University of North Texas, College of Engineering
Department of Electrical Engineering

EENG 2710: Digital Logic Design

Fall 2019
Mondays and Wednesdays 2:30 - 3:50 PM
Classroom: B185

Instructor
- Dr. R. Thomas Derryberry, Office: NTDP B240, Tel: (940) 369-8282
  Email: tom.derryberry@unt.edu
  Office Hours: Monday, Tuesday, Wednesday, and Thursday, 1:00 – 2:30 PM
  Monday, Tuesday, Wednesday, and Thursday, 4:00 – 4:30 PM
  (Additional appointments can be requested by email using your my.unt.edu account.)
- GA: TBD

Course Description
- Introduction to digital computers and information processing systems, Boolean algebra,
  principles and methodology of logic design, machine language programming, register transfer
  logic, microprocessor hardware, software and interfacing, fundamentals of circuits and systems,
  computer organization and control, memory systems, and arithmetic unit design.

Prerequisites
- Engineering or Engineering Technology majors.

Co-requisite
- EENG 2711 – Digital Logic Design lab for Electrical Engineering Majors

Course Webpage
- All the course related material will be posted on the course webpage which is available through
  Canvas (https://unt.instructure.com).

Course Objectives
By the end of the course, you will understand and know how to analyze digital systems and the
logical blocks that comprise them.

Required Textbook
- Digital Logic Circuit Analysis & Design, Author: V. P. Nelson, H. T. Nagle, J. D. Irwin, and B.
Course Requirements and General Policies

- Class attendance is mandatory. Lectures and class discussions will contain vital information needed to do well on the exams.
- Everyone must turn in individual homework. Homework must be done individually (you will learn the most from this). Any evidence of group participation or simply copying other's homework will be treated and interpreted as academic dishonesty.
- Please remember to turn off phones prior to class. Please note that portable phones, pagers, and late arrivals are disruptive to the instructor and to your peers. The use of cell phones, beepers, or communication devices is disruptive and is therefore absolutely prohibited during class or while taking exams or quizzes. Turn off your cell phone while in class. If I catch you using these devices, your final grade will be reduced by 10% for each and every transgression and you will be asked to leave the class. Except in emergencies, students using such devices must leave the classroom for the remainder of the class period. I know that some of you may wish to take notes directly on your computer and I have no problem with that. If however, you choose to access your email, search the web, play games, or instant messenger your friends during class, you will have 5% deducted from your final grade for each and every transgression. This penalty will be at the sole discretion of the instructor. If for some reason I am late arriving to class, it will be because of circumstances beyond my control. You are expected to remain for 15 minutes past the scheduled class start time while I attempt to communicate my situation and relay instructions.
- Please do not wait until the last minute. If you are having trouble with this class, please stop by my office during my office hours. I am also available by email. **NOTE:** I will correspond via email **ONLY** if you use your my.unt.edu student account. Anything else will be ignored and deleted.
- Please visit [http://www.unt.edu/csr](http://www.unt.edu/csr) for your rights and responsibilities.

Disability Accommodation

- The University of North Texas (UNT) complies with Section 504 of the 1973 Rehabilitation Act and with the Americans with Disabilities Act of 1990. UNT 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 (http://www.unt.edu/oda) at 940-565-4323 during the first week of class. It is the responsibility of students with certified disabilities to provide the instructor with appropriate documentation from the Dean of Students Office.

Assignments, Quizzes, and Exams

- **No late assignments will be accepted and no emailed assignments will be accepted**, except in extenuating circumstances. Homework is due before the class in the following week.
- Exams will be based on textbook readings, handouts, class exercises, class lectures, discussions, and homework assignments. Students are responsible for all text material, regardless of whether we review the text material in class or not.
Secret to Success in this Course (Shsssh, don’t tell anyone!)

- To do well in this course, you should be thoroughly familiar with this material. However, several years of research and practice including many trial and error attempts have resulted in the development of this long sought after but elusive recipe to success. The best kept secret to achieving success in this course is cordially shared with you below:
  1. Read and comprehend the required text (Yes, you have to read!).
     a. Know and explain how to correctly solve the examples provided in the text independently.
  2. Know and explain how to correctly solve the homework assignments independently.
  3. Know and explain how to correctly solve the programming assignments independently.
  4. Arrive on time, engage in, and practice active listening for all of the class lectures.

