

**ME 425/625 Robotics**  
 Department of Mechanical Engineering  
 University of Nevada Las Vegas

- Instructor: Prof. Woosoon Yim (x5 0956, woosoon.yim@unlv.edu)
- Text: Introduction to Robotics, John J. Craig, Addison-Wesley Publishing Co.
- MW 4:00-5:15 PM TBE B-176
- Grading: 2 Midterm (40%) Final (30%) Project & HW (30%)
- Homework solution is available on <http://www.me.unlv.edu/~wy/meg425/> and all homework is due on the first day of class in each week.
- Course prerequisites: MEG320, MAT 429 Co-requisite: MEG421 or consent of instructor
- ME 625 students are required to include more in-depth study of each subject in their final project

**Course Objectives**

ME 425/625 deals with the followings:

- To introduce students the science and engineering of mechanical manipulators
- To introduce kinematics, dynamics, and control problems of robotic manipulators
- To introduce feedback controller of robot manipulators including PID and Nonlinear controllers.
- To introduce various trajectories or motion generation schemes in robotics

By the end of this course, students should be able to

- Understand the science and engineering behind the motions generated by robot manipulators
- Design the basic feedback position controller for robot manipulator
- Simulate the robot system using Matlab and Simulink (kinematics, dynamics, controller)
- Deal with common control and dynamic problems in robot manipulators

	DATE	TOPIC	CHAPTER		DATE	TOPIC	CHAPTER
M	8/24	Introduction	1	M	10/19	Manipulator dynamics examples	
W	8/26	Spatial description and transformation	2	W	10/21	Joint trajectory planning	7
M	8/31	Composite transformation	2	M	10/26	Cartesian trajectory planning	7
W	9/2	Manipulator Kinematics	2	W	10/28	Direct Dynamics Problem	
M	9/7	<b>Labor Day Recess</b>	3	M	11/2	Inverse Dynamics Problem	
W	9/9	Manipulator Kinematics		W	11/4	Control system (Linear)	9
M	9/14	Inverse Kinematics	4	M	11/9	Control system (Nonlinear)	
W	9/16	Differential kinematics	4	W	11/11	<b>Veteran's Day Recess</b>	
M	9/21	Manipulator Jacobian	5	M	11/16	Position control problems	9
W	9/23	Manipulator Jacobian	5	W	11/18	<b>EXAM II</b>	
M	9/28	Force transformation	5	M	11/23	Exam II Review	
W	9/30	<b>EXAM I</b>		W	11/25	Force control problems	11
M	10/5	Exam I Review				<b>Thanksgiving Days</b>	
W	10/7	Manipulator Dynamics	6	M	11/30	Project discussion	
M	10/12	Manipulator Dynamics	6	W	12/2	Review	
W	10/14	Manipulator Dynamics	6	<b>Final Exam Dec. 7, 2009, 6:00-8:00 PM</b>			

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**Any other class specific policies** (e.g., absences, make-up exams, extra credit policies, plagiarism/cheating consequences, policy on pagers/mobile phones, specialized department or college tutoring programs, bringing children to class, policy on recording classroom lectures, etc.)