

# CSCI 341: Computer Organization

## Winter/Spring 2011, M/W/F 1-2PM, Meyer Hall 363

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**Office hours** are Tues/Thurs 1 – 4PM and by appointment.

**Course Web home:** <http://mines.humanoriented.com/classes/2011/spring/csci341/>

**Prerequisite:** CSCI 261, Programming Concepts

### **Texts:**

Computer Organization and Design, 4<sup>th</sup> ed. David Patterson and John Hennessy. Morgan Kaufmann. 2008. ISBN 978-0-12-374493-7.

### **Course Objectives**

This course introduces concepts of computer architecture and organization. Using the MIPS architecture, we will study at a low level how the computer functions. Students will develop assembly language programs using a MIPS simulator. These programs will be used to explore how high-level programming concepts can be realized by a simple instruction set. As time permits advanced topics will be covered such as: pipelining, instruction level parallelism, multi cores, etc.

Upon successful completion of this course, students will be able to:

- list and explain the basic functioning of the components of a CPU.
- understand how unsigned, signed, and floating point numbers are represented in the CPU and memory.
- perform arithmetic operations on binary data.
- write assembly language programs for the MIPS architecture.

### **Grading**

There will be approximately 10 homework assignments, at least two quizzes and two exams (midterm and final). Quizzes may be unannounced.

- Homework 50%
- Quizzes 10%
- Midterm Exam 20%
- Final Exam 20%

### **Attendance/Participation**

You are expected to be present for class (of course!), to participate in discussion/presentations and to participate in our online forum. This is a fun but challenging class that demands your consistent participation. A 24-hour advance notice via email of your pending absence will excuse you from class. **More than two unexcused absences will be met with my eeeevil wrath.**

## Homework

All homework assignments, unless otherwise instructed, are to be completed by the individual student. Completed assignments must be submitted in class prior to the due date on Blackboard. **Late submissions will not be accepted.** Homework submissions must show how you arrived at your solutions for full credit.

## Exams

One midterm exam will be conducted around March 1, 2010. (The formal date will be announced as the time approaches).

The final exam will be conducted during the traditional final exam week.

A makeup examination can be arranged only when a student has an emergency (eg, medical emergency or urgent family matter). The student may be asked to provide the instructor with an appropriate document, such as a doctor's note.

## Accommodation

If you need certain accommodation based on disability, talk to the instructor in person so that appropriate arrangements can be made.

## Course Schedule

This schedule is not fixed in stone and is subject to change according to the actual progress of the course.

<b>Topic</b>	<b>Textbook Chapters</b>	<b>Weeks</b>
Introduction	Chapter 1	1.5
Computer Arithmetic MIPS Instruction Set & ASM Programming	Chapter 3	3
Datapath & Control	Chapter 2	5
Pipelining	Chapter 4	2
	Chapter 4	2

## On Collaboration & Academic Integrity

*Students are encouraged to discuss and collaborate as much as possible.* However, it is obviously not acceptable to copy another student's solution. Your work must be your own. In addition, simply copying solutions found online is not acceptable. Be aware that homework assignments, project and midterm will not just focus on producing correct code, but explaining how things work.

Please see the Student Handbook for details on academic dishonesty. No exceptions will be made for students found simply giving away or taking another's solutions.

## Academic Integrity Pledge

Being enrolled in this class means that you pledge to uphold the high standards of academic ethics and integrity expressed by the Colorado School of Mines Student Honor Code by which you are bound. In particular, you will not misrepresent the work of others as my own, nor will you give or receive unauthorized assistance in the performance of academic coursework. You should understand that my instructor will report any infraction of academic integrity to the Department Head and that any such matter will be investigated and prosecuted fully.