ECEN 449 Microprocessor System Design

Instructor
Prof. Peng Li
Office: 333M WERC
Phone: 845-1612
Email: pli@tamu.edu
URL: http://www.ece.tamu.edu/~pli

TA
Andrew Targhetta, Email: atarghe1@tamu.edu

Lectures
TR: 8:00am –9:15am ZACH 223C
Class website: http://dropzone.tamu.edu/~pli/449Fall11/

Lab
Section 501: R 12:40pm - 02:30pm ZACH 115D
Section 502: T 12:40pm - 02:30pm ZACH 115D

Instructor Office Hours
TR 2:40pm - 3:30pm WERC 333M

Course Objective
The goal of this course is to provide the student with an in-depth knowledge of digital circuit design using an embedded platform as an implementation method. We will cover hardware and software co-design, using a commercial FPGA with an embedded on-chip microprocessor.

At the end of the course the student should be able to view the design of digital systems from an embedded hardware/software perspective and obtain a set of fundamental concepts and design skills that can be applied to a wide variety of digital design problems.

Prerequisites
ELEN248 (Introduction to Digital Systems Design) or equivalents, C/C++ programming

Lecture Agenda (tentative)
1. Verilog (2 weeks)
2. C-Programming (0.5 week)
3. C-Programming Tips/Practices (0.5 week)
4. Linux Introduction (2 weeks)
5. HW-SW Communication (2 weeks)
6. FPGAs and Reconfigurable Computing (2 weeks)
7. Memories (2 weeks)

**Weekly Lab Agenda (tentative)**

- Lab #1 - Hardware
- Lab #2 - Software
- Lab #3 - Hardware and Software
- Lab #4 - Booting Linux
- Lab #5 - CF Disk and Simple Kernel Module
- Lab #6 - Multiplier Device Driver
- Lab #7 - IR Remote HW
- Lab #8 - Interrupt Driven IR Remote Device Driver
- Lab #9 - AC97 Codec Device Driver
- Lab #10 - Audio Player with IR Remote and AC97 Codec Device Drivers

**Grading**

**Homework:** 15%

**Test 1:** 20%

**Test 2:** 20%

**Lab:** 45%

- No credit for will be given for late homework and missed labs.
- Final letter grade will be given based on a curve. Undergraduate and graduate students will be curved separately.
- Check the class website for detailed grading policies.

**Lab Safety Agreement**

The forms will be distributed and they should be reviewed, filled out, and turned back into the department.

**Logistics**

Check the class website for important logistical issues.