C O U R S E G U I D E – s h o r t f o r m

Academic year 2017-2018

Course name	**Nanomaterials**					Course code		4SM09DS	
Course type	DS	Category	DO	Year of study	IV	Semester	7	Number of credit points	4

Faculty	Materials Science and Engineering	Number of teaching and learning hours					
Field	Materials Engineering	Total	L	T	LB	P	IS
Specialization	Industrial safety engineering	96	28	-	14	-	54

Pre-requisites from the curriculum		
	Compulsory	Chemistry; Physics
	Recommended	Physical Chemistry

General objective	Application of the criteria and methods of fundamental assessment to identify, to modeling, analysis and assessment of qualitative and quantitative phenomena, as well as characteristic processes and theories, and to process and interpret the results of specific nanomaterials processes.
Specific objectives	The discipline "Nanomaterials" allows the student to develop skills on: - acquiring the most advanced knowledge concerning the phenomena and processes occurring in the manufacture of nanomaterials;
Course description	Course: Introduction. Chapter I. Nanomaterials general consideration. Chapter II. Metallic nanomaterials. 2.1. Definition; 2.2. Classification (Magnetic Nanoparticles); 2.3. Properties. Applications (metallic nanoparticles biocompatible). Chapter III. Polymeric nanomaterials. 3.1. Definition; 3.2. Classification (polyethylene, polypropylene, acrylic polymers, polyesters, polyurethanes); 3.3. Applications (biocompatible nanopolymers). Chapter IV. Ceramic and carbonic nanomaterials. 4.1. Definition; 4.2.Classification(absorbable bioceramics, hidroxyapatita, silicone materials, carbon-based nano); 4.3. Properties. Applications (biocompatible nanoceramics). Chapter V. ocessing techniques of nanomaterials. 5.1. Nanotechnologies used in synthesis of nanomaterials (overview, classification); 5.2. Nanotechnologies used to produce nanopowders nanowires and nanotubes; 5.3. Nanotechnologies for nanolayers; 5.4. Processing of nanomaterials into nanoproducts; 5.5. Nanotechnologies for obtaining some nanoproducts used in medicine (biosensors, nanocapsules). Chapter VI. Nanomaterials characterization techniques. 6.1. Structural characterization of nanomaterials (structure of surface and internal structure); 6.2. Physico-mechanical characterization of nanomaterials; 6.3. Electrical and magnetic characteristics of nanomaterials; 6.4. Chemical and physical characteristics of nanomaterials.

Assessment			Schedule	Percentage of the final grade (minimum grade)
Continuous assessment	Class tests along the semester		-	-
	Activity during tutorials/laboratory works/projects/practical work		Week 1 - 14	30%
	Assignments: 1		Week 1 - 14	20 %
Final assessment	Final assessment form	Examination		50%
	Examination procedures and conditions:1. exam tickets; task: subject 1; conditions: oral; weight in final grade: 50%;2. exam tickets; task: subject 1; conditions: oral; weight in final grade: 50%;			

Course organizer	Professor dr.eng. Ioan Carcea	
Teaching assistants	Assistant dr. eng. Raluca Maria Florea	