Welcome to Single-Chip Microcomputers. This course expands your knowledge of microprocessors from ECE 445 and puts them into a system context. You will be introduced to the principle of a microcontroller, which comprises all elements of a basic computer system on a single chip, i.e. microprocessor, memory and I/O devices. Based upon this single-chip microcomputer, you will learn how to interface it with other devices, such as sensors, keypads, and displays. This course also covers real-time control issues, assembly language programming for control, design of control software, input/output methods, design tools, and available single-chip microcomputers. In the associated lab you will be designing and constructing systems including a single-chip microcomputer and ancillary hardware to implement a complete control system.

Topics include: an introduction to the MSP430, software development using C and assembly, polling, interrupts, timers, real time clock (RTC), ADC, DCA, serial peripheral interface (SPI), I2C, RS232.
READING ASSIGNMENTS

Reading assignments are posted on the class schedule. In general, the assignments refer to sections of the Davies text. The assigned reading must be completed by the beginning of each week. Additional reading assignments, at the latter part of the semester, will come from the TI website. These documents can be downloaded from the TI website, the class webpage, or Blackboard. They should be printed and reviewed.

HOMEWORK

There will not be any assigned homework. However, I reserve the right to change this policy at any point in the semester if I determine that homework assignments are necessary.

QUIZZES

Quizzes will be on the reading assignments and material covered in class. There will be a maximum of 12 quizzes. The quizzes will not be announced in advance. Each quiz will be 20 minutes long, and be given at the beginning of class. No additional time will be given to those students that arrive late.

LABORATORY

This course features a senior laboratory component. Students in ECE 447 will be given access to the computer lab, room 3208 in the Nguyen Engineering Building, to complete their projects.

Additional information about the laboratory experiments can be found in the Lab Syllabus, provided separately.

EXAMS

There will be two exams in this course:

- Midterm
- Final Exam (during finals week)

See the detailed schedule for the date of each of the exams.

All exams are closed book. I will provide the necessary reference materials for each exam.

Use of calculators will be specified for each exam.

There will be NO makeup exams. If you cannot make one of the scheduled exams, you must speak with me in advance to arrange for an alternate time to take the exam.
GRADING

The final grade for the course is based on my best assessment of your understanding of the material and your participation in the class during the semester. The exams, quizzes, laboratory experiments and laboratory midterm will be used to determine your preliminary final grade according to the following weighting:

- Quizzes: 10%
- Midterm: 15%
- Final: 25%
- Lab Experiments: 40%
- Lab Midterm: 10%

CREDITS

This course includes 3 lecture hours and 3 lab hours, and is worth a total of 4 credits.

For Electrical Engineers, this course counts as one technical elective and one advanced laboratory course.
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 CAMPUS RESOURCES

- Writing Center: A114 Robinson Hall; (703) 993 – 1200; http://writingcenter.gmu.edu
- 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