Microprocessor-Based Systems (E155)

D. Money Harris **Fall 2009**

Syllabus

Contact Information

Instructor:	David Harris	Parsons 2374	x73623	David_Harris@hmc.edu
Lab Assistant:	Jin-Soo Jo			Jin-Soo_Jo@HMC.Edu
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Class web page:	www3.hmc.edu/~harris/class/e155			
Class directory:	\\Charlie\Courses\Engineering\E155			
Class email list:	eng-155-l			

Be sure to check that you are on the class email list. You should have received email before the beginning of classes. If you did 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:

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subscribe eng-155-l
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Schedule

Lecture:	MW 1:15-2:30
Lab:	M 2:45 – 5:15 / T 1:15-3:45
Office Hours:	TBD
Lab Hours:	Sat 6-8 (Jin-Soo), Sun 7-9 (Kevin)

You will be working on labs on your own time and it is not required that you attend the entire scheduled lab period. However, you should plan to show up for the first few minutes of each lab to see demonstrations. You also must get your projects checked off at some point during the lab period.

You are encouraged to come to office hours to ask questions, get help with your labs, talk about careers and graduate school, or just raid the candy jar. Even if I am not officially holding office hours, I am available more often than not, so try dropping in if you are having a problem with your lab. You may also contact the lab assistants for questions when I am not available.

Recommended Texts

The following texts are not required, but you may find them useful, especially if you are considering employment in the area of digital systems. Some books are also available at Sprague. I assume you have a strong mastery of digital design at the level of E85; review Harris & Harris if you feel rusty on a topic.

Wakerley, *Digital Design, Principles & Practice*,4rd Edition, Prentice Hall.
A comprehensive text on digital design with lots of useful tips.

Smith and Frazon, *Verilog Styles for Synthesis*, Prentice Hall.
Covers Verilog syntax and style issues in more depth than the class notes.

Grading

Labs:	50%
Final Project:	45%
Activities:	5%

Your grade in the class is based on seven labs and a final project. Late labs are not accepted, but your lowest lab score will be dropped before the average is calculated so if you are sick or have an emergency one week you can drop that lab. Labs are done individually. You are welcome to discuss them with other students or the instructor after you have made an effort by yourself. Please list the names of other students you have worked with. However, you should turn in your own work, not work identical to that of another person. **It is an honor code violation to simply copy someone else's work.** Solutions to past years labs have been handed out. Obviously, it is also an honor code violation to refer to these solutions while doing your lab. The final project will be done in groups of two.

Labs are graded on a 9-point scale. 3 points are given for the system meeting its specified requirements. Up to 3 more points are given for the cleanliness of implementation (simple, elegant, well-commented code, clean wiring) on the scale of 1 = marginal, 2 = good, 3 = exceptional. Another 3 points are given for answering a "fault tolerance question," with 3 points for a correct answer to the first question, 2 for a second try, and so forth.

Wednesday lectures will consist of in-class activities and design projects. Your work will count toward a small portion of your grade. Your two lowest activity scores will be dropped.

Schedule

Week	Monday Lecture	Wednesday Activity	Lab Demo	Due
8/31		Class Intro	no lab	
9/7	Comb & Seq Logic	Logic Design	Soldering & Xilinx	
9/14	Verilog Coding	FPGA Datasheet	Logic Analyzer	Lab 1 – FPGA Board
9/21	Synchronous Design	Verilog FSMs		Lab 2 – Muxed Display
9/28	PIC Assembly	PIC Programming	PIC ICD	Lab 3 – Keypad
10/5	PIC Hardware	PIC Interfacing		Lab 4 – Assembly
10/12	C Programming	C Examples	C Programming	Lab 5 – Audio
10/19	**Fall Break: No Class**			
10/26	Interrupts	Motors, Speakers		Lab 6 – Wireless
11/2	Project Kickoff	Serial Ports, Bluetooth		Lab 7 – Robot Arm Project Proposal 11/4
11/9	VGA Graphics	Data Converters		
11/16	Patent Law	Patents		
11/23	Presentations	Presentations		Project Status Report
11/30	Presentations	Interview Questions		
12/7	Computer Eng. Jobs	Project Demos		Report Due 12/11