

ENGR 171 Mechatronics: Introduction to Robotics, Cuyamaca College

Fall Semester 2010, Section 4595

Saturdays, 9 am – 12:55 pm, Room F301

ENGR 171 introduces fundamental concepts in robotics to let you develop autonomous robots that interact with their surroundings. You will build a basic robot, then use it as a test platform to experiment with these ideas. The objective is to develop robust behavior that achieves a desired goal while promoting robot survival in an uncertain environment.

Instructor

Dr. Duncan McGehee
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Office Hours: MW 5 - 6 pm, Th 12 – 1 pm, Sat 1 – 3 (in F301), or by appointment

Units and Prerequisites

1.5 units. No prerequisites.

Equipment

Required: BoeBot Robot Kit – USB Version, Item 28832, Parallax, Inc. (www.parallax.com) \$159.99 or if you already have a Parallax Board, of Education, order the Boe-bot Parts Kit, Item 28124, Parallax, Inc. (www.parallax.com) for \$81.99 + *Robotics with the Boe-Bot*, A. Lindsay, ISBN 1-928982-3-4, Parallax, Inc., 2004 (available by free download)

Of Interest:

Robot Programming, A Practical Guide to Behavior-Based Robotics, J. L. Jones, ISBN 0-07-142778-3, McGraw-Hill, 2004.

Robot Builder's Bonanza, G. McComb and M. Predko, ISBN 0-07-146893-5, McGraw-Hill, 2006.

Other Required Supplies

USB flash drive. Any size will suffice.
4 AA batteries

Grading

A: 90 - 100
B: 80 - 89.9999
C: 70 - 79.9999
D: 60 - 69.9999
F: < 60

Lab activities and projects	123 pts
Final project – navigation problem	22 pts
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	145 pts

Policies

- 1) This is a lab class, and you are encouraged to help each other on the textbook activities. With the creative projects, although you may discuss your ideas with friends, each project should be unique and original.

Important Dates

3 September: Final day to add classes, or to drop without a 'W'.
24 September: Last day to switch to pass/no pass (In my opinion the best way to take the class).
12 November: Final day to drop classes.

Tentative Lecture Schedule

Week	Dates	Topic	Reading
1	23 Oct	Continuously rotating servo motors, Robot assembly, Robotic Motion	Ch 2, 3, and 4
2	30 Oct	Robotic motion cont'd, Robotic navigation 1: tactile sensors	Ch 4, Ch 5
3	6 Nov	Tactile sensors, cont'd: Robotic "behavior"	Ch 5
4	13 Nov	Robotic navigation 2: Light sensors	Ch 6 part 1
5	20 Nov	Light sensitive response, "Behavior"	Ch 6 part 2
6	27 Nov	Thanksgiving Holiday	
7	3 Dec	Robotic navigation3: infrared sensors	Ch 7
8	11 Dec	Final Project: Navigation problem	

This course adheres to policies outlined in the Cuyamaca College Catalog. For further information, please see the section of the catalog entitled *Academic Policies*.

subject to minor changes