



ENGR 2406 – Introduction to Digital Systems

Course Syllabus: Fall 2017

“Northeast Texas Community College exists to provide responsible, exemplary learning opportunities.”

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Office Hours	Monday	Tuesday	Wednesday	Thursday	Friday	Online
	11am-1:30pm 3:30-5:00pm	12:30-1:30pm	11am-1:30pm 3:30-5:00pm	12:30-1:30pm	By Appt.	NA

The information contained in this syllabus is subject to change without notice. Students are expected to be aware of any additional course policies presented by the instructor during the course.

Catalog Course Description (include prerequisites): Introduction to theory and design of digital logic, circuits, and systems. Number systems, operations and codes; logic gates; Boolean Algebra and logic simplification; Karnaugh maps; combinational logic; functions of combinational Logic; flip-flops and related devices; counters; shift registers; sequential logic; memory and storage.

The course consists of three hours of lecture and three hours of lab each week. Prerequisite: MATH 1314 or equivalent.

Required Textbook(s):

- *Digital Systems: Principles and Applications*, 12th ed., R. J. Tocci, N. Widmer, G. Moss. 2017

Publisher:

Pearson

ISBN-13 Number(s):

- 978-0134220130

Recommended Reading(s): None

Student Learning Outcomes:

Upon successful completion of this course, students will be able to:

1. Utilize binary and hexadecimal numbers.
2. Solve problems involving digital codes, operations, and number systems.
3. Define, describe, and analyze fundamentals of Boolean algebra and digital logic gates.
4. Describe, analyze, design, and fabricate combinational logic circuits.
5. Describe, analyze, design, and fabricate sequential logic circuits.
6. Describe and explain the fundamentals of memory operations.
7. Apply computer mathematical and/or simulation tools to solve digital systems problems.
8. Prepare laboratory reports that clearly communicate experimental information in a logical and scientific manner.
9. Conduct basic laboratory experiments involving design and construction of digital circuits and systems.

10. Relate physical observations and measurements involving digital circuits and systems to theoretical principles.
11. Evaluate the accuracy of physical measurements and the potential sources of error in the measurements.
12. Design fundamental experiments involving principles of digital circuits and systems.
13. Identify and apply appropriate sources of information for conducting laboratory experiments involving digital circuits and systems.

SCANS Skills: N/A

Course Outline:

Chap.	Title	Week	Key Dates*
1	Course Overview / Introductory Concepts	1	
1/2	Introductory Concepts / Number Systems and Codes	2	
2	Number Systems and Codes	3	
3	Describing Logic Circuits	4	
	Exam 1 (Ch 1-3) / Start Ch 4-Combinational Logic Circuits	5	9/27/17
4/5	Combinational Logic Circuits / Flip-Flops and Devices	6	
5	Flip-Flops and Related Devices	7	
6	Digital Arithmetic: Operations and Circuits	8	
7	Counters and Registers	9	
	Exam 2 (Ch 4-7) / Start Ch 8-Integrated-Circuit Logic Families	10	11/1/17
8/9	Integrated-Circuit Logic Families / MSI Logic Circuits	11	
10	Digital System Projects Using HDL	12	
11	Interfacing with the Analog World	13	
12	Memory Devices	14	
13	Programmable Logic Device Architectures	15	
	Final Exam (Ch 1-13)	16	12/11/17

**This calendar will be adjusted to the needs of the course. Changes will be based on the course progress. The in-class exam dates could be moved one or two days up or down. The Final Exam date is fixed and will not change.*

Evaluation/Grading Policy:

Exams (2 @ 20%)	40%	400 pts
Final Exam	20%	200 pts
Quizzes/Homework (12, drop 2, @ 2% each)	20%	200 pts
Labs (6, drop 1, @ 4% each)	20%	200 pts
Total	100%	1000 pts possible

Grading Scale:

A = 90-100%, B = 80-89%, C = 70-79%, D = 60-69%, F = 0-59%

Other Course Requirements: A scientific graphing calculator is required for this course.

Student Responsibilities/Expectations: Regular and punctual attendance at all scheduled classes is expected. Attendance is necessary for successful completion of course work. There is no make-up

on in-class quizzes and no allowance to turn in assignments late. Exams missed will be rescheduled only for instances of obvious emergencies, documented illness, and/or NTCC sponsored activities.

NTCC Academic Honesty Statement:

"Students are expected to complete course work in an honest manner, using their intellects and resources designated as allowable by the course instructor. Students are responsible for addressing questions about allowable resources with the course instructor. NTCC upholds the highest standards of academic integrity. This course will follow the NTCC Academic Honesty policy stated in the Student Handbook."

Academic Ethics:

The college expects all students to engage in academic pursuits in a manner that is beyond reproach. Students are expected to maintain complete honesty and integrity in their academic pursuit. Academic dishonesty such as cheating, plagiarism, and collusion is unacceptable and may result in disciplinary action. Refer to the student handbook for more information on this subject.

ADA Statement:

It is the policy of NTCC to provide reasonable accommodations for qualified individuals who are students with disabilities. This College will adhere to all applicable federal, state, and local laws, regulations, and guidelines with respect to providing reasonable accommodations as required to afford equal educational opportunity. It is the student's responsibility to request accommodations. An appointment can be made with Shannin Garrett, Academic Advisor/Coordinator of Special Populations located in the College Connection. She can be reached at 903-434-8218. For more information and to obtain a copy of the Request for Accommodations, please refer to the [NTCC website - Special Populations](#).

Family Educational Rights And Privacy Act (FERPA):

The Family Educational Rights and Privacy Act (FERPA) is a federal law that protects the privacy of student education records. The law applies to all schools that receive funds under an applicable program of the U.S. Department of Education. FERPA gives parents certain rights with respect to their children's educational records. These rights transfer to the student when he or she attends a school beyond the high school level. Students to whom the rights have transferred are considered "eligible students." In essence, a parent has no legal right to obtain information concerning the child's college records without the written consent of the student. In compliance with FERPA, information classified as "directory information" may be released to the general public without the written consent of the student unless the student makes a request in writing. Directory information is defined as: the student's name, permanent address and/or local address, telephone listing, dates of attendance, most recent previous education institution attended, other information including major, field of study, degrees, awards received, and participation in officially recognized activities/sports.

Other Course Policies:

There will be no cell phone usage in the classroom. Students will be warned if caught using a phone during class. A student will be removed from class if the disruption continues.

The college's official means of communication is via your campus email address. I will use your campus email address and Blackboard to communicate with you outside of class. Make sure you keep your campus email cleaned out and below the limit so you can receive important messages.