

COURSE GUIDE – short form

Academic year 2017-2018

Course name ¹	Metallurgical basics of material fracture					Course code	3SM14DS			
Course type ²	DS	Category ³	DO	Year of study	III	Semester	6	Number of credit points	3	

Faculty	Materials Science and Engineering	Number of teaching and learning hours ⁴					
Field	Materials Engineering (Mechanical Engineering; Industrial Engineering)	Total	L	T	LB	P	IS
Specialization	Materials Science	42	28	-	14	-	30

Pre-requisites from the curriculum ⁵	Compulsory	-
	Recommended	-

General objective ⁶	Optimal solution of technical problems related to processed materials by applying concepts, theories and experimental methods
Specific objectives ⁷	Assimilation of knowledge regarding the behavior of metallic materials in mechanical and metallurgical factors influence on their break.
Course description ⁸	Theoretical notions of breaking materials. Crystalline structures. Theoretical breaking strength. Griffith's theory. Breaking ideal brittle materials. Breaking real-fragile materials Orowan's theory, theory of Irwin. Germination and propagation of cracks. Factors influencing behavior and tensile deformation. Modeling fracture. Brittle fracture. Types of tears fragile. Characteristics of fragile fractures in metals, Ductile tearing. Tearing modes, Ductile-brittle transition. Factors that determine the ductility or fragility of metallic materials. Creep rupture, Fatigue rupture. Breaking specific for different types of steels.

Assessment		Schedule ⁹	Percentage of the final grade (minimum grade) ¹⁰
Continuous assessment	Class tests along the semester		%
	Activity during tutorials/laboratory works/projects/practical work	continuous	50%
	Assignments		%
Final assessment	Final assessment form ¹¹	colloquy	Wk 13
	Examination procedures and conditions: 1. open and close questions; oral examination; 100%		50%

Course organizer	Gheorghe BĂDĂRĂU, Assoc. Prof. Ph.D. Eng.
Teaching assistants	Gheorghe BĂDĂRĂU, Assoc. Prof. Ph.D. Eng.

¹Course name from the curriculum

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

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

⁴Points 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)

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

⁶According to 7.1 from the Course guide – extended form

⁷According to 7.2 from the Course guide – extended form

⁸Short 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