Subject: CSCI    Number: 410

Course Title: Elements of Computing Systems

Section: A

Semester/year: Spring 2016

Instructor or Coordinator: Christopher Painter-Wakefield

Contact information:

office: Brown Building (BB) 280I
phone: 303-273-3717
email: cpainter@mines.edu

Office hours: TTh 1-3pm, by appointment, or whenever my office door is open

Class meeting days/times: MWF 10:00-10:50
Class meeting location: Marquez Hall 322

Web Page/Blackboard link (if applicable):

Course Website: http://eecs.mines.edu/Courses/csci410/
Blackboard: https://blackboard.mines.edu/
Piazza: https://piazza.com/mines/spring2016/csci410

Instructional activity: 3 hours lecture 0 hours lab 3 semester hours

Course designation: ___ Common Core ___ Distributed Science or Engineering

___ Major requirement  X Elective ___ Other (please describe ____________)

Course description from Bulletin:

This comprehensive course will help students consolidate their understanding of all fundamental computer science concepts. Topics include symbolic communication, Boolean logic, binary systems, logic gates, computer architecture, assembly language, assembler construction, virtual machines, object-oriented programming languages, software engineering, compilers, language design, and operating systems. Using a hardware simulator and a programming language of their choice, students construct an entire modern computer from the ground up, resulting in an intimate understanding of how each component works. Prerequisites: CSCI341 or EENG383.

Textbook and/or other requirement materials:

Required text: The Elements of Computing Systems by Nisan and Schocken
Student learning outcomes: At the conclusion of the class students will be able to:

1. Construct basic and complex logic gates from simpler logic gates.
2. Understand the basic concepts of computer architecture.
3. Program in a rudimentary assembly language and understand the translation of assembly into machine language.
4. Understand the role and design of a simple virtual machine.
5. Construct a working compiler for a simple object-oriented programming language.

Brief list of topics covered:

1. Digital (combinational and sequential) logic
2. Computer architecture
3. Machine language and assembly language programming
4. Virtual machine architecture
5. Compilers
6. Operating Systems

Policy on academic integrity/misconduct: The Colorado School of Mines affirms the principle that all individuals associated with the Mines academic community have a responsibility for establishing, maintaining an fostering an understanding and appreciation for academic integrity. In broad terms, this implies protecting the environment of mutual trust within which scholarly exchange occurs, supporting the ability of the faculty to fairly and effectively evaluate every student’s academic achievements, and giving credence to the university’s educational mission, its scholarly objectives and the substance of the degrees it awards. The protection of academic integrity requires there to be clear and consistent standards, as well as confrontation and sanctions when individuals violate those standards. The Colorado School of Mines desires an environment free of any and all forms of academic misconduct and expects students to act with integrity at all times.

Academic misconduct is the intentional act of fraud, in which an individual seeks to claim credit for the work and efforts of another without authorization, or uses unauthorized materials or fabricated information in any academic exercise. Student Academic Misconduct arises when a student violates the principle of academic integrity. Such behavior erodes mutual trust, distorts the fair evaluation of academic achievements, violates the ethical code of behavior upon which education and scholarship rest, and undermines the credibility of the university. Because of the serious institutional and individual ramifications, student misconduct arising from violations of academic integrity is not tolerated at Mines. If a student is found to have engaged in such misconduct sanctions such as change of a grade, loss of institutional privileges, or academic suspension or dismissal may be imposed.

The complete policy is online.

Collaboration Policy for Programming Projects in EECS Courses:
The following policy exists for all CS courses in the EECS department. This policy is a minimum standard; your instructor may decide to augment this policy.

1. If the project is an individual effort project, you are not allowed to give code you have developed to another student or use code provided by another student. If the project is a group project, you are only allowed to share code with your group members.

2. You are encouraged to discuss programming projects with other students in the class, as long as the following rules are followed:
   a. You view another student’s code only for the purpose of offering/receiving debugging assistance. Students can only give advice on what problems to look for; they cannot debug your code for you. All changes to your code must be made by you.
   b. Your discussion is subject to the empty hands policy, which means you leave the discussion without any record [electronic, mechanical or otherwise] of the discussion.

3. Any material from any outside source such as books, projects, and in particular, from the Web, should be properly referenced and should only be used if specifically allowed for the assignment.
4. If you are aware of students violating this policy, you are encouraged to inform the professor of the course. Violating this policy will be treated as an academic misconduct for all students involved. See the Student Handbook for details on academic dishonesty.

**Instructor's Addendum:**

As an addendum to this policy, you are required to submit a README file with every assignment. The README should list every person (other than the instructor or a TA) who assisted you in some way on the assignment. The README is also the place to give appropriate credit to any outside source that contributed to your submission.

**Grading Procedures:** The majority of the grade will be based on weekly assignments based on the “projects” detailed in the course textbook. There will be a final exam and occasional quizzes. Quizzes will be on the material recently covered in class as well as recently assigned reading.

Grading will be done on an absolute, but adjustable scale. This means that there is no curve. Anyone earning 90% or more of the total number of points available will receive a grade of A; 80% or higher a B; etc. This scale may go down, but it will not go up.

All grades will be posted in Blackboard.

- Assignments: 70%
- Quizzes: 10%
- Final exam: 20%

**Coursework Return Policy:** Assignments and quizzes will be graded and returned as quickly as possible, generally within two weeks.

**Absence Policy:** Please see the Mines policy on absences at [http://inside.mines.edu/Student-Absences](http://inside.mines.edu/Student-Absences)

**Homework:** Late work is strongly discouraged. All work will be accepted within 4 working days after the deadline (weekends and holidays are not counted in the 4 days). Students will lose 10 percentage points per day late. After 4 days, the work will not be accepted at all.