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

Academic year 2014-2015

Course name[1]	**Biomechanics**					Course code		RBT.310. DI.DIS	
Course type[2]	DS	Category[3]	DI	Year of study	III	Semester	6	Number of credit points	3

Faculty	Mechanical Engineering	Number of teaching and learning hours[4]					
Field	Mechatronics and Robotics	Total	L	T	LB	P	IS
Specialization	Robotics	42	28	-	14	-	-

Pre-requisites from the curriculum[5]		
	Compulsory	Mechanics, Mechanisms, Resistance of materials
	Recommended	Bases of robotics

General objective [6]	Acquiring knowledge of general or systemic biomechanics of the musculoskeletal system human,which are applicable for the analysis and design of anthropomorphic robots and knowledge of the fundamental principles of biomechanics for the analysis of the state of motion or static equilibrium of an anthropomorphic kinematic chain.
Specific objectives[7]	• Presentation of the general aspects of anatomy and physiology of the human musculoskeletal system • Presentation of the biomechanical characteristics of bone, ligaments, cartilage, muscles and tendons (mechanical strength parameters of the tissues, the kinematics parameters of the joints and dynamic parameters for the musculo-osteo-articular levers). • Presentation of biomechanical analysis methods, specific of the kinematic structures of the upper limb, lower limb or spine.
Course description[8]	Course: Introduction to biomechanics; aspects of the anthropometric analysis; Biomechanical analysis of the osteoarticular system; Biomechanical analysis of the muscular system; biomechanical analysis of human lower limb; biomechanical analysis of human upper limb; biomechanical analysis of the spine; modeling of the biomechanics systems with applications in robotics. Laboratory: anthropometric sizes, the composition and structural analysis of a kinematic chain osteo-articular, muscular-osteo-articular levers, stable and unstable equilibrium, structural and kinematics analysis of the prosthetic leg amputated, the modeling of a biomechanics system, uising Rayleigh method.

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		40	%
	Assignments		-	%
Final assessment	Final assessment form[11]		60	%
	Examination procedures and conditions: 1. Exam grid; percent 50 % 2. Report presentation; percent 50 %.			

Course organizer	Associate Professor eng. Emil Budescu, PhD	

Teaching assistants	Associate Professor eng. Emil Budescu, PhD	

[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