ECE 2020 Syllabus

Digital System Design, 3-hour Lecture, 3 credit hours

Instructor Information

Instructor	Email
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General Information

Description

This course introduces the many levels of abstraction that enable today's digital systems. It explores digital design at the layers from switches and wire to a programmable machine. At each layer, the design process of transforming a specification into an implementation is introduced and practiced.

Pre-requisites

CS 1301 [min C]

Course Outcomes:

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

- Understand Boolean logic and be able to produce desired logic functions in truth-table, schematic, and algebraic forms.
- Understand physical implementations of digital logic, be able to produce logic functions using it, and analyze its timing behavior.
- Understand how numbers are represented and manipulated in digital logic.
- Understand basic digital building blocks such as multiplexers and encoders, and be able to use them to build larger digital devices.
- Understand digital storage elements and sequential logic and be able to create finite state machines to implement a desired behavior.
- Understand basic processor operation and be able to create simple programs in assembly code.

Course Materials

Textbook

Wakerly, Digital Design: Principles and Practice 5th Edition – The 4th edition is similar but does not contain some of the newer material. Please see course schedule for approximate textbook sections.
Additional supplemental textbooks:
Harris & Harris, Digital Design and Computer Architecture (free online access through GT library)
Wills & Wills, Digital Computer Systems (free e-book: https://ece2020.ece.gatech.edu/ComputerDesign.pdf)

Course Website & Materials

The course will use Canvas to provide resources, assignments, and other course materials. http://canvas.gatech.edu.

Additionally, there is a common course website: https://ece2020.ece.gatech.edu/

Course Grading, and Policies

Assignment Weights	
Homework	5%
Labs (2 labs, 5% each)	10%
Tests (4 tests, 12% each)	48%
Final Exam	32%
Participation Assignments	5%
Total Grade **A = [90, 100]; B = [80,90); C = [70,80); D = [60,70); F = [0,60)**	100%

Important Dates

Labor Day: September 7
Fall Break: October 5-6
Thanksgiving: November 25-27
Final Instructional Class: December 7

Extra Credit Opportunities

If any extra credit opportunities arise, they will be discussed in class and posted on Canvas.

Late-Work Policy

Late work will not be accepted unless pre-approved by the instructor.

Grade Disputes

Regrade requests must be made via email within one week of receiving the original grade. In the event of a regrade, the entire assignment may be regraded.

Missing Tests

If you must miss a test for a serious condition, you must let the instructor know as soon as you know that you cannot attend. Any excused absence must be accompanied by proper documentation. Institute Absence Policy: https://catalog.gatech.edu/rules/4/.

Course Components

Homework

There will be a homework assignment approximately every 1-2 weeks. Homework is meant to build both basic knowledge of the course material and deeper understanding, so it is likely that some additional research beyond coming to class will be required. Homework is evaluated on effort, and not correctness. Late homework will not be accepted.

Labs

There are two labs during the semester which will each have some lecture time dedicated to them but may require additional time to complete outside of lecture. Students will be provided with pre-lab assignments and lab instructions prior to the in-lecture periods. A laptop is needed to complete the assignments.

Tests/Exams

Tests will be given four times during the semester, and a cumulative final exam will be given during the final exam period for this course. Tests and exams are graded for correctness, with partial credit awarded for partial answers (e.g. work shown) or to account for minor errors.

Course Expectations & Guidelines

Academic Integrity

Although students are encouraged strongly to work together to learn the course material, all students are expected to complete exams individually. You MAY NOT collaborate during tests and in-class quizzes, unless otherwise specified. You MAY NOT share solutions to assignments before due dates, discuss tests until they have been returned or reference lab work from previous semesters. However, you ARE allowed to discuss the problems and course material with others, including fellow students, teaching assistants, and the instructor. You may use previous semester's exams, homework, or other resources from other 2020 sections, or the general 2020 website. You may use CAD or simulation software such as http://lushprojects.com/circuitjs/circuitjs.html.

All conduct in this course will be governed by the Georgia Tech honor code. Additionally, it is expected that students will respect their peers and the instructor such that no one takes unfair advantage of any other person associated with the course. Any suspected cases of academic dishonesty will be reported to the Dean of Students for further action. GT honor code: http://www.policylibrary.gatech.edu/student-affairs/academic-honor-code

Any student suspected of cheating or plagiarizing on a quiz, exam, or assignment will be reported to the Office of Student Integrity, who will investigate the incident and identify the appropriate penalty for violations.

Accommodations for Students with Disabilities

Students requesting official accommodations should contact the Office of Disability Services at http://disabilityservices.gatech.edu/ or (404) 894-2563, as soon as possible, to make an appointment to discuss your special needs and to obtain an accommodations letter. Please also email me as soon as possible in order to set up a time to discuss your learning needs.

Student-Faculty Expectations Agreement

At Georgia Tech we believe that it is important to strive for an atmosphere of mutual respect, acknowledgement, and responsibility between faculty members and the student body. See https://catalog.gatech.edu/rules/22/ for an articulation of some basic expectation that you can have of me and that I have of you. In the end, simple respect for knowledge, hard work, and cordial interactions will help build the environment we seek. Therefore, I encourage you to remain committed to the ideals of Georgia Tech while in this class.

Content Accessibility

Every effort is being made to ensure that materials provided as part of the course meet accessibility standards.

Campus Resources for Students

Counseling Center	counseling.gatech.edu	404-894-2575
Dean of Students (Student Life)	studentlife.gatech.edu	404-385-8772
GT Police	police.gatech.edu	404-894-2500
Stamps Health Services	health.gatech.edu	404-894-1420