

1.	Course title	<b>Introduction to Robotics</b>		
2.	Course code	InIS-Ro-03		
3.	Study program	Intelligent Systems Engineering		
4.	Unit offering the course	<b>FCSE</b>		
5.	Undergraduate/master/PhD	<b>Master</b>		
6.	Year/semester 1(2)/winter/mandatory	7. ECTS: <b>6</b>		
8.	Teacher(s)	Andrea Kulakov, Nevena Ackovska		
9.	Course prerequisites	None		
10.	<p>Goals (competences): Introduction of students to basics of the physics laws and limitations in building and using different robots. Students should learn the basics of robots control. Upon completion of this course the students should be able to:</p> <ul style="list-style-type: none"> <li>• understand the specifics of artificial embodied systems.</li> <li>• realize the physical limitations in building and using different robots</li> <li>• critically discuss and research the key concepts in robotics systems</li> <li>• gain basic knowledge in programming robotic systems.</li> </ul>			
11.	<p>Course content:</p> <ul style="list-style-type: none"> <li>• Definition of robot and robotics</li> <li>• Sensors and actuators</li> <li>• Direct and inverse kinematics</li> <li>• Mobile robots</li> <li>• Microprocessors for robotics</li> <li>• Representing the world – robot mapping</li> <li>• Robot learning</li> <li>• Control architectures, programming of robot systems</li> <li>• Introduction to behavior based robotics</li> </ul>			
12.	<p>Teaching methods: Lectures supported by slide presentations, interactive lectures, trainings (using lab equipment and software packages), team work, case studies, invited guests and lectures, individual practical assignments presentations, seminar paper, e-learning (forums, consultations).</p>			
13.	Total available time	6 ECTS x 30 hours = 180 hours		
14.	Distribution of the available time	30+30+40+40+40 = 180 hours		
15.	Teaching activities	15.1.	Lectures	30 hours
		15.2.	Training (labs, problem solving), seminar and team work	30 hours
16.	Other activities	16.1.	Project work	40 hours
		16.2.	Self study	40 hours

		16.3.	Home work		40 hours	
17.	Grading					
	17.1.	Tests			20 points	
	17.2.	Seminar work/project (written or oral presentation)			70 points	
	17.3.	Active participation			10 points	
18.	Grading criteria			to 59 points	5 (five) (F)	
				from 60 to 68 points	6 (six) (E)	
				from 69 to 76 points	7 (seven) (D)	
				from 77 to 84 points	8 (eight) (C)	
				from 85 to 92 points	9 (nine) (B)	
				from 93 to 100 points	10 (ten) (A)	
19.	Final exam prerequisites		Successfully completed activities 15.1 and 15.2			
20.	Course language		Macedonian and English			
21.	Quality assurance methods		Internal evaluation and student questionnaires			
22.	Literature					
	Compulsory					
		No.	Authors	Title	Publisher	Year
	22.1.	1	Michael Predko	Programming Robot Controllers	McGraw-Hill/TAB Electronics	2002
		2.	Maja J Mataric	The Robotics Primer	The MIT Press	2007
	Additional					
		No.	Authors	Title	Publisher	Year
	22.2.	1.	Fred G. Martin	Robotic explorations: a hands-on introduction to engineering	Prentice Hall,	2001
		2.				
	3.					