

COURSE GUIDE – short form

Academic year 2014-2015

Course name ¹	Creep and stress relaxation in metals					Course code	MDET.DI.DA.202		
Course type ²	DID	Category ³	DI	Year of study	2	Semester	3	Number of credit points	7

Faculty	Mechanical engineering	Number of teaching and learning hours ⁴						
Field	Mechanical engineering	Total	L	T	LB	P	IS	
Specialization	Diagnosis and Technical Expertise in Mechanical Engineering	50	28	-	14	-	8	

Pre-requisites from the curriculum ⁵	Compulsory	Not provided
	Recommended	Advanced elements of elasticity and plasticity

General objective ⁶	Students will learn the basics of theoretical, experimental and calculation used to check and correct sizing and economic component parts of plant and machinery operating at high temperatures for a long time.
Specific objectives ⁷	<ul style="list-style-type: none"> • Experimental determination of materials behavior in the creep test; • Experimental determination of materials behavior under stress relaxation test; • Solving problems of bending beams with creep; • Solving problems of torsion bars with creep; • Stress relaxation of flanged joints and screws.
Course description ⁸	The behavior of metallic materials at elevated temperatures; Creep and stress relaxation in metals; Definitions; The appearance of creep and relaxation curves; Analytical relations illustrating creep and stress relaxation; Strengthening hypothesis (Nadai, Davenport); Flow hypothesis (Davenport); The hypothesis of aging (Soderberg, Bealeaev); Heredity hypothesis plastic (Rabotnov); Bending beams with creep; Torsion bars with creep; Stress relaxation in machine parts; Installations for creep and relaxation tests; Technical creep tests; Interpretation of results.

Assessment			Schedule ⁹	Percentage of the final grade (minimum grade) ¹⁰
Continuous assessment	Activity during tutorials/laboratory works/projects/practical work		weeks1-14	20%
	Assignments		week 14	30%
Final assessment	Final assessment form ¹¹	Exam	exam period	50%
	Examination procedures and conditions: 1. Creep or stress relaxation problem; tasks: solution; working conditions: written; percent of the final grade 50%; 2. Theoretical subject; tasks: assumptions, judgments, description, demonstrations; working conditions: written; percent of the final grade 50%.			

Course organizer	prof. dr. ing. Corneliu Comandar	
Teaching assistants	prof. dr. ing. Corneliu Comandar	

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