

## 91.451 Robotics II, Spring 2003 Syllabus

### Contact Information

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### Class Meetings

Lecture: Tuesdays, 11:30 – 12:45, Olsen 403  
Lab: Thursdays, 11:30 – 2:00, 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 12:45 to 2:00  
Wednesdays 1:00 to 3:00  
Thursdays 2:00 to 3:00

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 403) 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 2DXE robot platform and its simulator.

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

### Project Sequence

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

### Textbooks

*Introduction to AI Robotics*, Robin Murphy, MIT Press, 2000

While the Murphy 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>

**Class Rescheduling**

There will be no class on Tuesday, February 18 because I will be out of town. Class will be rescheduled during the week of February 24 – 28.

**Exam Dates**

Midterm: Tuesday, 25 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. Since we do not have a robot for every person, the demos will run serially.

**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-2DXE as the platform. 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. From 7:00pm to 7:00am on weekdays and all days on weekends, the door can not be propped open, due to the alarm system (which, unlike last semester, is active now).

Each student will have his own workbench with a computer for programming the robots. 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.

## **Getting More Involved with Robotics**

### *Botball and Botfest*

Botball and Botfest will kick off February 7 – 9 with a tutorial on campus. The tournament and exhibition will be held on Saturday, March 29. Volunteers are needed at the tutorials, to mentor teams, and to help on March 29. Talk to me if you are interested.

### *Reading Group*

The Robotics and Learning reading group is held on Thursdays from 3:00 – 4:00 in Olsen 210A, led by me and Prof. Martin. If you are interested in reading and discussing papers on current research in robotics, come to the meetings. See me to get a copy of the first paper for Thursday, 6 February.

### *Trinity Firefighting Competition*

The Trinity Firefighting Competition will be held at Trinity College in Hartford, Connecticut on Saturday, April 12 and Sunday, April 13. If you are interested in building a robot for the competition, I can cover your registration costs. Unfortunately, robots built for Trinity can not count for credit in this course, since we are focusing on AI and Robotics using the Pioneers.