

CS 457: Robotics – (Programming in Robotics)

Class Syllabus

September 13, 2005

Course Objective:

Computer Science 457 is an interdisciplinary course between Computer Science and Engineering. The course will provide an opportunity for students to understand intelligent robot system architecture. In this course, students will study two kinds of robotic systems: Manipulators and Intelligent Mobile Robots. You will design algorithms and programs for the Robotic Systems based on kinematics and dynamics, planning, navigation and control models. Students will use simulation software and hardware test-bed to verify their algorithm and program performance during their project work.

Prerequisite:

The prerequisite for this class is CS 222 and CS 223

Class Time:

Monday, Wednesday, Friday	12:30 - 1:55p.m	SCI 414
Thursday	01:00 - 3:25p.m	SCI 414

Texts

1. Introduction to ROBOTICS, John J. Craig (ISBN: 0-201-54361-3). Publisher: Prentice Hall.
2. Introduction to AI ROBOTICS, Robin R. Murphy (ISBN: 0-262-13383-0). The MIT Press.
3. The Materials from Instructor's papers

The books are available in the CSUB Bookstore and at retail and internet bookstores.

The following chapters will be covered:

Chapter 1	Introduction
Chapter 2	Spatial Descriptions and Transformation
Chapter 3	Manipulator Kinematics
Chapter 4	Inverse Manipulator Kinematics
Chapter 5	Trajectory Planning
Chapter 6	Reactive Robotic Paradigm
Chapter 7	Soft Computing Based Reactive Behavior
Chapter 8	Manipulator Dynamics
Chapter 9	Intelligent Controllers in Robotics
As time allows:	
Chapter 10	Multiple Sensor Fusion

Grading:

Grades will be based on the homework + labs (45%), one midterm exam (25%), and final exam (30%).

Lab assignments will be made at the beginning of each Thursday lab and are usually due by the start of class on next Wednesday. Labs will be graded as complete, incomplete, or undone. Students are encouraged to work together during the lab time. Homework assignments will be made approximately every week and will include both written exercises and programming. The due date of each assignment will be announced when the assignment is made. Assignments will be graded for logical correctness and as well as programming style. Guidelines for labs and homework assignments will be distributed when the first of these assignments is made. The midterm exams will be given during class time on Friday, October 21, 2005. **The final exam is on Wednesday, November 30, 2005, 11:00 am-1.30 pm in the classroom.** The material covered in each exam will be announced in class.

Policy:

While the discussion of class materials by students is encouraged, all homework submitted must be the original work of each individual student. Copying the work of others, including solutions published on the Internet, violates standards of academic honesty and will result in severe penalties. Students take responsibility for missing lectures, labs and examinations. **Late assignments and makeup examinations will not be accepted.**

Instructor: Dr. Wei LI

Office: Science 405

Hours: Monday, Wednesday, Friday 8:30 – 9.00am and 11:am - 12: pm.

Additional times by appointment

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