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

Academic year 2024-2025

Course name[1]	**Research / Practical training (sem. 2)**					Course code		MATAE PA 111	
Course type[2]	DS	Category[3]	DI	Year of study	1	Semester	2	Number of credit points	7

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	175	-	-	147	-	28

Pre-requisites from the curriculum[5]	Compulsory	
	Recommended	

General objective [6]	Training human resource such as to be able to contribute to the development of scientific knowledge, by cultivating theoretical, practical capacities, necessary for the use of experimental analysis techniques of microscopic structural analysis, available in the laborarory.
Specific objectives[7]	Acquiring the operation mode of the research equipment of the laboratory and their respective software (optical microscope (MO) - MoticCam, scanning electron microscope (SEM)-VegaTescan, atomic force microscope (AFM)-EasyScan, energy dispersive spectroscopy (EDS)-Esprit 2, electron back scattering diffraction (EBSD) – Esprit 2)
Course description[8]	• Structural analysis by optical microscopy (MO) • Structural analysis by scanning electron microscopy (SEM) • Chemical analysis by energy dispersive spectroscopy (EDS) by using the analysis modes Automatic and Element List (ZAF) and editing ad experimental report by means of Esprit 2 software • Chemical analysis by EDS by using the analysis modes Point, Line and Mapping, by means of Esprit 2 software • Determining: crystalline orientation, grain size, global and local texture, analyzing the sub-structures, characterizing grain boundaries and grain boundary distribution by means of electron back scattering diffraction (EBSD) • Analyzing the surface profile by means of atomic force microscopy (AFM) • 2D and 3D analysis of thin layers surface profile by AFM

Assesment			Sche-dule[9]	Percentage in the final grade (minimum grade)[10]
A. Final assessment form [11]: Exam	Class tests along the semester	%		
	Home works	%		
	Other activities	%		
	Final evaluation	%		
B. Seminar	Activity during seminar: evidence of answers, paper portfolio (reports, scientific reviews)			
C. Laboratory	Activity during laboratory • Written test • Laboratory register (experimental files, reviews) • Practical demostration			100 %

D. Project	Activity during project	%

Course organizer		
Teaching assistants	Prof.dr.ing. Leandru-Gheorghe BUJOREANU	

[1]Course 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