COURSE SYLLABUS

University	**Alexandru Ioan Cuza University of Iaşi**	**Course title**	
Faculty	**Physics**	**INTERACTION OF IONIZING RADIATIONS WITH MATTER**	
Department	**Physics**		
Domain	**Physics**	**Course category** (FC/SC/CC[1]): SC	**Term** (1-4): 1
Level	**Postgraduate (MA)**	**Course type** (Co/El/F[2]): Co	

I. Course structure

Number of hours/week				Credits	Total class hours/ semester	Total hours of individual activity	Examination type (C/Ex/CE[3])	Teaching language
Course	Seminar	Lab.	Project	**6**	**56**	**124**	**C**	**English**
2		**2**						

II. Instructors

	Academic degree[4]	Scientific degree	Name and surname	Faculty position (tenure/ associate - organization)
Course	Lecturer	Ph. D.	Borcia Catalin-Gabriel	tenure
Seminar				
Laboratory	Lecturer	Ph. D.	Borcia Catalin-Gabriel	tenure

III. Prerequisites

Electricity and magnetism, Atomic and molecular physics, Nuclear physics, Dosimetry and radioprotection, Plasma physics

IV. Course objectives

Learn advanced knowledge of radiation interaction with matter; apply this knowledge for studying the transport of radiations through matter; apply the knowledge in practice; work in a team for solving experimental and technological issues; identify and use bibliographic resources for continuous formation.

V. Course content

Course	1) Fundamentals of ionizing radiation physics; 2) Interaction of hard charged particles with matter; 3) Interaction of light charged particles with matter; 4) Elements of electron beam dosimetry; 5) Interaction of photons with matter; 6) Elements of photon beam dosimetry; 7) Interaction of neutrons with matter; 8) Ionizing radiations transport thorough matter; 9) Elements of radiobiology; 10) Ionizing radiations applications; 11) Analysis and control techniques with ionizing radiations
Seminar	
Laboratory	- discussion and analysis of knowledge given during classes - Monte-Carlo simulation of practical problems; - work for preparing a project presentation

VI. Minimal required references

[1] D. Mihăilescu, C. Borcia – "Interacţiunea radiaţiilor ionizante cu substanţa. Partea I: radiaţii încărcate electric", Ed. Sedcom Libris, Iaşi, 2007.
[2] E.B.Podgoršak - "Radiation Physics for Medical Physicists", Springer Berlin Heidelberg, 2006, online at www.springerlink.com.
[3] A. Bielajev – „Fundamentals of the Monte Carlo method for neutral and charged particle transport", Univ. of Michigan, 2001.

[1] FC – fundamental course, SC – specialty course, CC – complementary course
[2] Co – compulsory, El – elective, F – facultative
[3] C – colloquium, Ex – exam, CE – colloquium AND exam
[4] Professor / Associate professor / Lecturer / Assistant professor / Teaching assistant

VII. Didactic methods

lecture, laboratory work, class discussion

VIII. Assessment

Pre-conditions	75% course attendance, 100% seminary attendance, project presentation.	
Exam dates	**1st Assessment**	**8th week**
	2nd Assessment	**16th week**

	Assessment means and methods	**Percentage of the final grade**
Exam/Colloquium	written	60
Seminar		
Laboratory	project presentation	40