Content

Course Code	Course Name	Semester	Theory	Practice	Lab	Credit	ECTS
INF430	Robotics	7	3	0	0	3	4

Prerequisites	
Admission Requirements	

Language of Instruction		
Course Type	Elective	
Course Level	Bachelor Degree	
Objective	The aim of the course on Robotics is to teach to the undergraduate students the fundemantals of the articulated robots, their components, and their structures. Kinematic modelling of the moving and articulated robots will be given.	
Content	 Week: Robotic components: fundamental approaches Week: Forward kinematics: rotational matrix, rotational movement with respect to the local coordinate system, Euler angle, roll, pitch and yaw angles. An exapmle of 6 DoF robot. Week: Backward kinematics: solution, existencea and uniqueness of the solution Week: Translational motion Week: Dynamics of the robot joints and regulation: mathematical modelling Week: Working space and trajectory planning: basic presentation Week: vision-based sensing: introduction to image processing Week: midterm exam Week: Moving robots: trajectory following. Kinematics Week: Sensor technologies Week: Simulation and experimental study /Lego Mindstorm and Irobot programming Week: Simulation and experimental study /Sensors Week: Simulation and experimental study /Programming and Robot intelligence Week: Simulation and experimental study, trajectory planning 	
References	1) M.W. Spong, S.Hutchinson and M. Vidyasagar, "Robot Modeling and Control", Wiley, 2006. 2) Phillip John McKerrow, "Introduction to Robotics", Addison-Wesley, 1991. 3) Saeed B. Niku, "Introduction to Robotics. Analysis, Systems, Applications", Prentice Hall, 2001. 4) Vladimir J. Lumelsky, "Sensing, Intelligence, Motion", Wiley, 2006. 5) S. M. LaValle, "Planning Algorithms", Cambridge University Press, 2006. URL adresi http://planning.cs.uiuc.edu/. 6) Mobile Robot Programming Toolkit (MRPT) (http://babel.isa.uma.es/mrpt/index.php/Main_Page) 7) Player stage gazebo dökümantasyonu. Online URL adresi http://playerstage.sourceforge.net/	

Theory Topics

Week	Weekly Contents			
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