

ELEC 2200 Digital Logic Circuits

Spring 2012 – Section 002 (MWF 2-2:50pm)

Dr. Charles E. Stroud

Office hours: 12:00-2:00pm MWF

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2002 Catalog Data: ELEC 2200. DIGITAL LOGIC CIRCUITS (3). Prereq. COMP 1200. Electronic devices and digital circuits; binary numbers; Boolean algebra and switching functions; gates and flip-flops; combinational and sequential logic circuits; hierarchical design of digital systems; computer-aided design tools for digital design, simulation, and testing.

Textbook: *Digital Logic Circuit Analysis and Design*, by V.P. Nelson, H.T. Nagle, B.D. Carroll & J.D. Irwin, Prentice-Hall, 1995.

Goals: This course introduces the student to the design of digital logic circuits, both combinational and sequential, and the design of digital systems in a hierarchical, top-down manner. The student is also introduced to the use of computer-aided design tools to develop digital circuits.

Prerequisites by topic: Introductory computer programming in a high level language.

Course Outline & Schedule:

Week	Topics	Textbook Sections
1	Introduction to digital systems and number systems	0.2, 1.1-1.2
2	Number systems and codes	1.3-1.5
3	Boolean algebra	2.1
4	Switching functions and canonical forms	2.2
5	Design and analysis of combinational circuits	2.3-2.5
6	Test #1 2/15, Circuit minimization via Karnaugh maps	3.1-3.7
7	Timing issues, Schematic capture and simulation tools	3.8, 2.7
8	Common combinational logic circuits	4.1-4.7
9	Latches and flip flops	6.3-6.4
10	Counters and shift registers	7.1, 7.3-7.5
11	Test #2 3/28, Synchronous sequential circuit analysis	8.1-8.2
12	Synchronous sequential circuit design	8.3-8.4
13	Simulation and timing analysis of sequential circuits	8.5
14	Optimization of synchronous sequential circuits, Test #3 4/20	9.1-9.4
15	Programmable logic, semester review	5.4-5.5
16	Final Exam: Wednesday 5/2, 4-6:30 pm	comprehensive

Method of evaluating student performance: There will be three exams (contributing 20% each to the course grade) and a comprehensive final exam (contributing 20% to the course grade) in addition to homework/design projects (contributing 20% to the course grade). All exams will be closed-book, closed-notes, and closed-neighbor. No electronics of any kind (calculator, cell phone, iPod, PDAs, etc.) can be used during exams. There will be no unannounced quizzes. All projects and assignments must be turned in on or before the designated time to receive credit. Each student is expected to do his/her own project or assignment. Discussion of various aspects of the project or assignment with fellow students is acceptable, provided that solutions are not copied. All assignments/projects will be posted on the ELEC 2200 class web page at www.eng.auburn.edu/~strouce.

Class attendance and behavior: Students are expected to attend class regularly and on time. In case of absence, the student is responsible for all course business conducted in class. There should be no distractive talking or cell phone usage during class.

Computer usage: Some assignments may require the use of the Auburn University Simulator (AUSIM) digital logic circuit simulation program which is available for free downloading on the ELEC 2200 class web page at www.eng.auburn.edu/~strouce.

Accommodations: Students who need accommodations should arrange a meeting during office hours within the first two weeks of classes, or as soon as possible if accommodations are needed immediately. If you have a conflict with office hours given above, an alternate time can be arranged. To arrange for this meeting, please contact me via e-mail. If you do not have an Accommodation Memo but need accommodations, make an appointment with the Program for Students with Disabilities, 1228 Haley Center, 844-2096.