91.450 Robotics I, Fall 2011
Syllabus

Contact Information

Prof. Holly Yanco
Office: Olsen 206
Lab: Olsen 304
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Class Meetings

Tuesdays and Thursdays, 12:30-1:45

On lecture days (most Tuesdays), we will meet in Olsen 403. On lab days (most Thursdays), we will meet in Olsen 302.

Office Hours

Tuesdays 11:00 to 12:15 (in Olsen 206)
Thursdays 11:00 to 12:15 (in Olsen 206)
1:45 to 2:15 (in Olsen 302)
and by appointment.

Course Description

In this course, you will learn about robotics, with a focus on autonomous mobile robots. There will be lectures (held in Olsen 403) and labs (held in Olsen 302). In the labs, you will build and program your own robots. There will be a robot contest and a final project

Readings

Readings will be distributed in class. Many will not be available on the course web site due to copyright issues. If you miss a class, you are responsible for getting a copy of the handout from a classmate or from me during office hours.

Grading

Homework and Labs	35%
Midterm Exam	20%
Projects:	
Contest	20%
Final project	25%

Collaboration Policy

Labs will be done in groups of two students each. You may choose your own partners, but I reserve the right to regroup people as the term progresses. For the labs, I expect that each person will do his or her own equal share of the work. To learn, you'll need to actually build and program the robots, not watch another person do it.

You should write your own homework assignments as well as any written components of the labs. You may discuss the questions with your classmates, but you must write them up individually.

Exams are also to be an individual proposition.

Robots

In the lab, you'll be building and programming robots. We will be using the CBC robot controller. Our robot bases will be built out of Lego and Vex (and anything else you'd like). Each two person team will be given a robot kit with the processing boards, sensors, and motors for use during the term; the lab contains large bins of Lego as well as Vex parts. Each team will have its own workspace with computer in Olsen 302.

Lab

The lab is in Olsen 302. Each group will have their own workbench with computer for building and programming their robots.

The door has an ID lock, so you will have 24 hour access to the lab (ID access should be live by Thursday 9/8). While time in class is set aside for working on your robot, you should expect to spend additional time in the lab to work on your labs and projects.

Please try to keep your workspace and the lab neat. Do not leave trash lying around. You may eat in the lab, but this policy will be changed if people do not clean up after themselves.

Schedule

On lecture days, go to Olsen 403. On lab days, go to Olsen 302.

Th	9/1	Lecture: Class overview
T	9/6	Lecture: A brief history of robotics
Th	9/8	Lab: Intro to the robot kit; building your first robot
T	9/13	Lecture: Sensors, motors and robot morphologies
Th	9/15	Lab: Programming your first robot
T	9/20	Lecture: Braitenburg vehicles
Th	9/22	Lab: Braitenburg vehicles
T	9/27	Lecture: Robot control architectures
Th	9/29	Lab: Wall following
T	10/4	Lecture: Path planning and the DARPA Challenges
Th	10/6	Lab: Servo motors and sonars
T	10/11	Lecture: Computer vision
Th	10/13	Lab: Vision I
T	10/18	Lecture: Robot learning
Th	10/20	Lab: Vision II
T	10/25	Lecture: Multi-agent robotics
Th	10/27	Lab: Competition building start
T	11/1	Lecture: Human-robot interation
Th	11/3	Lab: Competition building
T	11/8	Lab: Competition building and trial runs; Project meetings this week
Th	11/10	Lab: **Competition rounds**
T	11/15	**Exam** (in lecture room); covers material through 11/10
Th	11/17	Lab: Project building; **Project proposals due**
T	11/22	Lecture: Cool robot applications; **Competition report due**
Th	11/24	No class: Thanksgiving
T	11/29	Lecture: On the horizon
Th	12/1	Lab: Project building
T	12/6	Lab: Project building
Th	12/8	Lab: **Final project presentations**; **Project reports due**