University of North Texas at Dallas

Fall 2024

Syllabus

CSCE 2300: Digital Logic (3hrs)	
School	School of Business
Department	Information Technology
Instructor name	Dr. Nushwan Al-Nakash
Office Location	FH – 207
Office Phone	9723381980
Email Address	Nushwan.Al-nakash@untdallas.edu
Office Hours	**Tuesdays and Thursdays** 1. **9:00 AM-10:00 AM in Office.** **The Office door is kept open during this time.** 2. **1:00 PM-2:00 PM Online.** **By appointment only, email, or other electronic communication with students.**
Course Format/Structure	Face to Face
Classroom Location	**DAL1 304**
Class Meeting Days & Times	Tuesday/Thursday: 1:00 PM - 2:20 PM
Course Catalog Description	Digital circuits process data using logic gates and storage elements (flip flops). This course introduces binary systems and digital signals, covers Boolean algebra and logic gates, and investigates various digital logic circuits such as adders, flip flops, shift registers, and counters.
Prerequisites	Junior Standing
Corequisites	NA
Required Text	Digital Design: With an Introduction to the Verilog HDL, VHDL, and SystemVerilog, 6th Edition, Mano & Ciletti | ©2018 | Pearson | 720 pp ISBN-13: 9780134549897
Recommended Texts and References	
Access to Learning Resources	**UNT Dallas Library:** Phone: (972) 338-1616; Website URL: http://www.untdallas.edu/library **UNT Dallas Bookstore:** Phone: (972) 780-3652; Website URL: http://www.untdallas.edu/bookstore Email: untdallas@bkstr.com
Canvas Resources **Supported Browsers:** • Chrome 67 & 68 • Firefox 60 & 61	**Getting Help with Canvas:** **Canvas 24/7 Phone Support for Students: 1-833-668-8634** **Canvas Help Resources:**

• Flash 29, 30 (for audio/video) • Respondus Lockdown Browser • Safari 10, 11 **Supported Devices:** • iPhone • Android • Chromebook *Note: Tablet users can use the Canvas app* **Screen Readers:** • VoiceOver (Safari) • JAWS (Internet Explorer) • NVDA (Firefox) *Note: There is no screen reader support for Canvas in Chrome*	**Canvas Student Guide -** https://community.canvaslms.com/docs/DOC-10701 For additional assistance, contact Student Assistance (UNT Dallas Distance Learning): DAL1, Room 157 Phone: 972-338-5580 Email: distancelearning@untdallas.edu **If you are working with Canvas 24/7 Support to resolve a technical issue, please keep me updated on the troubleshooting progress.** **If you have a course-related issue (e.g., course content, assignment trouble, quiz difficulties), please contact me during office hours or use canvas messaging. In the circumstances where you don't have access to canvas messaging, use email to get in contact.**

Course Goals:

This course introduces students to digital systems, digital functions, digital information, and number systems, including binary. It teaches them how to convert between number systems, how to operate on binary numbers, and relate digital information to digital signals and functions. It also uses proven Boolean algebra methodologies in designing various minimalist digital logic circuits for a cost-effective implementation. This course then covers detailed studies of how some digital circuits are made and function, including adders, flip flops, shift registers, and counters.

Student Learning Outcomes: Upon successful completion of this course, the student will be able to:

- Understand the representation of information in binary format, and its relation to digital logic signals.
- Add and subtract signed binary numbers using 2's complement representation.
- Identify basic CMOS logic gates such as AND, OR, NOT, NAND, NOR and XOR.
- Implement any Boolean function with only NAND or only NOR gates.
- Know how to simplify any Boolean function to the smallest number of literals and gates by creating and manipulating a four-variable Karnaugh map from the Boolean function's truth table.
- Know how to analyze a combinational logic circuit. Understand the functionality of a binary adder.
- Declare a Verilog or a VHDL description/model for a combinational circuit.
- Perceive the functionality of an SR latch, and flip-flops.
- Explain the digital logic diagram, functionality and use of registers.
- Know the digital circuit, operation, and use of counters

Course Outline

Date	Topics	Quizzes See CANVAS for Due Dates
8/27	Chapter 1: Introduction to the Course	
8/29	Chapter 1: Digital Systems and Binary Numbers	
9/3	Chapter 1: Digital Systems and Binary Numbers	
9/5	Chapter 1: Digital Systems and Binary Numbers,	Q1
9/10	Chapter 2: Boolean Algebra and Logic Gates,	
9/12	Chapter 2: Boolean Algebra and Logic Gates,	Q2
9/17	Chapter 2: Boolean Algebra and Logic Gates	
9/19	Chapter 2: Boolean Algebra and Logic Gates,	Q3
9/24	Chapter 3: Gate-Level Minimization	
9/26	Chapter 3: Gate-Level Minimization	Q4
10/1	Chapter 3: Gate-Level Minimization	
10/3	Review of Chapters 1,2, and part of 3	
10/8	In Class Exam1 Chapters 1,2, and part of 3	

