

COURSE GUIDE – short form

Academic year 2014-2015

Course name ¹	FUNDAMENTALS OF SYSTEMS THEORY					Course code	305		
Course type ²	DID	Category ³	DI	Year of study	3	Semester	5	Number of credit points	4

Faculty	Mechanical Engineering				Number of teaching and learning hours ⁴				
Field	all				Total	L	T	LB	P IS
Specialization	all				98	28	-	14	- 56

Pre-requisites from the curriculum ⁵	Compulsory	
	Recommended	Mathematical analysis 101 DI.DF Special mathematics 201.DI.DF

General objective ⁶	<ul style="list-style-type: none"> the understanding of automated systems principles related to mechanical/mechatronics engineering education; the exposure of the basics problems, techniques and computation methods in the systems theory.
Specific objectives ⁷	<ul style="list-style-type: none"> terminology and fundamentals in systems theory: modeling, systems representation, stability analysis, simulation
Course description ⁸	Automated system concept; standard signals; computation techniques in time domain (pulses train; convolution); computation techniques based on Laplace transform, on frequency method, on sampling theorem; transfer function; systems operating regimes; analysis of the systems quality; stability analysis fundamentals (Routh-Hurwitz, Nyquist) ; mechatronic system structure; practical experience with LabVIEW in transfer functions, the close loop stability analysis based on Nyquist criterion, the frequency and time response analysis of automated/mechatronics systems.

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		Weeks 1-14	40%
	Assignments			
Final assessment	Final assessment form ¹¹	colloquium	Week 14	60%
	Examination procedures and conditions: 1. activity in the laboratory ; percent of the final grade 40% 2. written test from the course content; percent			

Course organizer	Assoc.prof.dr.ing. Carmen BUJOREANU		
Teaching assistants	Assoc.prof.Carmen Bujoreanu; assist.dr.ing. Ciprian Stamate		

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