Laboratory Syllabus
Spring 2013

George Mason University
Electrical and Computer Engineering Department

ECE 447: Single-Chip Microcomputers

Instructor: Bilal Habib
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Lab: W 4:30 – 7:10pm
Nguyen Engineering Bldg., room 3208

Aaron Hunter
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R 4:30 – 7:10pm
Nguyen Engineering Bldg., room 3208

Office hours: See class webpage.

Prerequisites: Grade of C or better in ECE 445 and either CS 367 or CS 222.

Required Text: MSP430 Microcontroller Basics, by J.H. Davies


Problem Solving and Program Design in C, 7th Edition,
by J. R. Hanly and E. B. Koffman

Hardware: Each student is required to purchase a lab kit.

Software: IAR Kickstart Environment
http://www.ti.com/tool/iar-kickstart
Code Composer Studio (v.4)
http://www.ti.com/tool/ccstudio
Students may NOT use any other IDE.

Course Webpage: http://ece.gmu.edu/~clorie/courses/Spring2013/ece447/
Blackboard

LABORATORY DESCRIPTION

Students learn to implement microcontroller concepts through a series of laboratory experiments. Each experiment requires implementation of major concepts taught in previous class lectures. Some hardware-specific implementation details may also be taught during the labs.

• All lab sessions and office hours will be conducted in room 3208, Nguyen Engineering Building.
• Students are required to have an ID card to access the lab during off hours.
• Experiment demonstrations will be accepted only during the scheduled lab sections.
REQUIRED MATERIALS

A lab kit is required for the laboratory experiments. The kit contains the microcontroller development board and all major components required for the experiments. Basic tools may also be necessary for labs that include hardware implementation.

The kits can be purchased from Cynthia Ballentine in 3915 Nguyen Engineering Building.

EXAMS

There will be one exam in the laboratory:

• Midterm

See the detailed schedule for the date of the lab midterm exam.

There will be NO makeup exam. If you cannot make the scheduled midterm exam, you must speak with the lab instructor in advance to arrange for an alternate time to take the exam.
General Laboratory Rules:

Each lab experiment will be preceded by an introduction and a hands-on session taught by a lab instructor.

Students will be required to demonstrate working experiments during a lab session on a day designated as a due date for a particular lab experiment.

Experiment demonstrations will be accepted exclusively during the class time for a particular lab section.

Lab projects must be submitted using Blackboard by 2:45 PM on the experiment deadline. Students must submit their IAR workspace to Blackboard. For lab demonstrations this workspace must be retrieved from Blackboard to ensure that no modifications have been made since the submission.

Lab reports must be submitted using Blackboard by 2:45 PM, on the day following the experiment deadline, e.g., by 2:45 PM on Thursday for the Wednesday section.

Lab assignments can be submitted for 50% credit up to one week late. After one week, no credit will be given for the assignment.

Both penalty and bonus points if available for a lab project will apply independently to the demonstrations and to the electronic deliverables.

During the second part of the semester the students can follow two schedules:

- Schedule A: Lab 6 – 3 weeks, Lab 7 – 3 weeks, Lab 8 – 1 week.
- Schedule B: Lab 6 – 4 weeks, Lab 7 – 4 weeks, Lab 8 – not attempted.

Schedule B is intended for students who feel that they fall behind, and need more time for Labs 6 and 7. These students can avoid late submission penalties for Labs 6 and 7, but at the same time, they have to give up their chance of earning any points for Lab 8. A decision about switching to Schedule B, should be communicated to the respective lab instructor no later than by the regular deadline for Lab 6 according to Schedule A.

Office hours will be devoted to helping students with their experiments and answering any questions related to the subject of the course. You are welcome to attend office hours held by all lab instructors and the course instructor.

Students are required to work individually on all experiments, except one or two in which working in groups is explicitly permitted. In case of the group work, both students are expected to be intimately familiar with the entire solution to the given experiment and the entire lab report. This knowledge will be verified during the experiment demonstration and the same grade will be applied to the entire team.
Every completed experiment must be presented to your lab instructor, who will evaluate student’s results and effort. It is the students’ responsibility to convince the lab instructor that their designs work as required. Therefore, students have to simulate and test their designs thoroughly and well document their work. The lab instructor is not required to test anything by himself nor to investigate if the designs are correct in case of insufficient documentation.

The students will be required to answer correctly several detailed questions regarding their experiment solution at the time of demonstration. Incorrect answers to these questions may lead to either a total rejection of the demonstration by the TA, or to a substantial reduction of the number of points awarded to the student.

In case of any evident attempt to submit somebody else’s work as your own, both students will receive a 0 for the lab. A second case of cheating will result in an F for the class. Second violations will be reported to the honor committee (see Honor Code section).

Students are encouraged to help and support each other in all problems related to the

- operation of the development environment
- operation of the microcontroller board
- operation of the measurement equipment in the laboratory
- understanding of the problem to be solved during each experiment.
HONOR CODE

All rules of the GMU Honor Code system will be enforced in both the lecture and the lab. You must review the rules of the GMU Honor Code and be familiar with them. The GMU Honor Code can be found at: http://academicintegrity.gmu.edu/honorcode/

You are encouraged to discuss homework problems with other students and/or obtain assistance of the instructor or the teaching assistants. Nevertheless, please write down your own solutions which represent your understanding of the material. Duplicating another student's homework solutions, hardware/software designs, diagrams, source code, pre-labs, or lab reports is considered cheating. If you use material from other sources such as, but not limited to, the web, books, journals, data sheets, etc. you must reference the source.

Honor code violations will be pursued and prosecuted to the fullest extent.

CLASSROOM ETIQUETTE

Cellphones are to be turned off during class; minimally they must be silenced. Emergency calls may be taken, but must be taken outside of the classroom.

Texting, using your laptop for something other than lecture-related work, etc. is considered a distraction to me and to the other students trying to learn in the class, and will not be tolerated.

OFFICE OF DISABILITY SERVICES (ODS)

If you are a student with a disability and require special accommodations, please contact me and the Office of Disability Services (ODS) as soon as possible. All special accommodations must be arranged through ODS.

Office of Disability Services (ODS): (703) 993 – 2474; http://ods.gmu.edu

OTHER USEFUL CAMPUSS RESOURCES

- Writing Center: A114 Robinson Hall; (703) 993 – 1200; http://writingcenter.gmu.edu
- University Libraries: “Ask a Librarian” http://library.gmu.edu/mudge/IM/IMRef.html
- Counseling and Psychological Services (CAPS): (703) 993 – 2380; http://caps.gmu.edu
- The University Catalog: http://catalog.gmu.edu
- University Policies: http://universitypolicy.gmu.edu