10/10	Chapter 3: Gate-Level Minimization	
10/15	Chapter 3: Gate-Level Minimization,	
10/17	Chapter 3: Gate-Level Minimization,	**Q5**
10/22	Chapter 4: Combinational Logic	
10/24	Chapter 4: Combinational Logic	**Q5**
10/29	Chapter 4: Combinational Logic	
10/31	Chapter 5: Combinational Logic,	**Q7**
11/5	Chapter 5: Synchronous Sequential Logic	
11/7	Chapter 5: Synchronous Sequential Logic,	**Q8**
11/12	Chapter 5: Synchronous Sequential Logic,	
11/14	Chapter 6: Latches and Flip-flops	**In class Quiz**
11/19	Chapter 6: Latches and Flip-flops,	
11/21	Chapter 6: Latches and Flip-Flops	
11/26	Chapter 6: Latches and Flip-Flops,	**In class Quiz**
11/28	**Fall Break**	
12/3	Chapter 6: Registers and Counters	
12/5	**Review of Second part of chapter 3, and chapters 4,5, and 6**	

12/10	**In Class Exam 2, Second part of chapter 3, and chapters 4,5, and 6.** **Note: In Class Exam 2 Date may change depending on UNT Dallas Examination Time Schedule. You will be notified, by me, on CANVAS and your UNT Dallas Email, so watch out for this.**

Course Evaluation Methods

This course will utilize the following instruments to determine student grades and proficiency in the learning outcomes for the course.

Grading Matrix

Assessment method	Points	Total
Quizzes	(8 On CANVAS + 2 In class) 5 Points Each	50%
Class Participation	5 Points	5%
Attendance	5 Points	5%
Midterm	20 Points	20%
Final Term	20 Points	20%
Total		100%

Grade Determination

The following standard grading scale will be used to determine your final letter grade:

A = 90% or better
B = 80 – 89 %
C = 70 – 79 %
D = 60 – 69 %
F = less than 60%

Course-Specific Policies

Attendance and Participation Policy:

The University attendance policy is in effect for this course. Please refer to Policy 7.005 Student Attendance at https://www.untdallas.edu/hr/upol. Class attendance and participation is mandatory because the class is designed as a shared learning. The dynamic and intensive nature of this course makes it impossible for students to make-up or to receive credit for missed classes. Attendance and participation in all class meetings is essential to the integration of course material and your ability to demonstrate proficiency. Students are responsible to notify the instructor if they are missing class and for what reason. Students are also responsible to make up any work covered in class. It is recommended that each student coordinate with a student colleague to obtain a copy of the class notes, if they are absent. Successfully completing this class is a function of many factors. Two such factors are class attendance and assignment/exams completion.

Assignment Policy:

All assignments are due in class on the due dates stated on the assignments. No late assignments will be accepted, except for documented emergencies. All assignments are to be done individually unless stated otherwise on the assignment.

Exam Policy:

Exams should be taken as scheduled. No makeup examinations will be allowed except for documented emergencies (See Policy 7.005 Student Attendance at https://www.untdallas.edu/hr/upol).

Email Policy:

Use Canvas messaging to contact me. In circumstances where you don't have access to Canvas messaging, use your Canvas/university email account to contact me. You should check your email every day as you are responsible for all information I send out. Due to privacy rights, I will not discuss grades over the phone and I will only answer emails from your Canvas/university email account.

Cell Phones:

Cell Phone use (ringing, texting, reading, etc.) in class is strictly prohibited.

University Policies and Procedures

Students with Disabilities (ADA Compliance):

The University of North Texas at Dallas makes reasonable academic accommodations for students with disabilities. Students seeking accommodations must first register with the Disabilities Services Office

(DSO) to verify their eligibility. If a disability is verified, the DSO will provide you with an accommodation letter to be delivered to faculty to begin a private discussion regarding your specific needs in a course. You may request accommodations at any time, however, DSO notices of accommodation should be provided as early as possible in the semester to avoid any delays in implementation. Note that a student must obtain a new letter of accommodation for every semester and must meet/communicate with each faculty member prior to implementation in each class. Students are strongly encouraged to deliver letters of accommodation during faculty office hours or by appointment. Faculty members have the authority to ask students to discuss such letter during their designated office hours to protect the privacy of the student. For additional information see the Disability Services Office website at http://www.untdallas.edu/disability. You may also contact them by phone at 972-338-1777; by email at UNTDdisability@untdallas.edu on the first floor of the Student Center.

Canvas Instructure Accessibility Statement: University of North Texas at Dallas is committed to ensuring that online and hybrid courses are usable by all students and faculty including those with disabilities. If you encounter any difficulties with technologies, please contact our ITSS Department. To better assist them, you would want to have the operating system, web browser and information on any assistive technology being used. The Canvas Instructure Accessibility Statement is provided at https://www.canvaslms.com/accessibility.

