

EE 365 - Microprocessors - 3 hours  
Required Course

1. *2007-2008 Catalog description*  
Design of microprocessor-based systems applied to real situations; control and data acquisition. Programming practice on commercial microprocessors. Prerequisite: EE 201 or EE 311; EE 221 with a minimum grade of C.
2. *Prerequisites by topic*
  - Can manipulate binary and hexadecimal numbers
  - Can design simple combinational and sequential logic circuits
  - Can write programs in a high-level language
3. *Textbook (s) and/or other required material*  
None in fall 2007  
Suggested Text: Using the MCS-51 Microcontroller, by Huang, Oxford  
Other required text material will be from readily available data sheets and all course material is posted on Blackboard allowing online student access.  
  
Software: Keil Development Software: [www.keil.com](http://www.keil.com)
4. *Class/Laboratory Schedule*  
Three sessions per week, each 50 minutes, for 14 weeks plus 2 hour final time slot
5. *Topics Covered (Outcomes influenced)*
  - architecture of the 8051-family microcontrollers (7ab)
  - 8051 assembly language and Keil assembler (7af)
  - 8051 C language subset and Keil compiler (7bf)
  - Programming skills – using structure, growing projects, time management (7abdf)
  - MicroPac 535 peripherals (7abc)
  - 80C535 timers, A/D (7abc)
  - Bus Loading (7e)
  - Bus Timing (7e)
  - Brainstorming, Peer Review, *Critical Thinking*, & Presentation skills (7fg)
6. *Contribution of course to meeting the curriculum components*  
Engineering Science - 50%, Engineering Design - 50%
7. *Course Outcomes (Program Outcome contributions): In learning the course topics, the student will attain the following outcomes*
  - a) Student will program the 8051 using assembly language, including using projects and modules (9ABCD)
  - b) Student will program the 8051 using C language for the 8051 (9ABCD)
  - c) Student will program the 8051 to interact with hardware – interrupts, timers, A/D, D/A (9ABCD)
  - d) Student will use the Keil Development Tools and Diagnostics application and development system learning software writing and debugging skills and techniques (9BCD)
  - e) Student will analyze hardware interfaces for an 8051 based microcontroller system (9ABD)
  - f) Student will demonstrate personally written, operating projects (9CFG)
  - g) Student will learn and apply *Critical Thinking* to project development (9F)
8. *Grading policy and criteria:*  
The course grade will be based upon the percentage of points earned throughout the semester. The points are earned based upon how well you meet the objectives stated above. Each objective will be tested several times and ways throughout the semester to assure accurate evaluation. The points assigned for your efforts will conform to the *Undergraduate Catalog, Grading System*. The initial grade ranges, in percent, are: 100 – A – 85 – B – 72 – C – 58 – D – 45 – F – 0. [test(ea) = 100; peer review(tot) = 300; project 1 = 100, project 2 = 200]

A grade of C corresponds to meeting the minimum competency required to understand course topics and attain course outcomes.

9. *Relationship of course to program outcomes*

label	Program Outcomes (A Graduate from the program will:)	Contribution
A	have knowledge of the mathematical and scientific foundation of electrical engineering	Moderate
B	have knowledge of and the ability to apply techniques and technology of electrical engineering	Strong
C	complete a design project sequence, culminating in a capstone project at or near the professional level	Strong
D	understand that acquisition of new knowledge is needed for success in the electrical engineering profession	Strong
E	meet Bradley's general education requirements which are based on the principles of liberal education	NA
F	have experience in communicating technical information and working on teams	Moderate
G	understand the importance of professional and ethical behavior	Moderate

10. *Prepared by:* James Irwin – 08 06 02