

## CS 367-002 - Computer Systems and Programming

Fall 2010

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### Course Description & Outcomes

This course provides an introduction to computer systems from a programmer's perspective. Topics include machine-level representation of data and programs, linking and loading, processes, virtual memory and memory allocation.

Upon completion of this course, students should be able to:

- Demonstrate an ability to design and implement C programs.
- Demonstrate knowledge of computer arithmetic and logic operations and representations of data at the machine-level.
- Demonstrate knowledge of machine-level representations of (C) programs.
- Demonstrate an ability to use debuggers.
- Demonstrate an understanding of object file linking and related ideas such as relocatable object files and symbol resolution.
- Demonstrate an understanding of the idea of a process, how processes are created and laid out in memory, how processes use virtual memory, and how they are manipulated via interrupts, signals, and context switches.

### Prerequisite

Grade of C or better in CS 262 and in ECE 303, 331, or 445.

### Readings

The required textbook for this class is *Computer Systems: A Programmer's Perspective* by Randal Bryant and David O'Hallaron (Prentice Hall, Second Edition).

### Course Outline

Week 1: Overview of Computer Systems (Ch 1) & C review

Week 2,3: Representing & Manipulating Information (Ch 2)

Week 4,5,6,7,8,9: Machine-level Representation of Programs (Ch 3)  
Week 10: Linking (Ch 7)  
Week 11: Exceptional Control Flow (Ch 8)  
Week 12 Ch 8 (cont'd)  
Week 13: Virtual Memory (Ch 10)

## Grading

The grade for the course will be based on the following components:

- (i) Homework Assignments & C programming (20%)
- (ii) Lab Assignments (30%)
- (iii) Exams (15% + 15%)
- (iv) Final exam (20%)

All exams are closed book.

## Lab Assignments

There will be three to four labs. The relative weight for each assignment is based on the amount of effort that is required. You may work in a group of up to two students on these assignments.

You are expected to abide by the [University's honor code](#) and the CS Department's [Honor Code and Academic Integrity Policies](#) during the semester. Any violation of the honor code will result in an F for the class.

## Class Home Page

All handouts and other course material will be available on blackboard

## Computer Accounts

Please obtain an [IT&E labs](#) account if you do not already have one. Your programs will need to execute correctly on the Linux computers in the IT&E lab since that system will be used while grading your projects.

If you are a student with a disability and you need academic accommodations, please see me and contact the Disability Resource Center (DRC) at 993-2474. All academic accommodations must be arranged through the DRC.