Educational Objectives:  
1) To introduce microcomprocessor/microcontroller based system design  
2) To give hands on experience designing embedded applications using assembler and C programming, and basic single board system hardware  
3) To understand hardware and software design issues  

Relationship of Course to Program Outcomes:  
In this course, the student will have to show:  
a) An ability to apply knowledge of mathematics, science, and engineering.  
c) An ability to design a system, component, or process to meet desired needs.  
e) An ability to identify, formulate, and solve engineering problems.  
f) An understanding of professional and ethical responsibility.  
g) An ability to communicate effectively.  
j) A knowledge of contemporary issues.  
k) An ability to use the techniques, skills, and modern engineering tools in engineering practice.  
l) An understanding of hardware/software co-design issues, especially in the context of real-time, embedded and networked systems.

Instructor:  
Dr. Rhonda Gaede, Office: EB 211, Phone: 824-6573, email: gaede@ece.uah.edu

Textbook:  

Web Page:  
http://www.ece.uah.edu/courses/cpe421

Office Hours:  
MW 10:00 AM- 12:00 PM, TR 4:00 PM- 5:00 PM, or by appointment

Grading:

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<tr>
<th>Undergraduate</th>
<th>Graduate</th>
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<tr>
<td>Laboratory assignments (4 labs)</td>
<td>Laboratory assignments (2 labs)</td>
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<tr>
<td>Lab1 – 10%, Lab2 – 5%, Lab3 – 10%, Lab4 – 5%</td>
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<td>Homework</td>
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<td>Test I</td>
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<td>5%</td>
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A student may miss up to 5 unexcused classes and still get all 5 attendance points.
A student missing 6 unexcused classes or more will lose all 5 attendance points. Any homework assignment done in pen will incur a 25% penalty. Any test done in pen will incur a 10% penalty.

**Homework:** Homework and Lab reports – 10% off per day
Homework will not be accepted after 5 days past the due date

**Academic Honesty:** UAH is committed to the fundamental values of preserving academic honesty as defined in the Student Handbook (7.III.A).

**Important Dates:**
- September 3 – Last day to add a class and file a course repeat
- September 6  – Labor Day Holiday
- September 13 – Last day to withdraw with refund
- September 27 – Last day to change from credit to audit
- October 7-9 – Fall Break
- November 1 – Registration for Spring 2004 semester begins
- November 10 – Last day to withdraw
- November 24 - 26 – Thanksgiving Holiday
- December 8 – Last MW class

**Final Exam:** December 13 – 3:00 PM – 5:30 PM

**Miscellaneous:** Mute your cell phone before you come to class.

**Topics Covered**

- Introduction to Microprocessor-Based System Design
- Motorola 68000 processor Architecture
- Microcomputer Architecture -- Programmer's View (overview of MC68000 family of microprocessors, basic assembly language programming of the MC68000)
- MC68000 Software development (*Lab Session*)
- Software Development for the MC68000 (High-Level Language Considerations – C programming)
- Single chip microcomputers - Hardware and System Issues (Texas Instruments MSP430 microcontroller family)
- TI MSP430 Software development (*Lab Session*)
- Single chip microcomputers – Low Power Issues
- Single chip microcomputers – Software Issues, Exceptions, Interrupts, Real time operation, Real time kernels
- Microprocessor Architecture – Hardware Details (MC68000 CPU specifications, pin descriptions and timing analysis, I/O interfacing, Parallel and serial data transfer using custom hardware and MC6800/MC68000 type peripheral IC’s)
- Microcomputer System Design (ROM, EPROM, EEPROM, Static and Dynamic RAM, connections, signals and timing)
I promise or affirm that I will not at any time be involved in cheating, plagiarism, fabrication, misrepresentation, or any other form of academic misconduct as outlined in the UAH Student Handbook while I am enrolled as a student at UAH. I understand that violating this promise will result in penalties as severe as indefinite suspension from the University of Alabama in Huntsville.

____________________  ______________________  ____________
Name (Printed)        Signature                       Date