

Syllabus
Digital System Design
ECE2020
Prof. Linda Milor

Main Text:

Wakerly, *Digital Design: Principles and Practice*, 5th Edition.

Supplemental Texts:

Harris & Harris, *Digital Design and Computer Architecture* (available through the library)

Wills & Wills, *Digital Computer Systems* (free e-book)

Course Description:

ECE2020 introduces the many levels of abstraction that enable today's digital systems. It explores digital design at the layers from switches and wires to a programmable machine. At each layer, the design process of transforming a specification into an implementation is introduced and practiced.

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.

Grades and Assignments:

Final exam (34%), Four tests (12% each), Homework (8%), Two labs (5% each)

Homework: There will be a homework assignment approximately every 1-2 weeks. 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 class will be required. Homework is graded for completion.

Late Submission: If unexcused, cannot be submitted late. Complete homework well before the deadline so that any issues can be fixed before it's too late. Email me with excused delays to work out submission details.

Tests: In-class tests will be given four times during the semester. Tests are graded for correctness, with partial credit possible (e.g. for work shown or to account for minor errors).

Late Submission: With a valid excuse, tests can be made up for full credit as soon as possible. Tests missed without a valid excuse will receive a 0.

Final exam: The final exam will be at the date, time, and location scheduled by the institute. It is cumulative through the topics of state machines (i.e. it will not include memory, computer architecture, or programming).

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. Any needed hardware will be provided by the school.

Late Submission: If the in-class portion is missed or is not completed within the lecture period, the lab must be finished outside of lecture. Late submissions will not be accepted beyond the one-week period.

Accommodations for Students with Disabilities: If you are a student with learning needs that require special accommodation, contact the Office of Disability Services at (404) 894-2563 or <http://disability.services.gatech.edu/> as soon as possible to make an appointment to discuss your special needs and to obtain an accommodations letter.

Grade Disputes:

Requests to regrade any assignment must be made within one week of the assignment being returned. In the event of a regrade, the entire assignment may be regraded.

Academic Honesty:

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 <http://www.catalog.gatech.edu/rules/22/> for an articulation of some basic expectations that you can have of me and that I have of you.

Contact Info:

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