

MM 561 Advanced Robotics				MECHANICAL ENGINEERING DEPARTMENT					
Semester	Methods of Education							Credits	
	Lecture	Recit.	Lab.	Project/Field Study	Homework	Other	Total	Credit	ECTS credit
1,2	12	30				146	188	3	7.5
Language	Turkish								
Compulsory / Elective	Optional								
Prerequisites	-								
Course Contents	Robot applications, Robot Classification Object location, Kinematic Equations: Manipulator Position and Manipulator motion, Homogeneous transformations. Differential relationships, Manipulator Jacobian, Dynamics: Lagrange-Euler and Newton-Euler formulations. Motion trajectories control: Motion control and minimum time control. Force Control.								
Course Objectives	Teaching Robot applications, Robot Classification Object location, Kinematic Equations: Manipulator Position and Manipulator motion								
Learning Outcomes and Competences	Learning to Manipulator Jacobian, Dynamics: Lagrange-Euler and Newton-Euler formulations. Motion trajectories control								
Textbook and /or Reference	1. K.Ogata, "System Dynamics.",Prentice-Hall, 1997. 2.Shearer, Murphy, Richardson,"Introduction to System Dynamics" Addison-Wesley,1972. 3.Rowel,Wormley," Introduction to System Dynamics" Prentice-Hall, 1997. 4.Y.Ercan," Mühendislik Sistemlerinin Modellenmesi ve Dinamiği", 2003								
Assessment Criteria					If any, mark as (X)		Percentage (%)		
	Midterm Exams				X		30		
	Quizzes								
	Homeworks				X		10		
	Projects								
	Term Paper								
	Laboratory Work								
	Other								
	Final Exam				X		60		
Instructors	Prof. Mehmet EROGLU								
Week	Subject								
1	Introduction								
2	Robot Arm Kinematics								
3	Robot Arm Invers and Direks Kinematics								
4	Robot Arm Dynamics								
5	Lagrange-Euler formulation								
6	Newton-Euler formation								
7	Denavit-Hertanberg Representation								
8	Link Coordinate System Assigment								
9	Motion Control								
10	Type of Control								
11	Manipulator Jacobian								
12	State-Space Search								
13	Robot Languages								
14	Test Planning								