E15/CS38: Fundamentals of Digital Systems
Syllabus - Fall 2009

Class: M W F 9:30-10:20, Hicks 211 (Zucker)
Lab: M/W 1:15-4:30, Hicks 213 (Cheever)

Course Website: http://www.swarthmore.edu/NatSci/mzucker1/e15/

Instructor Information:

Prof. Matt Zucker
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Course Description:
This class introduces students to the basic concepts of digital systems, including analysis and design. Both combinational and sequential logic will be covered. Students will gain experience with several levels of digital systems, from simple logic circuits to hardware description language and interface programming in C.

The following topics will be covered:

- Number systems
- Boolean algebra
- Binary arithmetic
- Logic gates
- Programmable logic
- Combinational logic and building blocks
- Synchronous sequential circuit design
- Latches, flip-flops, registers and counters
- State machines
- Verilog and C programming

Please check the course website for an updated course schedule, readings, labs and homework schedule.

Prerequisites: Any engineering course, any computer science course, or instructor permission.

Course Objectives:

- Apply Boolean algebra and other techniques to express and simplify logic expressions.
- Analyze and design combinational and sequential digital systems.
- Use different techniques, among them a hardware description language and a programming language, to design digital systems.
Textbook:


Pertinent readings will be listed on the course web site and announced in class. You will get more out of this course if you do the reading before class!

Labs, Exams & Grading:
The course has two midterm exams and a final exam, weekly homework assignments and labs.

- It is legitimate to work together on homework, but not to copy. The homework you turn in should reflect your individual work. If you do work together, please note on your homework the students with whom you collaborated.
- Labs will be done in groups of 2-3. You may discuss your lab report with other groups, but you may not copy anything from their reports.
- Any outside sources used for your lab reports (or homework, where appropriate), such as books and on-line resources, should be explicitly cited.

Grading will follow approximately the divisions shown below.

Homework: 15%
Labs: 30%
Exams: 2 x 15%
Final Exam: 25%

Exams will be cumulative, but will focus on the most recent material.

Late Policy:
Typically, assignments will be posted before class on Friday, and due at the start of class the following Wednesday. Late homework is worth half credit for the first 48 hours after the due date, and zero credit thereafter. Each student will be granted two “free” late days for the semester (which can both be used on the same, or on two separate assignments).

Labs are due at the next lab meeting (that is, in two weeks).