

COURSE GUIDE – short form

Academic year 2024-2025

Course name ¹	Advanced Metallic Materials for Medical Applications					Course code	MATAE IA 113			
Course type ²	DS	Category ³	DO	Year of study	1	Semester	2	Number of credit points	4	

Faculty	Materials Science and Engineering				Number of teaching and learning hours ⁴					
Field	Materials Engineering				Total	L	T	LB	P	IS
Specialization	Advanced Materials and Experimental Analysis Techniques				100	28	-	14	-	58

Pre-requisites from the curriculum ⁵	Compulsory	
	Recommended	

General objective ⁶	Being acquainted with the notion of biomaterial, of the interaction material-biological environment and the principal medical applications specific to metallic materials
Specific objectives ⁷	<p>The definitions of biomaterial, implant, implantable device, medical device, medical application.</p> <p>Being acquainted with the specific requirements for a material used for the construction of a medical device meant for a specific application.</p> <p>Understanding the concepts of biocompatibility and biofunctionality and the interaction between biologic and artificial materials.</p> <p>Description of the main metallic material classes for medical devices, of their specific properties and the connection between processing-structure and properties- applications</p>
Course description ⁸	<ol style="list-style-type: none"> 1. Introduction 2. Biofunctionality and biocompatibility 3. Applications and medical devices 4. Metallic material classes for medical devices 5. Mechanical properties 6. Chemical and mechanical degradation 7. Superficial changes 8. Present trends in the field of medical materials and devices

Assesment			Schedule ⁹	Percentage in the final grade (minimum grade) ¹⁰
A. Final assessment form ¹¹ :	Class tests along the semester	%		70 %
	Home works	%		
	Other activities	%		
	Exam 1. Subject with open questions; tasks: answer to open questions; work conditions: oral examination; percentage:50 %. 2. Subject with open questions; tasks: answer to open questions; work conditions: oral examination; percentage:50 %.	100 % (minimum 5)	Exam period	
B. Seminar	Activity during seminar			%

C. Laboratory	Activity during laboratory	30 %
D. Project	Activity during project	%

Course organizer	Professor PhD. Eng. Leandru-Gheorghe BUJOREANU	
Teaching assistants	Professor PhD. Eng. Leandru-Gheorghe BUJOREANU	

¹Course name from the curriculum

² DF – fundamental, DID – in the field, DS – specialty, DC – complementary (from the curriculum)

³ DI – imposed, DO –optional, DL – facultative (from the curriculum)

⁴ Points 3.8, 3.5, 3.6a,b,c, 3.7 from the Course guide – extended form (L-lecture, T-tutorial, LB-laboratory works, P-project, IS-individual study)

⁵ According to 4.1 – Pre-requisites - from the Course guide – extended form

⁶ According to 7.1 from the Course guide – extended form

⁷ According to 7.2 from the Course guide – extended form

⁸ Short description of the course, according to point 8 from the Course guide – extended form

⁹ For continuous assessment: weeks 1 – 14, for final assessment – colloquium: week 14, for final assessment-exam: exam period

¹⁰ A minimum grade might be imposed for some assessment stages

¹¹ Exam or colloquium