

COURSE GUIDE – short form

Academic year 2016-2017

Course name ¹	Machine Elements					Course code	2ISI09DID			
Course type ²	DID	Category ³	DI	Year of study	2	Semester	4	Number of credit points	4	

Faculty	Material Science and Engineering	Number of teaching and learning hours ⁴					
Field	Industrial Engineering	Total	L	T	LB	P	IS
Specialization	Safety Engineering in Industry	70	28	-	-	14	28

Pre-requisites from the curriculum ⁵	Compulsory	- Strength of Materials, Mechanisms, Technical Drawing, Physics, Mathematics, Theoretical Mechanics
	Recommended	- Tolerance and Technical Measurements, Machinery Fabrication Technology, Study Materials, Materials Technology

General objective ⁶	<p>Integrate of the principles of safety and health in work processes by identifying and assessing risks.</p> <p>Creation of the skills necessary for the theoretical and design work, in mechanical engineering by acquiring knowledge of principles and calculation methods of machine elements.</p> <p>Substantiation of approaches to design, based on optimization criteria, specific to classes and types of machine elements.</p> <p>Creation of the theoretical support and conception of approach to the design, operation and maintenance of machine elements, mechanical and mechatronics sub-assemblies and assemblies, based on tribological methods and using of the statistical analysis methods.</p>
Specific objectives ⁷	<ul style="list-style-type: none"> • Clarification of concepts, theories and basic methods for carrying out the work processes, in health and safety conditions at work by identifying and evaluating occupational risks. • Using of the basic knowledge (concepts, theories, methods) for carrying out the work processes, in conditions of safety and health at work, by identifying and assessing professional risks.
Course description ⁸	<p>Self evaluation of safety in industry.</p> <p>General elements of machine design; General concepts of design; Materials; Safty under mechanical stress (static and dynamic) ; Precision of machine elements; Non-removable connections; Bolts; General overview; Kinematics and force; Design for strength; Joints between shaft and hub; Shafts; Presizing of shafts; Calculation at variable stress; Deformation and vibration calculation; Springs and dampers; Viscous dampers; Belt transmission; Mechanics of belt operation; Chain transmission; Mechanics of chain operation; Gear transmission; Evolventical gear design: geometry and kinematics; Cylindrical gear transmission; Conical gear transmission; Worm gears; Helical gears; Friction transmission; Friction wheels. EHD traction; Bearings; Bearing kinematics; Load distribution; Damage and lubrication; Fatigue load rating; Journal bearings; Journal bearing with limit and mixed friction; Hydrodynamic cylindrical journal bearings; Hydrodynamic axial journal bearing; Hydrostatic journal bearing; Air/gas bearing; Couplings; Mechanical sealings;</p>

Assessment		Schedule ⁹	Percentage of the final grade (minimum grade) ¹⁰
Continuous assessment	Class tests along the semester and participation in scientific circles	week 5&10	20%

	Activity of projects	Weekly	30 %
	Assignments	-	%
Final assessment	Final assessment form ¹¹	Exam	50 %
	Examination procedures and conditions: 1. Theoretical knowledge; test paper; percent of the final grade 70%. 2. Identifying and solving of possible security problem; specific for the machine elements, percent of the final grade 30%.		

Course organizer	Ass. Prof. Ph. D. Eng. Gelu Ianuș	
Teaching assistants	Ass. Prof. Ph. D. Eng. Gelu Ianuș	

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