- By the way, there are rumors this recipe works very well when applied to other courses.

Grading Policies

- There will be no extra credit.
- No make up quizzes or exams will be offered unless prearrange with the instructor for a university approved absence.
- You have 1 week to contest any grade once returned.
- You MUST achieve PASSING PERFORMANCE for BOTH Parts 1 and 2 of the course grading in order to PASS the course, i.e. your grades for Parts 1 and 2 will not be merged together to yield a composite course score without FIRST achieving passing performance for both Parts 1 and 2 separately. Failure to achieve passing performance in either Part 1 or Part 2 will result in a final course grade of F.

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<thead>
<tr>
<th>PART 1</th>
<th>PART 2</th>
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<tr>
<td>Homework</td>
<td>Midterm Exam</td>
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<td>20%</td>
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<td>Quizzes</td>
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- Keep all of your graded assignments, quizzes, and tests for study and review. You should track your own progress using Canvas or other appropriate means and be aware of current grades throughout the term however the official gradebook will be my Excel spreadsheet. I will make all the effort to return the graded assignments, but it’s your responsibility to collect back the graded assignments from the grader or the instructor if it is not given back to you. A composite course score will be computed only for those students that achieve passing performance for both Part 1 and Part 2 of the grading assessment. Failure to achieve passing performance in either Part 1 or Part 2 will result in a final course grade of F. Once passing performance has been achieved in BOTH Parts 1 and 2 of grading, the final grading for the composite (merging of Part 1 and Part 2 grading) course score will be done as follows: A > 90%, 90% > B > 80%, 80% > C > 70%, 70% > D > 60% and F < 60%. Grades will be curved if deemed necessary. Grades cannot be changed after they have been electronically entered into the university’s system except for instructor error. Any extenuating circumstances that may adversely affect your grade must be brought to my attention before the final course grades are recorded. To be considered, such circumstances must be unusual, unavoidable, and verifiable.
Academic Dishonesty

- All the provisions of the University code of academic integrity apply to this course. Any student found to have participated in academic dishonesty will receive an F in the class, a record of the offense will be kept in the Office of the Dean of Students, and may be subject to further disciplinary action. Acts of academic dishonesty include but are not limited to: academic fraud (e.g. changing solutions to appeal a grade), copying or allowing one's work to be copied, fabrication/falsification, plagiarism, sabotage of others' work, substitution (e.g. taking an exam for someone else). In addition, it is my understanding and expectation that your signature on any test or assignment means that you neither gave nor received unauthorized aid. For homework and lab assignments, while discussion is allowed, direct copying is not and students must turn in individual submissions. Realize that mastery of the material in the homework and lab assignments will be essential for good performance on the exams! All students are required to know, observe and help enforce the UNT Code of Student Academic Integrity.

Course Outline and Tentative Schedule

All course materials, including syllabus, lecture notes, homework assignments, and grades are available in Canvas at https://unt.instructure.com

- **First Day of Class, Aug. 26, Monday, 2:30 - 3:50 PM**
- **Topic 0** Syllabus, Grading Policy, etc.
- **Topic 1** Introduction to Digital and Analog Systems
- **Topic 2** Number Systems and Codes
- **Topic 3** Boolean Algebra, Switching Functions, and Canonical Forms
- **Topic 4** Circuit Minimization, Analysis of Combinational Circuits, and Timing Issues
- **Topic 5** Top-down Modular Design of Combinational Logic
- **Topic 6** Sequential Circuit Elements – Latches and Flip-Flops
- **Topic 7** Modular Sequential Logic – Counters and Shift Registers
- **Topic 8** Analysis and Design of Synchronous Sequential Circuits
- **Topic 9** Analysis and Design of Asynchronous Sequential Circuits
- **Topic 10** Digital Logic Testing

- **Midterm Exam, October 9, Wednesday, 2:30 – 3:50 PM**
- **Final Exam, December 9, Wednesday, 1:30 - 3:30 PM**

Useful Links

- UNT Catalogs: http://www.unt.edu/catalog/
- Office of the Registrar: http://essc.unt.edu/registrar/ (schedule of classes and exams, etc.)
- Eagle Student Services Center: http://essc.unt.edu/
- Canvas: https://unt.instructure.com

Last updated: 08/16/2019