

COURSE GUIDE – short form

Academic year 2014 - 2015

Course name ¹	Control systems of Robots					Course code	MSR.DI. DA.209		
Course type ²	DA	Category ³	DI	Year of study	M II	Semester	4	Number of credit points	7

Faculty	Mechanics	Number of teaching and learning hours ⁴						
Field	Mechatronics and Robotics	Total	L	T	LB	P	IS	
Specialization	Robotic Systems	42	28	-	14	-	98	

Pre-requisites from the curriculum ⁵	Compulsory	
	Recommended	

General objective ⁶	The course is intended to familiarize the students with the basic principles of control systems. Presentation of the classic linear control of robots. Presentation of position control, speed and force robots.
Specific objectives ⁷	<ul style="list-style-type: none"> • Introduction to the problems of the control systems of robots. Performance evaluation of dynamic servo-control. • Independent control of the driving joints. Position control of the driving joints using PD or PID regulator. • Multivariable control of lead joints. Natural non-linear and continue. Control by evaluating the torque motor. • Control of position and force contacts to industrial robots. • Presentation nonlinear robot control problems. Types of natural discontinuous nonlinearities.
Course description ⁸	<p>General problems of control of robots. Evaluation of dynamic performance of servo. Independent control of the driving joints. Independent control of gross negligence ruling position using a PD and PID controller.</p> <p>Control by evaluating the torque motor. PD or PID control of external feedback loop. Control of position and force contacts to an industrial robot.</p> <p>Nonlinear control systems. Types of natural discontinuous nonlinearities: saturation, friction, area (band) dead, backlash between gear teeth.</p>

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		Week 1-14	40%
	Assignments, homework			
Final assessment	Final assessment form ¹¹	Exam	Exam period	60%
	Examination procedures and conditions: 1. Exam with three subjects from the curriculum, time 2 h, percent of the final grade 60 %. 2. Applications evaluation, percent of the final grade 40 %.			

Course organizer	prof. dr. ing. Leohchi Dumitru	
Teaching assistants	prof. dr. ing. Leohchi Dumitru	