E11: Autonomous Vehicles
Fall 2012
Clark & Lape

Syllabus

Teaching Staff

Faculty:	Christopher Clark	Parsons 2376	x78856	clark@hmc.edu
	Nancy Lape	Parsons 2360	x73886	lape@hmc.edu
Lab Proctors:				
	Cody Crosby			ccrosby@g.hmc.edu
	Alistair Dobke			Alistair_Dobke@hmc.edu
	Andrew Donelick			adonelick@g.hmc.edu
	Aarthi Sridhar			asridhar@g.hmc.edu
	Rebecca Thomas			Rebecca_Thomas@hmc.edu
	Katie Vinnedge			Katie_Vinnedge@hmc.edu
	Nicole Yu			Nicole_Yu@hmc.edu
Tutors	Justin Jones			jpjones@g.hmc.edu
	Taylor Peterson			tpeterson@g.hmc.edu
	Ryan Seldon			rseldon@g.hmc.edu
	Joshua Vasquez			Joshua_Vasquez@hmc.edu

Schedule

Lecture:	MW 4:15-5:30			Parsons 1287
Labs:	Lape, Sridhar, & Yu	Tuesday	1 – 4 pm	Parsons B171
	Thomas & Dobke	Tuesday	6 – 9 pm	Parsons B171
	Vinnedge & Donelick	Wednesday	6 – 9 pm	Parsons B171
	Clark & Crosby	Friday	1 – 4 pm	Parsons B171
Office Hours:			TBD	
Tutoring Hours		Saturday	2-5 pm	Linde Computer Lab
		Sunday	2-5 pm	Linde Computer Lab

Feel free to stop by even if we do not have official office hours. One of the main reasons that we teach at Harvey Mudd is that we value working with students one-on-one and in small groups.

Text and Supplies

There is no textbook for this course, but lecture slides will be distributed. **You will need to purchase a lab kit before your lab on the week of September 10**. The kit contains components for your Mudduino embedded processor board and for your autonomous vehicle. The college has partially subsidized the kits, so your cost is $100. To purchase a kit, bring your ID card with Claremont Cash to Sydney Torrey in the Engineering Department Office (Parsons 2373) and get a receipt. You can add Claremont Cash to your card online or at Honnold Library. Take your receipt down to the stockroom (Parsons B714) to pick up your kit.

Electronic Communication

Class web page: http://www.hmc.edu/lair/E11/
Class email list: eng-11-l
Be sure to check that you are on the class email list. If you do not receive mail, add yourself to the list or risk missing important late-breaking announcements. To subscribe, send email to listkeeper@hmc.edu with one line in the body:

subscribe eng-11-l

You also will need a Harvey Mudd College computer account to complete your labs. If you are not an HMC student, email one of the faculty with your full name and school affiliation and we will request an account for you.

Course Objectives

Autonomous Vehicles is a hands-on interdisciplinary introduction to mechanical, electrical, and computer engineering, computer science, design, systems, and controls. The course has a variety of objectives including

- Give students a taste of what engineers and computer scientist do to help make informed decisions about majors
- Provide practical technical skills relevant to subsequent projects including
    - Machine shop
    - 3D CAD and printing
    - Soldering
    - C programming
    - Sensors and actuators
    - Analog and digital interfacing
    - Modeling
    - Embedded control systems
- Whet students' appetite to learn more advanced topics
- Develop design – build – test – debug skills
- Develop teamwork, presentation, and technical writing skills
- Just plain fun!

By the end of this course, you and your teammate will have built your own autonomous vehicle and programmed it to play Capture the Flag.

Grading

E11 is offered on a pass/fail basis. To pass the class, you are expected to:

- regularly attend class and lab
- complete all but one of the weekly labs
- complete all but one of the homework assignments
- deploy an operational autonomous vehicle to play Capture the Flag
- make a presentation about your vehicle
- complete a final report documenting your vehicle

If you have an emergency, please notify your instructor when you will be missing class.

You will complete the labs before Fall Break on your own but are welcome to consult your classmates and your instructor. You and a teammate will jointly design your autonomous vehicle to play Capture the Flag in the weeks after Fall Break, and then will jointly prepare your presentation and final report.

Your problem sets may be done on your own or with a partner. Both of you should be involved in and understand all aspects of the work; it misses the point to simply split the assignment and do two halves independently. You are welcome to discuss the assignments with other students or with the instructor or lab assistants after you have made an effort by yourself. Be sure to credit at the top of your assignment anyone classmates with whom you discussed ideas. **It is an honor code violation to simply copy someone else's work.** All problem sets must be turned in to the Resources section of the E11 Sakai site.