

The Ohio State University
Department of Electrical and Computer Engineering

ECE 763

Introduction to Real-Time Robotics Systems

Autumn 2007

Textbook: "Introduction to Robotics: Mechanics and Control," 3rd Ed., by J. J. Craig

<u>Week</u>	<u>Subjects</u>	<u>Reading</u>	<u>Homework Project</u>
1	Course introduction Mitsubishi RM501 example	Chap. 1	#1
2	RM501 command language spatial descriptions	2.1-2.3, 2.6-2.7 2.9-2.10	#2
3	Homogeneous transforms: position, rotation, inverse, relative transforms, properties		#3
4	Manipulator coordinate systems, Denavit-Hartenburg convention, link parameters, direct kinematics	Chap. 3 (not 3.6 or 2nd example of 3.7)	#4
5	Midterm I, inverse kinematics	4.1, 4.4 (algebr. sol.), 4.7 (PUMA 560), 4.8-4.11, App. C	#5
6	DC motor actuators		#6, #P1
7	Hydraulic actuators		#7, #P2
8	Midterm II, simulation		#8
9	Control of actuators		#9, #P3
10	Position & velocity sensing		#10

Homework:

1. Mitsubishi RM501 kinematics
2. Mitsubishi RM501 programming
3. Homogeneous transformations
4. Direct kinematics
5. Inverse kinematics
6. DC motor actuators
7. Hydraulic actuators
8. Actuator simulation
9. Control of actuators
10. Position & velocity sensing