

Syllabus

ECE 2020: Fundamentals of Digital Design

CRN 52814 or CRN 57692

Summer 2026

Instructor Information

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General Course Information

Description

ECE 2020 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.

Course Learning Outcomes

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

Required Course Materials

1. Main textbook: Wakerly, Digital Design: Principles and Practice 4th Edition or 5th Edition

2. Supplemental textbook: Wills & Wills, Digital Computer Systems (free e-book, can be found on Canvas)
3. Common Course Website: <http://ece2020.ece.gatech.edu/>
4. Instructor notes

Grading Policy:

1. Distribution of grades:
 - a. Homeworks: 20%
 - b. Labs: 10%
 - c. Midterms : 40%
 - d. Final Exam: 30%
2. The final grade will be curved. I will treat the highest grade as 100% and the other grades will be adjusted accordingly. The letter-grades will be as follows:
 - a. $A \geq 90.0\%$ of the highest total score
 - b. $B \geq 80.0\%$ of the highest total score
 - c. $C \geq 70.0\%$ of the highest total score
 - d. $D \geq 60.0\%$ of the highest total score
3. There will be partial credit in home-works as well as in all exams, where appropriate.

Description of Graded Components:

Homework:

Homework is meant to both assess basic knowledge of the course material and to encourage deeper understanding, so it is likely that some additional research beyond coming to the class will be required. Homework is graded partially on completion and partially on correctness. Homework due dates will be announced on Canvas. No plagiarism and late submission will be tolerated. There will be approximately one homework per module. All homeworks will be uploaded together at the start of the semester. Please look both at the Homework file AND the Homework Guide file on Canvas to find which problems need to be submitted for which Homework.

Examinations:

1. There will be two midterm exams and a Final exam.
2. Midterms will be a problem-based exam or multiple-choice. The format will be communicated in advance in the class.
3. The Final exam will be a problem-based exam at a time set by the registrar's office.
4. No collaboration or discussions will be allowed during the exams.
5. There will be review sessions or review videos before each exam.

Late Submission Policy:

Homework: If unexcused, no late submission will be allowed. Email me with excused delays to work out submission details, before the homework is due.

Examinations: If unexcused, no late submission will be allowed.

Course Policies

USG Required Course Policies [remove this heading in your final syllabus]

Attendance and/or Participation

1. **Lectures:** Attendance for the class is expected but not mandatory. However, students are encouraged to attend the class to be able to ask questions and participate in the discussions during the lectures. Some of the Class videos will be posted on Canvas so that the students can review the lectures later.
2. **Projects:** Students will require a myDAQ and parts kit for completing the lab. You can either purchase the myDAQ or you can loan one from the library on a short-term basis. Please communicate with the library personnel to find out how to loan myDAQs from them. All students must purchase the parts kit. Purchase details will be posted in the first week of classes, and these supplies must be ordered immediately before the due date. Labs must be completed within a definite period of time as indicated on Canvas.

Academic Integrity

Georgia Tech aims to cultivate a community based on trust, academic integrity, and honor. Students are expected to act according to the highest ethical standards. Review [Georgia Tech's Honor Code](#) and the student [Code of Conduct](#).

Any student suspected of cheating or plagiarism 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

If you are a student with learning needs that require special accommodation, [contact the Office of Disability Services](#) (404-894-2563) as soon as possible to make an appointment to discuss your special needs and to obtain an accommodations letter. Please also e-mail 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. [The Student-Faculty Expectations](#) articulate some basic expectations 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.

Pre- &/or Co-Requisites

CS 1371 [min C] or CS 1171 [min D] or CS 1301 [min C]

Campus Resources for Students

Undergraduate Student Academic Success Resources:

- Academic Support: Academic Success and Advising (a unit in the Office of Undergraduate Education & Student Success) provides free support for your courses. Students can attend scheduled supplemental review (PLUS) sessions, stop by Drop-In Tutoring, or schedule a one-on-one appointment through Knack. To explore what options work best for you, please visit us online at success.gatech.edu/tutoring, email us at tutoring@gatech.edu, or come see us at Clough Undergraduate Learning Commons, Suite 283.

Student Well-Being:

At Georgia Tech, we are concerned about your overall physical, social, and mental well-being. A [comprehensive list](#) of wellness related resources has been compiled and maintained by the Office of the Vice President for Student Engagement and Well-being ([student-resource-guide \(gatech.edu\)](https://student-resource-guide.gatech.edu))