NOTE: Additional instructional technology tools, such as Turnitin, Respondus, Panopto, and publisher cartridge content (i.e. MyLab, Pearson, etc.) may NOT be fully ADA compliant. Please contact our Disability Office should you require additional assistance utilizing any of these tools.

Academic Integrity:

Academic integrity is a hallmark of higher education. You are expected to abide by the University's code of Academic Integrity policy. Any person suspected of academic dishonesty (i.e., cheating or plagiarism) will be handled in accordance with the University's policies and procedures. Refer to the UNT Dallas Academic Integrity Policy in the appropriate Catalog at http://dallascatalog.unt.edu.

Academic dishonesty includes, but is not limited to, cheating, plagiarizing, fabrication of information or citations, facilitating acts of dishonesty by others, having unauthorized possession of examinations, submitting work of another person or work previously used without informing the instructor, or tampering with the academic work of other students.

Web-based Plagiarism Detection*:* Please be aware in some courses, students may be required to submit written assignments to Turnitin, a web-based plagiarism detection service, or another method. If submitting to Turnitin, please remove your title page and other personal information.

Diversity/Tolerance Policy:

Students are encouraged to contribute their perspectives and insights to class discussions. However, offensive & inappropriate language (swearing) and remarks offensive to others of particular nationalities, ethnic groups, sexual preferences, religious groups, genders, or other ascribed statuses will not be

tolerated. Disruptions which violate the Code of Student's Rights, Responsibilities, and Conduct will be referred to the Dean of Students as the instructor deems appropriate (UNTD Policy 7.001 found at https://www.untdallas.edu/hr/upol).

Classroom Disruption:

Students are expected to engage with the instructor and other students in this class in a respectful and civil manner at all times to promote a classroom environment that is conducive to teaching and learning. Students who engage in disruptive behavior will be directed to leave the classroom. A student who is directed to leave class due to disruptive behavior is not permitted to return to class until the student meets with a representative from the Dean of Students Office. It is the student's responsibility to meet with the Dean of Students before class meets again and to provide the instructor confirmation of the meeting. A student who is directed to leave class will be assigned an unexcused absent for that class period and any other classes the student misses as a result of not meeting with the Dean of Students. The student is responsible for material missed during all absences and the instructor is not responsible for providing missed material. In addition, the student will be assigned a failing grade for assignments, quizzes or examinations missed and will not be allowed to make up the work.

The Code of Student's Rights, Responsibilities, and Conduct **(UNTD Policy 7.001 found at** https://www.untdallas.edu/hr/upol**)** describes disruption as the obstructing or interfering with university functions or activity, including any behavior that interferes with students, faculty, or staff access to an appropriate educational environment. Examples of disruptive behavior that may result in a student being directed to leave the classroom include but are not limited to: failure to comply with reasonable directive of University officials, action or combination of actions that unreasonably interfere with, hinder, obstruct, or prevents the right of others to freely participate, threatening, assaulting, or causing harm to oneself or to another, uttering any words or performing any acts that cause physical injury, or threaten any individual, or interfere with any individual's rightful actions, and harassment. You are encouraged to read the Code of Student's Rights, Responsibilities, and Conduct for more information related to behaviors that could be considered disruptive.

Course Evaluation:

Student's evaluations of teaching effectiveness is a requirement for all organized classes at UNT Dallas. This short survey will be made available to you at the end of the semester via your campus email, providing you a chance to comment on how this class is taught. I will not have access to the results of the evaluations until after final grades have posted. I am very interested in the feedback I get from students, as I work to continually improve my teaching. I consider students' evaluations to be an important part of your participation in this class.

Bad Weather Policy:

Campus facilities will close and operations will be suspended when adverse weather and/or safety hazards exist on the UNTD campus or if travel to the campus is deemed dangerous as the result of ice, sleet or snow. In the event of a campus closure, the Marketing and Communication Department will report

closure information to all appropriate major media by 7 a.m. That department will also update the UNTD website, Facebook and Twitter with closing information as soon as it is possible. For more information please refer to http://www.untdallas.edu/police/resources/notifications.

Technology Assistance:

In order to successfully access the materials in Canvas, UNT Dallas advises that your computer be equipped with the minimum system requirements listed on the first page of the syllabus.

If you experience difficulty accessing or using components of the course, try using Google Chrome browser. If you still experience technical difficulties, first, notify your instructor.

If the problem is still not resolved, call Distance Learning at the phone number listed on the first page of the syllabus. Also, no matter what browser you use, always enable pop-ups.

For more information see:

- UNT Dallas Canvas Technical Requirements: https://community.canvaslms.com/docs/DOC-10721
- Canvas Instructure Support & Unsupported Operating Systems: https://community.canvaslms.com/docs/DOC-10720