

UNIVERSITY OF RHODE ISLAND
Department of Electrical, Computer, and Biomedical Engineering

ELE 205-206

Microprocessor Laboratory

Spring 2012

Course Content: Hands-on familiarization with computer and microprocessor software and hardware. Computer architecture and interfacing with input and output devices. Prerequisite: credit or concurrent enrollment in MTH 141 (Introductory Calculus with Analytic Geometry).

Instructor: Bill Ohley

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Office: Kelley Annex 206

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Office Hours: by appointment (call or e-mail),
or come to my office

CourseWebSite: www.ele.uri.edu/courses/ELE205

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Teaching Assistant: Jerry Wang

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Office: Kelley Hall 109

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Classes: Kelley 102 MW 11:00 – 11:50 am

Labs: Kelley 101 Sect 1: M 2 - 4:50 pm
Sect 2: Th 2-4:50 pm

Books: Purchase an Arduino Uno with usb cable; Amazon is ok

Down load the Arduino IDE (its java based so Mac and PC work ok)

We will use on line info from Arduino and Atmel (Manufacturer of processor)

Week	Lab Work	Lectures	Reading
Jan 23	No Lab; Classes only	Intro to Arduino; Class Overview	Intro to arduino Programming
Jan 30	Lab 1- Intro to Arduino	IDE and Arduino; Basic labs	Atmel spec sheet Command structures
Feb 6	Lab 2- LCD Display	Display examples	Display specifics
Feb 13	Lab 3- A/D and D/A	A/D conversion	A/D converter
Feb 20	No Class on Monday; Lab 4 -LEDs	Music and LEDs; Exam #1	Review; Arduino sound processing
Feb 27	Lab 5- Data communication	Pass data via parallel bus	Handshaking
Mar 5	Lab 6- 24 Hour Clock	Timing and Display	Timing functions
Mar 12	Spring Break No Classes	Don't get too sunburnt	
Mar 19	Project	Project Proposal in class; ppt	What ever you need for your project
Mar 26	Project	Matlab interaction with arduino	Matlab stuff

Apr 2	Project	Internet interaction with arduino	Internet protocols And E-Arduino Shield
Apr 9	Project	Exam #2	Review for exam
Apr 16	Project	Other development devices and IDEs	Eclipse and Arduino
Apr 23	Project Final Demo	Final ppt in class with demo	
Apr 30	Project Final Demo		

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Spring 2011

Grade Distribution:	Lab Reports	35%	A: 90 – 100%
	Lab Project	25%	B: 80 – 89%
	Exam 1	20%	C: 70 – 79%
	Exam 2	20%	D: 60 – 69%
			F: < 60%

Lab Exercise, Exam, & Grading Policies: Participation will count toward your course grade, so come to class and lab! Lab reports are due at the beginning of your next lab meeting. Late reports will not be accepted. Six lab reports will be turned in, but the lowest score will be omitted, so only 5 reports will count toward your course grade. (This doesn't include the Project Report—it can't be dropped.) Your lab report should be about two pages long (excluding printouts), generated using a word processor, and grammatically correct. Graphs and flow charts may be drawn by hand, but remember: we can evaluate your work only if it is legible, so be neat! Each report should include:

- Abstract of 25 words (or less) stating the problem, your solution, and your results
- Methods: a description of your procedure
- Results: observations, and results, diagrams of any special hardware you used
- Discussion: What you thought about the results
- program documentation including a flow chart, appropriately commented source code
- answers to all the questions in the lab handouts

You can complete the labs in groups, but each individual must turn in a lab report. List the names of everyone in the group on your report. Reports will be re-graded if you believe an error was made, but I reserve the right to re-grade the entire report. Exams will be open book, open notes. Make-up exams are difficult to prepare and administer, therefore approval for a make-up exam will be given only with strong justification. Contact me *before* the regularly scheduled exam to request a make-up exam. In case of illness, a physician's note will be required.

Lab Projects: The Lab Project allows you extend the skills you develop in the assigned exercises to build a more complex system. You will work on the project in teams of 3 people. A Project Proposal and Project Report will be turned in by each team, and presented by *all* the team members during our last class meetings. The project presentation will count for one-third of the project score.

Academic Enrichment Center: The Academic Enrichment Center, located on the 4th floor of Roosevelt Hall in University College, houses URI's writing center and learning assistance program, and many other academic support services such as tutoring, study groups, and

workshops. The Center serves students seeking academic support as well as those with more advanced academic ability who are interested in helping others. Students can get help or help others with schoolwork and find individual or group assistance as needed.

Disabilities: Any student with a documented disability should contact me early in the semester so that we may make reasonable accommodations to support your success in this course; you should also contact Disability Services for Students, Office of Student Life, 330 Memorial Union, 874-2098. **Academic Honesty:** Students are expected to maintain the highest level of academic integrity. Academic dishonesty will be dealt with according to the University Manual; the penalty can range from failing the assignment to dismissal from the University. It isn't worth it, so don't do it.