

## 91.451 Robotics II, Spring 2005 Syllabus

### Contact Information

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### Class Meetings

Lecture: Tuesdays, 1:00 – 2:15, Olsen 415  
Lab: Thursdays, 1:00 – 2:50, Olsen 304

### Office Hours

Office hours for the course will be held in the lab (Olsen 304) to allow us to work with the robots. I will be in the lab during the following hours.

Tuesdays 2:30 to 4:00  
Thursdays 11:00 to 12:30

You may also make an appointment with me if you can not make it to the scheduled office hours.

### Course Description

In this course, you will learn about autonomous mobile robots and artificial intelligence. There will be lectures on Tuesdays (held in Olsen 415) and labs on Thursdays (held in Olsen 304). The robots will be programmed in Pyro, which stands for **Python robots**. The language abstracts the underlying robot control language, allowing you to write code that will run on different types of robots and robot simulators. We will primarily use the Pioneer robot platform and the Player/Stage simulator.

The focus of the course will be AI Robotics. We will learn about robot architectures, computer vision, planning and mapping, machine learning, and multi-agent robotics. Most lecture topics will be followed by a lab on that subject.

### Project Sequence

This course together with Robotics I in the fall is a project sequence.

### Textbook

*Behavior-Based Robotics*, Ron Arkin, MIT Press, 1998 (same book from 91.450 last semester)

While the Arkin book will be the primary text for the course, there will be additional photocopied readings distributed.

**Class Website**

<http://www.cs.uml.edu/~holly/91.451>

**Exam Dates**

Midterm: Tuesday, 22 March, in class

Final Exam: To be determined by the Registrar

**Projects**

A great deal of the programming in this class will occur as part of the labs. There will be a final project for the class. You will pick your topic around the time of the midterm. The project will be due during the last week of classes. On the last day of classes, you will give a presentation about your project with a live demo.

**Grading**

|                   |     |
|-------------------|-----|
| Homework and Labs | 30% |
| Midterm Exam      | 20% |
| Final Project     | 30% |
| Final Exam        | 20% |

**Collaboration Policy**

Most labs and homework will be done alone. Unless a lab or homework assignment is designated as a group assignment, you must do your own work, not collaborate with another person. You can talk to others about the assignment, but you must write all code and other documentation by yourself. Exams are also to be an individual proposition.

**Robots**

In the lab, you'll be programming robots. We will be using ActivMedia's Pioneer robots. This wheeled robot has a color camera with pan-tilt zoom, 16 sonar sensors (8 front and 8 back), a back bumper and a gripper.

**Lab**

The lab is in Olsen 304. The door has an id lock, so you will have 24 hour access to the lab. You must enter with your id.

Please try to keep your workspace and the lab neat. If I see a mess from food or drink, I will be forced to ban them from the lab. Throw all leftover food away in the trash bins in the hallway, not in the inner lab.

## **Getting More Involved with Robotics**

### *Botball and Botfest*

Botball and Botfest will kick off February 11 – 12 with a tutorial on campus. The tournament and exhibition will be held on Saturday, March 27. Volunteers are needed at the tutorials, to mentor teams, and to help on March 27. Talk to me if you are interested.

### *Reading Group*

Fred and I lead the Robotics and Learning reading group, which will be scheduled shortly. If you are interested in reading and discussing papers on current research in robotics, sign up for the robotics-reading-group mailing list on weblab (or talk to me).

### *Trinity Firefighting Competition*

The Trinity Firefighting Competition will be held at Trinity College in Hartford, Connecticut on Saturday, April 9 and Sunday, April 10. If you are interested in building a robot for the competition, I can cover your registration costs. (Registration slots are limited, so you should let me know very soon if you're even considering entering a robot at Trinity.)