COURSE SYLLABUS

University	**Alexandru Ioan Cuza University of Iaşi**	**Course title**	
Faculty	**Physics**	ELECTRONIC TRANSPORT PHENOMENA	
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	**8**	**56/2**	**184**	**C**	**English**
2	**-**	**2**	**-**					

II. Instructors

	Academic degree[4]	Scientific degree	Name and surname	Faculty position (tenure/ associate - organization)
Course	Professor	doctor	MARDARE DIANA MIHAELA	tenure
Seminar				
Laboratory	Professor	doctor	MARDARE DIANA MIHAELA	tenure

III. Prerequisites

Condensed Matter Physics

IV. Course objectives

The students should obtain knowledge on the electronic transport phenomena in solid bodies. In the particular case of thin films, correlation between the deposition method, deposition parameters used in each method and electronic transport phenomena will be performed.

V. Course content

Course	1. Boltzmann transport equation 2. Scatttering mechanisms of the charge carriers in solid bodies. 3. Electrical conduction in solid bodies 4. Thermal conduction in solid bodies 5. Thermoelectrical phenomena 6. Galvanomagnetical phenomena 7. Tensoresistiv effect 8. Electronic processes in photocatalysis 9. Transport phenomena in thin films
Seminar	
Laboratory	Study on the electrical conductivity of some thin films: The influence of the deposition conditions; the influence of post deposition annealing; the influence of the selected gas atmosphere. Optical band gap of some semiconductors in thin films, from optical transmittance measurements. Studies on Seebeck effect Studies on Hall effect Studies on the photocatalytic properties of some thin films, by hydrophilicity meaurements

[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

	Studies on the thermal conductivity in some solid bodies (dielectrics, metals)

VI. Minimal required references

[1] Diana Mardare, Polycrystalline and Amorphous Thin Films. Titanium oxide, Ed. "Politehnium", Iaşi, 2005
[2] Diana Mardare, Transport Phenomena in Solid Bodies,, Ed. "Gh. Asachi", Iaşi, 2002
[3] P. S. KIREEV, Semiconductor Physics, Ed. Şt. Enc., Bucureşti, 1977
[4] x x x Handbook of Thin Film Technology, Eds. L. I. MAISSEL, R. GLANG) McGraw Hill Book Company, New York, 1970.
[5] M. BALKANSKI (Ed.), Handbook on Semiconductors, North-Holland, Amsterdam, 1994.

VII. Didactic methods

Lectures supported by slides and video

VIII. Assessment

Pre-conditions	Laboratory attendance, obtaining the minimal grade 5 for each ongoing assessment	
Exam dates	**1st Assessment**	April
	2nd Assessment	June

	Assessment means and methods	**Percentage of the final grade**
Exam/Colloquium	written paper	50%
Seminar		
Laboratory	practical work, presentation of a project	50%