UTD

Course Syllabus

Course Information
CS/CE 4141.0U1 Digital Systems Laboratory - Summer 2025
Date&Time: Tu: 5:30pm - 10:00pm ; Room location: ECSN 3.112

Lab Supervisor:
Professor: Dr. Gity Karami
Office Phone:972-883-4204
Office Location:ECSS 3.202
Email: gity.karami@utdallas.edu
Office hours: TuTh: 11:30 am – 12:15 pm by appointment
Signup link: https://calendly.com/gxk180009/virtual-office-hours
Please sign up in advance (at least a few hours before your scheduled meeting)

Lab instructor:
Professor: Shuo Yan
Email: shuo.yan@utdallas.edu

Course Prerequisites:
(Corequisite: CS 4341).

Course Description:
CS 4141- Digital Systems Laboratory (1 semester credit hour) Laboratory to accompany **CS 4341**. The purpose of this laboratory is to give students an intuitive understanding of digital circuits and systems. Laboratory exercises include construction of simple digital logic circuits using simulated board-level assembly on a personal computer.

Text Book:
• Dally. W., Harting, R.C., Digital Design – A System Approach, Cambridge University Press, 2012
• Harris, D. Harris, S., Digital Design and Computer Architecture, Morgan Kauffman, Second edition, 2013 Mano, M. Morris and Ciletti, Michael D. , Digital Design, Pearson, 6th Edition, 2018
• Helmut Neemann, 'Digital': a very good digital circuits simulator. https://github.-com/hneemann/Digital/release

*supplementary materials will be posted in the e-learning

Learning Objectives:

After successful completion of this lab, the student should
• Ability to design gate-level logic circuits to a given specification
• Ability to design gate-level circuits for adders
• Ability to design logic circuits using D-type flip-flops
• Ability to use TTL 7400 series chips to construct bread-board circuits and test them in a virtual lab.
• Ability to produce lab-reports that fully explain experiments conducted in the lab

Tentative Course Schedule:

	Experiment	Date &Time
1	Experiment #1 : Familiarization with Lab Equipment and Simple AND, OR, NOT, NAND, NOR and XOR Functions	Pre Lab: June 21th Lab: June 24th Post Lab: June 27th
2	Experiment #2 : Familiarization with Multiplexers & Decoders; Construction of Circuits to Represent Given Boolean Expressions	Pre Lab: June 28th Lab: July 1st Post Lab: July 6th
3	Experiment #3 : The Digital Adder Circuit	Pre Lab: July 12th Lab: July 15th Post Lab: July 18th
4	Experiment #4 : Flip-Flops	Pre Lab: July 19th Lab: July 22th Post Lab: July 25th
5	Makeup	Pre Lab: July 26th Lab: July 29th Post Lab: Aug 2nd

A Makeup Lab is available for a lab that was missed by the student for a clear, documented reason. A Makeup Lab is not available to re-do a lab with a failing grade or even a passing grade. The deadline for requesting a make-up lab is the due date of the Post-Lab report. Students need to email the Lab Instructor about the reason they cannot attended before the deadline. If the Lab Instructor accepts the reason, the Lab Instructor will schedule another date for the student to do the makeup lab

Course Works and Grading Policies:

Experiments : 100%   (Each Experiment : 25%)
Instructor reserves the right to alter these weights or make changes as she sees fit.

Grades will be assigned according to the following scale
A+   97 and above
A   94 - 96 (94 or more and less than 97)
A-   90 - 93 (90 or more and less than 94)
B+   87 - 89 (87 or more and less than 90)
B   84 - 86 (84 or more and less than 87)
B-   80 - 83 (80 or more and less than 84)
C+   77 - 79 (77 or more and less than 80)
C   74 - 76 (74 or more and less than 77)
C-   70 - 73 (70 or more and less than 74)
D   60 - 69 (60 or more and less than 70)
F   Below 60

General Lab procedure:

Laboratory Sessions follow this pattern.

Check Course Announcements
Depending on the **Lab Instructor**, students may be asked to bring either hard copies of documentation or if the students should bring their lap tops. Be sure to check the course announcements before each lab.

Pre-Labs
A few days before the lab, a Pre-Lab is assigned. Labs are not coordinated with Lecture. Labs are a separate grade. The Pre-Lab is designed to prepare the students for the Experiment. If a student has not done the Pre-Lab themselves, their lack of performance is noticeable. If you do not use your Pre-Labs for practice, you will lose time that you cannot make up. Pre-Labs are typically due on the day of the lab demonstration. Each student must complete their own Pre-Lab report with their own name on it or points will not be awarded. If we cannot read your report, they do not need to grade it.

Lab Demonstration
On the day of the lab is the actual experiment, **the Lab Instructor gives a 15-minute lecture about performing the lab**. If you ignore the instructions, you will lose time on completing the lab. **The next 150 minutes are for performing the lab procedure** (Getting your lab station set up, Finding the correct chips for the experiment, Getting enough wires for the experiment, Going through the procedure and building the experiments, Dealing with the unexpected, Demonstrating the experiment to the Lab Instructor). **The last 15 minutes are for deconstructing your circuitry and putting the equipment away neatly.**

Each lab section has more students than physical lab stations. As a result, the group size is determined by your **Lab Instructor**. Typically, a class has 10 lab stations, 20 students, with 2 students per lab station. The **Lab Instructor** decides if a need exists to have a group of 3 students, or to have one student work solo. Group size is the part of the authority of the **Lab Instructor**. Note: If you have a problem within your lab group, and you say nothing then nothing will be done. The **Lab Instructor** cannot read your mind. Ask for a change. If the **Lab Instructor** sees there is a problem in your group, they can re-assign lab partners on their own authority.

Post-Labs
Once the lab has been completed, usually a Post-Lab report is due in three days. Observations, tables, wiring connections, and results generated during the lab will make up the Post-Lab report. More than one student working together can create a single Post-Lab report to be shared, but such a report must have the correct date, the name of the student submitting the report, and then the names of lab partners, if any. Each student must complete their own Post-Lab report with their own name on it or points will not be awarded. If the Grader cannot read your report, they do not need to grade it

Attendance:
Attendance is compulsory for all the labs. You will get 0 points if you miss your lab. Leaving your lab early without permission from the lab instructor will count as an absence. Submitting the report without attending your lab will earn 0 points.

Grade Dispute :
All grade disputes must be reported in person to the instructor using grading dispute form within 3 days of the grade being posted in eLearning. Un-contested grades will become final after 3 days and cannot be disputed later.

Academic Dishonesty:
You should do your own work on exam and assignments. Copying another student's work is not acceptable. Any indication of cheating and/or plagiarism on an exam/assignment will be an automatic 0 (zero) for the exam/assignment for all students involved. Solutions copied from the internet, instructor's manual, etc. will be also given zero credit. Please note that suspected incidents will be reported to the Office of Community Standards and Conduct.

Comet Creed: "As a Comet, I pledge honesty, integrity, and service in all that I do."

Additional Policies: Please visit http://go.utdallas.edu/syllabus-policies for all other University policies

Descriptions and timelines are subject to change at the discretion of the Professor.