU Associate Professor Dr. Mihaela SIN Professor Dr. Anabella TUDORA Lecturer Dr. Marius CĂLIN
	3	Op.I_3	Physics Methods to Investigate the Earth Atmosphere	Associate Professor Dr. Mihai DIMA
	4	Op.I_4	Advanced Topics in Experimental Nuclear Physics	Professor Dr. Octavian SIMA Professor Dr. Alexandru JIPA Professor Dr. Ionel LAZANU Associate Professor Dr. Mihaela SIN Professor Dr. Anabella TUDORA

Optional Courses - package DII

	Nr. crt.	Code	Course Title	Observations
DII	1	Op.II_1	Metrology of Radiation-Matter Interaction	Lecturer Dr. Florin STĂNCULESCU
	2	Op.II_2	Biomedical Optical Imaging	Associate Professor Dr. Andrei BARBORICĂ
	3	Op.II_3	Single Molecule Optical Methods for Studies of (Bio)molecular Interactions	Professor Dr. Laura TUGULEA Lecturer Dr. Marcela BĂRBINȚĂ
	4	Op.II_4	Structural investigation techniques	Associate Professor Dr. Lucian ION Professor Dr. □tefan ANTOHE

Optional Courses - package DIII

	Nr. crt.	Code	Course Title	Observations
DIII	1	Op.III_1	Laser Radiation Metrology	Lecturer Dr. Ion GRUIA
	2	Op.III_2	Theory of Nucleus, of Photonuclear Reactions, Theory of Elementary Particles	Professor Dr. Virgil BĂRAN, Professor Dr. Nicolae COTFAS, Associate Professor Dr. Francisc Dionisie AARON
	3	Op.III_3	Advanced in Plasma Physics and Spectroscopy of Laser Active Media	
	4	Op.III_4	Theory of Plasma and of Quark-Gluon Plasma	Professor Dr. Virgil BĂRAN, Professor Dr. Nicolae COTFAS, Associate Professor Dr. Francisc Dionisie AARON

Facultative Courses

	Nr. crt.	Code	Disciplines	Observations
F.1-F.4	1	F.1	Experimental Evidences for Phase Transitions in Nuclear Matter	Professor Dr. Alexandru JIPA Professor Dr. Ionel LAZANU Associate Professor Dr. Mihaela SIN Lecturer Dr. Vania COVLEA Lecturer Dr. Marius CĂLIN Associate Professor Dr. Mihai DONDERA
	2	F.2	Materials for Optoelectronics	Associate Professor Dr. Adrian DAFINEI
	3	F.3	Atoms And Molecules in Intense Coherent Electromagnetic Fields	Professor Dr. Florin POPESCU
	4	F.4	Atoms Collisions in Solids	Associate Professor Dr. Mircea BERCU Lecturer Dr. Vasile BERCU

Dean,

Professor Dr. Ștefan ANTOHE