Department of Electrical and Computer Engineering

Fall 2008

CPE 323: Introduction to Embedded Computer Systems

Course Home Page: http://www.ece.uah.edu/~milenka/cpe323-08F/

Lectures
Monday/Wednesday 2:20 - 3:40 PM, EB239.

Instructor
Dr. Aleksandar Milenkovic, Office: 217-L, Engineering Building
Phone: 824 6830
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Office hours
Monday 1:00 - 2:00 PM, Wednesday 4:00 – 5:00 PM, or by appointment.

Lab Instructor
Ms. Zahra Atashi, Office: 242-A, Engineering Building
Phone: (256) 824 6304
E-mail: atashiz@ece.uah.edu

Office hours
Thursday 9:00 – 11:00 AM

Description
The course examines both hardware and software aspects in building embedded computer systems, as well as methods to evaluate design tradeoffs between different technology choices. The students develop an appreciation of technology capabilities and limitations and appreciation of all system components necessary to design and implement a basic embedded computer system and interface it to the outside world. Experiments performed in the Microcomputer Laboratory provide considerable experience, allowing students to develop programs in assembly language and C and program embedded systems to perform required functions.

Prerequisites
EE 202, CPE 212. Corequisite: CPE 323L

Text
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References
- Class handouts (lecture notes and tutorials)
Grading

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<td>Laboratory assignments</td>
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<td>Homeworks</td>
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Late Submission
- Homeworks and Lab reports – 10% off per day
- Homeworks and Lab reports will not be accepted after 5 days past the due date

Important Dates
- Test I & Test II: September 29, October 29 (tentatively)
- Last day of Class: November 24, 2008.
- Final exam: December 1, 2008 (3:00 – 5:30 PM).

Course Outline
- Introduction to Microprocessor-Based System Design
- TI MSP430 Microcontroller: An Introduction
- Programmer's View (TI MSP430):
  - Registers, Data types, Memory, Addressing Modes, Instruction Sets, Instruction Encoding
- Software development: Assembly Programming and Debugging (TI MSP430)
- Software Development: C/C++ (TI MSP430)
- TI MSP430 System Architecture
- Exception Handling, Basic clock module
- I/O Interfacing: Parallel Ports, Timers (Watchdog Timer, Timer A, Timer B) (TI MSP430)
- I/O Interfacing: Serial Communication (TI MSP430)
- I/O Interfacing: ADC (TI MSP430); DAC (TI MSP430); DMA (TI MSP430)
- Advanced Topics: Building An Embedded Computer Systems Using Soft Cores (Altera’s NIOS II)
- Advanced Topics: Nios II (Hardware and Software Aspects)

Laboratory
- The Microcomputer Laboratory is located in the room 106 of the Engineering Building. Students will be required to work individually on a set of laboratory experiments that are designed to reinforce the material being covered in the class.

Lab Policies
1. You must demonstrate your solution for each laboratory assignment to the lab instructor during your assigned lab session.
2. You must hand in a printout of your code and test vectors to the lab instructor.
3. Although highly discouraged, lab assignments may be turned in after the due date with a penalty of 10% off per day late (including weekend days). Lab assignments will not be accepted more than 5 days late.

Academic Policy
- See http://www.ece.uah.edu/~milenka/cpe323-08F/#Info