EENG 2710 Digital Logic Design

Instructor: Gayatri Mehta
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Spring 2013
Time: (T, Th) 12:30-1:50 pm
Meeting Place: NTDP B217

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Course Topics:

- Digital and Analog Systems: Basic Concepts and Historical Perspective
- Number Systems and Digital Logic Gates
- Boolean Algebra, Switching Functions and Canonical Forms
- Combinational Circuit Minimization, Analysis, and Synthesis
- Sequential circuits elements and sequential logic circuits
- Modular Sequential Logic- Counters and shift registers
- Minimal Design of Synchronous Sequential Circuits
- Analysis and Design of asynchronous sequential circuits
- Digital Logic Testing

Textbook(s) and/or required material:
Digital Logic Circuit Analysis & Design, 1st Ed. V. P. Nelson, H. T. Nagle, J. D. Irwin, and B. D. Carroll, Prentice Hall, 1995. ISBN: 0-13-463894-8.

Course Objectives:

The main objectives of the course are to facilitate the students to achieve the highest levels in the Bloom's 6-level Learning Taxonomy so that they, at the end of the course, will be able to-

1. **Know** *what* the digital systems are, *how* they differ from analog systems and *why* it is advantageous to use the digital systems in *many applications*.
2. **Comprehend** different number systems including the binary system and Boolean algebraic principles
3. **Apply** Boolean algebra to switching logic design and simplification.
4. **Analyze** a given digital system and decompose it into logical blocks involving both *combinational* and *sequential circuit* elements.
5. **Synthesize** a given system starting with problem requirements, identifying and designing the building blocks, and then integrating blocks designed earlier
6. **Validate** the system functionality and evaluate the relative merits of different designs.

Exams: There will be three exams (this includes the final exam).

Missed Exams: You will be allowed to make up a missed exam only if you have a documented university excused absence. If you know in advance that you will miss an exam, you MUST contact me before the scheduled exam.

Assignments: No late assignments will be accepted.

Attendance Policy: In view of the continuous evaluation strategy adopted by the instructor, perfect attendance is recommended for those aspiring to get good grades. Rather than taking attendance, there will be quizzes. A quiz may be administered at the beginning, middle, or end of a class session.

Grading:

- Assignments: 20%
- Exam 1: 20%
- Exam 2: 20%
- Final: 30%
- Quiz: 10%

Academic Dishonesty: Cheating will not be tolerated. Anyone found guilty of cheating on a test or assignment will be awarded an F grade for the course. Discussions of problems and assignment with your classmates is welcome and encouraged, however, sharing of solutions is not. If you need help, you should ask the instructor. Cheating includes, but is not limited to, all forms of plagiarism and misrepresentation. For your rights and responsibilities please refer to **http://www.unt.edu/csrr**

Disabilities Accommodation:

The University of North Texas complies with Section 504 of the 1973 Rehabilitation Act and with the Americans with Disabilities Act of 1990. The University of North Texas provides academic adjustments and auxiliary aids to individuals with disabilities, as defined under the law. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring accommodation, please see the instructor and/or contact the Office of Disability Accommodation at 940-565-4323 during the first week of class.

Additional Policies and Procedures:

Cell Phones: Please remember to turn off phones prior to class.

Extra Help: PLEASE DO NOT WAIT UNTIL THE LAST MINUTE. If you are having trouble with this class, please come by my office during office hours. I am also available by email at gayatri.mehta@unt.edu.

Course Outline and Tentative Schedule:

Topic No.	Topics	Time Allocated
1.	Digital and analog systems- an introduction, historical perspective, importance of L2L and PBL	0.5 Week

2.	Number systems and codes	1.5 Weeks
3.	Boolean Algebra, Switching functions, canonical forms	2 Weeks
4.	Circuit minimization, Analysis of combinational circuits, and Timing issues	2 Weeks
5.	Top-down Modular Design of Combinational Logic	2 Weeks
6.	Sequential Circuit Elements- Latches and flip-flops	1 Week
7.	Modular Sequential Logic- Counters and shift registers	1 Week
8.	Analysis and Design of synchronous sequential circuits	1 Week
9.	Analysis and Design of asynchronous sequential circuits	2 Weeks
10.	Digital Logic Testing	1 Week