

## Lab Syllabus

- All lab sessions and office hours will be conducted in room ENGR 3208
- Students are required to have an ID card for off hours entry.
- Experiment demonstrations will be accepted **exclusively** during the class time for a particular lab section.

### Lab Sessions:

Day	Time	Section	TA	E-Mail
Monday	07:20 – 10:00 PM	201 (CRN 70727)	Malik Umar Sharif	msharif2@gmu.edu
Tuesday	07:20 – 10:00 PM	202 (CRN 70729)	Bilal Habib	bhabib@gmu.edu
Wednesday	07:20 – 10:00 PM	203 (CRN 70731)	Malik Umar Sharif	msharif2@gmu.edu
Thursday	07:20 – 10:00 PM	204 (CRN 70733)	Bilal Habib	bhabib@gmu.edu

### Office Hours:

Jens-Peter Kaps	Monday 3:00 – 4:00 pm Wednesday 3:00 – 4:00 pm	ENGR 3222
Bilal Habib / Umar Sharif	Monday 1:00 – 2:00 pm	ENGR 3204
Bilal Habib	Tuesday 1:00 – 3:00 pm	ENGR 3208
Umar Sharif	Wednesday 1:00 – 2:00 pm,	ENGR 3208
Umar Sharif / Bilal Habib	Saturday 11:00 – 1:00 pm	ENGR 3208

All office hour sessions are open to all students, independently of their assignment to a particular lab section. Please check the class web page for updates to this office hour schedule. The best way to contact us outside class and office hours is via e-mail or **for questions that might interest several students via the discussion group on Blackboard.**

### Lab Description:

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

### Required Materials:

A lab kit is required for labs and can be purchased from Cynthia Ballentine. The kit contains the microcontroller development board and all major components required for the labs. Basic tools may also be necessary for labs that include hardware implementations.

**Class Web Page:** <http://ece.gmu.edu/~jkaps/courses/ece447/> and on Blackboard

**Textbooks:** J. H. Davies, MSP430 Microcontroller Basics, Burlington, MA: Newnes, 2008, ISBN 978-0-7506-8276-3.

B. W. Kernighan, and D. M. Ritchie, The C Programming Language, 2nd Ed., Englewood Cliffs, NJ:Prentice-Hall, 1998, ISBN 0-13-110362-8 (paperback).

**Hardware:** Each student is expected to purchase a lab kit

**Software:** IAR Kickstart Environment  
<http://www.ti.com/tool/iar-kickstart>

Code Composer Studio v4 <http://www.ti.com/tool/ccstudio>

### Exams:

There will be one lab midterm exams during the course. There will be NO make-up exams. (See the instructor for an exception at least 4 weeks before the exam.) Students who are more than 15 minutes late for an exam may not be admitted and will be assigned a grade of zero for the exam.

- **Lab Midterm Exam:** Week of October 29<sup>th</sup>.

### Grading:

The final grade is based on a weighted sum of your performance in exams, homeworks, recitations and class participation:

	Total
Lab Assignments	40%
Midterm Lab Exam	10%
Midterm Exam	15%
Final Exam	25%
Quizzes	10%
	100%

### Lab Schedule (subject to change)

#### 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 5:45 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 5:45 PM, on the day following the experiment deadline, e.g., by 5:45 PM on Tuesday for the Monday 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 4 – 3 weeks, Lab 5 – 3 weeks, :Lab 6 – 1 week
- Schedule B: Lab 4 – 4 weeks, Lab 5 – 4 weeks, Lab 6 – not attempted

Schedule B is intended for students who feel that they fall behind, and need more time for Labs 4 and 5. These students can avoid late submission penalties for Labs 4 and 5, but at the same time, they have to give up their chance of earning any points for Lab 6 (20 % of the points). A decision about **switching to Schedule B**, should be communicated to the respective lab instructor **no later than by the regular deadline for Lab 4 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 an F and in severe cases will be reported to the honor court (see Honor Code section).

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

- operation of the development environment,
- operation of the microcontroller boards,
- operation of the measurement equipment available in the lab,
- understanding of the problem to be solved during each experiment.

### **Honor Code:**

All rules of the GMU Honor Code system will be in effect. You must review the rules and be familiar with them.

You are encouraged to discuss homework problems and projects with other students and/or obtain the assistance of the TA. Nevertheless, you must write down your own homework solutions which represent your understanding of the material. Projects must be completed individually. No part of a project submission can be copied from another student of the class or any other source.

Duplicating someone else's work such as but not limited to homework solutions, hardware/software designs, diagrams, source code, project reports, labs, and exam notes, 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 followed up with full force.

**Classroom Etiquette:**

Cellphones, pagers have to be put into silent mode. If you have an emergency need to answer a call please quietly leave the room BEFORE answering the call. Lectures may not be recorded without express written permission from the instructor.

**Students with Disabilities**

If you need special assistance, please inform the instructor within the first 3 weeks of classes so that we can work something out.

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