

The University of Alabama in Huntsville
ECE Department
CPE/EE 421/521 01 - Microcomputers
Course Syllabus
Fall 2004

Educational Objectives:

- 1) To introduce microprocessor/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: Alan Clements, *Microprocessor Systems Design: 68000 Hardware, Software, and Interfacing*, Third Addition, PWS Publishing Company, New York, 1997.

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:

Undergraduate	
Laboratory assignments (4 labs) Lab1 – 10%, Lab2 – 5%, Lab3 – 10%, Lab4 – 5%	30 %
Homework	5%
Test I	15 %
Test II	15 %
Final Exam (Comprehensive)	30 %
Attendance	5%

Graduate	
Laboratory assignments (2 labs) Lab1 – 10%, Lab3 – 10%	20 %
Homework	5%
Test I	10 %
Test II	10 %
Final Exam (Comprehensive)	30 %
Project	20 %
Attendance	5%

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