

ECE243H1S Computer Organization – Winter 2015

Overview

- How computers represent and manipulate information.
- What is assembly language and how it relates to high-level programming languages.
- How to design a computer that works correctly
- How to interface external devices with a computer.

Course Website

All course material and grades will be posted on the University's portal:

Winter-2015-ECE243H1-S-LEC0101.LEC0102.LEC0103 COMPUTER ORGANIZATION

Discussion/Q&A will be handled through piazza. Please register here:

piazza.com/utoronto.ca/winter2015/ece243

Required and Recommended Reading

1. We will be using course notes that will be available through the course's website. We suggest you print and *bring the notes to each lecture*.

<http://www.eecg.toronto.edu/~enright/teaching/ece243S/notes> (lecture notes)

You may also find these slides useful:

<http://www.eecg.toronto.edu/~enright/teaching/ece243S/lectures>

2. Since you do not have to purchase a book, we strongly encourage you to get a DE1 or DE2 development board (you do not need one to complete the course):

http://www-ug.eecg.toronto.edu/msl/handouts/buying_de1.html

3. The laboratory related notes are available through the Digital Embedded Systems labs website

<http://www-ug.eecg.toronto.edu/msl/nios.html>

4. The following book is recommended reading: Hamacher, Vranesic, Zaky, Computer Organization, 6th Edition, McGraw Hill

Evaluation Scheme

	Percentage	Component	
1	15%	Labs	Start January 20.
2	10%	Design Project	
3	25%	Midterm Exam	March 5, 6-8pm
4	50%	Final Exam	

Both exams will be "open book", which means you can bring any printed/hand-written material you wish. There will be several lab assignments for which you will have to prepare in advance. Check the course's website for the lab schedule. You will have to propose and complete a project at the last few weeks of the course. For the labs we will be using an FPGA board (DE2) and LEGO Mindstorm parts.

Instructors and Head TA

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Tentative Schedule:

Lab descriptions available on blackboard.

First lab is Tuesday Jan 20.

Week	Lecture Topics	Lab	Project
Jan 5	Introduction, Number Representation, Memory	-	-
Jan 12	Introduction to NIOS II Programming	-	-
Jan 19	NIOS Assembly Language	Computer Memory, Introduction to Nios II Assembly (lab starts Jan 20)	-
Jan 26	Control Flow/Subroutines	Assembly Programming	-
Feb 2	Structures/Intro to I/O	C Programming, Assembler Linking	-
Feb 9	Timer/Parallel Port	Parallel Port, Timer (Auto-Balance)	-
Feb 16	Reading Week, No Labs		
Feb 23	Interrupts	Polled I/O	-
Mar 2	Single-cycle CPU	Midterm March 5 6-8pm, No Labs (Mar 2-Mar 6)	
Mar 9	Multi-cycle CPU	Interrupt Driven I/O	Project Uniqueness on Piazza Mar 11, 8:00am – Mar 14, 5:00pm
Mar 16	Memory Interface/Memory Mapped I/O	-	Project Lab Session 1, Project Proposal due, Discussion with your TA
Mar 23	Caches	Modifying a Microprocessor	Progress Report due before lab
Mar 30	Memory	-	Project Lab Session 2, Progress Report due before lab
Apr 6	Extra topics/exam review	-	Project Lab Session 3, Progress Report due before lab, Project Demo