CSCI 222
Computer Organization and Machine Level Programming
Fall 2009

Instructor: Dr. Matthew Lang
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Class: MWF 11:45am–12:55pm in Reeve 212
Lab: TBD in PPHAC 114
Office Hours: TBD (or by appointment)

Course Description

"What is happening when a program is being executed?"

This course is a study of the answer to that question. We will examine the organization of a modern computer from the perspective of a programmer; our examination will include the set of instructions that a processor supports, how a processor carries out those instructions, the memory hierarchy, and storage systems.

Course Objectives

At the completion of this course, you should be able to:

- Describe the instruction cycle.

- Describe what factors impact software performance.

- Design and implement MIPS assembly language programs.

- Describe how the MIPS architecture is implemented and design components of the architecture's implementation.

- Design complex circuits from simple components.

Texts

"Computer Organization and Design: The Hardware/Software Interface" (4th edition) by Patterson and Hennessy. ISBN 978-0-12-374493-7

Schedule

Topic	Weeks
Introduction and organization overview	1
MIPS assembly language	2
Arithmetic	3
Logic design basics	1
The processor	3
Memory and caches	2
Storage devices	2
Parallelism (time permitting)	2

Attendance Policy

This course does not have a rigid attendance policy in the sense that there is a rule describing the number of lectures that you must attend. However, please do not take this as a license to never show up to class; I

expect you to be at every class meeting. Your attendance in lecture is important (beyond the usual reasons) in that homeworks, due dates, and readings will be assigned in person during lecture.

Attendance in graded lab sessions is mandatory. You may assume that you must show up to each lab; if a lab is optional, I will let you know beforehand.

Academic Honest Policy

Please read and understand the College's Academic Honesty Policy (which you can find in the Student Handbook). I will let you know what materials are appropriate to use for reference for specific assignments when they are assigned. For example, in the lab, you will generally be prohibited from using the Internet as a reference while doing lab assignments.

Since collaboration with your colleagues will be an important part of your careers, collaboration is permitted on all graded assignments (with the exception of exams). However, unless I state otherwise, you must turn in your own copy of each assignment *in your own writing*. If the ideas/algorithms expressed in an assignment are not entirely your own (*i.e.*, you worked with one of your colleagues), you must include a note stating who you worked with and the percent contributions of everyone who contributed to the work (including your contribution).

Grading Policy

There are four components to your grade:

- **Homework:** Homework will be handed out periodically throughout the semester; assignment details and due dates will be describe upon being distributed. **Weight: 40%**

- **Labs:** Each week we will meet in the lab and you will be given a series of tasks that are to be completed before leaving the lab. **Weight: 30%**

- **Tests:** There will be two midterm exams given during the semester on October 2 and November 20 (these dates are *tentative*). **Weight: 20%**

- **Final:** A cumulative final exam will be given on Friday, December 18 at 1:30pm. **Weight: 10%**

Other policy matters:

- **Grading Scale:** I will use the standard 90-80-70-60 scale with pluses and minuses to assign grades.

- **Late Homework:** I will accept homework beyond its due date with the penalty of 30% of the assignment's value per day. For example, if a homework is work 10 points and it is turned in two days late, the maximum amount of points one can receive is 4 points.

- **Lab/Exam Absence:** If you are going to miss a lab or exam due to conflict, you must let me know before the lab or exam. If you miss a lab or exam due to some other circumstance, you must let me know as soon as possible and provide me with documentation. Valid circumstances include events like illness and family trauma. Invalid circumstances are events like hangovers and faulty alarm clocks.

- **Academic Accommodations:** Please let me know immediately if you have any disability that requires accommodation.

This syllabus is subject to change.