Digital Circuits

Spring 2008--Course 0156-244-001
Science 309, TR 1:40-2:55 pm

Text: *Fundamentals of Digital Logic with VHDL Design*, 2nd edition, Brown & Vranesic

Instructor: Sean Bentley
8H Blodgett Hall
Phone: 4878
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Office Hours: MW 2-3:30; TR 10:30-12
Feel free to come by other times or make an appointment if necessary.
Questions via email I will attempt to answer ASAP.

Topics:

- *Introduction to Logic and Binary Systems*
    Number systems, corresponding math, & codes (BCD, grey codes, etc.)
    Basic logic operations, corresponding gates, & Boolean algebra
- *Combinational Logic*
    Combinational design methods (truth tables, K-maps, optimization)
    Combinational logic circuits (encoders, multiplexers, etc.)
    Adders and other mathematical circuits
- *Programmable Logic*
    PLA, PAL, FPGA, and other programmable architectures
    VHDL (code for converting circuit design into working programmable circuit)
- *Sequential Logic*
    Latches, flip-flops, & sequential design
    Registers, counters, & other sequential circuits
- *Computer Basics*
    Simple processors
    Memory and implementation of RAM
- *The Digital-Analog Connection*
    A/D & D/A conversion (relating digital data to real-world analog I/O)
    Introduction to semiconductors (exploring the inner-workings of logic gates)

Grades: In-Class Exams (3)—18% each for total of 54%
Final Exam—25%
Laboratory*--21%
Course grades determined by logical breaks in the distribution.

* *If your total lab grade is below 60%, you will receive an F for the course! Other details for laboratory grade on separate syllabus.*

Digital Circuits Lab

Spring 2007--Course 0156-244-011
Blodgett 010, R 4:30-7:00 pm

Instructor: Sean Bentley
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Phone: 4878
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Lab Requirements:
1. For this lab course, you will keep a notebook detailing any data taken, circuit diagrams, any calculations, sketches, etc requested, and a brief conclusions paragraph. Everything except pre-labs and conclusions are to be done IN LAB, directly in the notebook (not copied over for neatness). This is to be like a real engineering/research notebook. Your notebook is to be checked at the BEGINNING and END of each lab period.
2. For one lab (to be announced), an extended formal write-up will be assigned. Details will be provided when assigned.
3. A practical exam testing abilities gained through labs will be given at the end of the semester.

Grades: Laboratory Grade is 21% of course grade.*
Notebook—1/3 (7% of course grade)
Formal Write-Up—1/3 (7% of course grade)
Practical Exam—1/3 (7% of course grade)

All labs must be performed and recorded in your notebook. If you have an excused absence, you must schedule to make up the lab missed.

* **RECALL: A LAB GRADE OF LESS THAN 60% RESULTS IN AN F IN THE COURSE, REGARDLESS OF WRITTEN EXAM GRADES!** That is, you must pass the lab to pass the course.

Plagiarism is a very serious offence. Do not take material from the web, text, or other sources without giving proper credit. Any detected instances of plagiarism will be reported and will result in an F in the course.