

ECE230-1: Digital Logic Fundamentals

Fall 2019

Instructor: Dr. Tom Zimmermann
Office: Engineering Research Complex C131
Phone: (517) 353-3624
Email: tomzim@mail.d2l.msu.edu

Class Hours: M W F: 8:00 – 8:50 am
Classroom: 100 Packaging Bldg.
Course Website: <https://d2l.msu.edu/d2l/home>
Office Hours: M W: 11:00 am - noon or by appointment
Engineering Research Complex C131

Grader: Huiyu (Peter) Zhao, zhaohui2@msu.edu
Help Room Tutor: Haochen Sun, sunhaoc2@msu.edu
Date/Time: every Tuesday and Thursday from 1 to 3 pm
Room: 2220 Engineering Bldg.

Prerequisite(s): CSE 131 or CSE 231

Required Text

Brown, Vransic. "Fundamentals of Digital Logic with VHDL Design", Third Edition, McGraw-Hill, 2009, ISBN= 0077221435.

Reference Books

1. Marcovitz, "Introduction to Logic Design", McGraw-Hill, 2002. ISBN: 0-07-247699-0.
2. Katz, "Contemporary Logic Design", Benjamin Cummings Publishing Company, 1994, ISBN: 0-8053-2703-7.
3. Perry, "VHDL Programming by Example", McGraw-Hill, 2002. ISBN: 0-07-140070-2.
4. Rabaey, "Digital Integrated Circuits", Prentice-Hall, 1996, ISBN: 0-13-178609-1.

Course Outline

Chapter 1: Design Concepts
Chapter 5: Number Representation and Arithmetic Circuits
Chapter 2: Introduction to Logic Circuits
Chapter 4: Optimized Implementation of Logic Functions
Chapter 6: Combinational Circuits Building Blocks
Chapter 7: Flip-Flops, Registers and Counters
Chapter 8: Synchronous Sequential Circuits
Chapter 9: Asynchronous Sequential Circuits
Chapter 10: Digital Circuit Design

Grading Policy

There will be three 50-minute exams, one project, and six homework assignments. Graded homework assignments will be returned. Exams will be returned in class and then re-collected. For regrades, please see “Regrade Policy” section. In the event that you must miss an exam (for any reason), the makeup exam will be arranged with the instructor. The request for the makeup oral exam must be made prior to the exam day and approved by the instructor.

Grade Breakdown

Exams: 75% total (3 exams, 25% each)

Homework: 24% total (20 points each, normalized)

Project: 1% total + 10% bonus points

Exams: September 25th (Exam 1), October 30th (Exam 2), December 4th (Exam 3).

Final Exam: There is no final exam.

Grading Scale (Not on a curve)

≥ 90% = 4.0 ≥ 85% = 3.5

≥ 80% = 3.0 ≥ 75% = 2.5

≥ 70% = 2.0 ≥ 65% = 1.5

≥ 60% = 1.0 < 60% = 0.0

Attendance Policy

Attendance is required. Spartan Life, Section 2.3.3: “The student shares with the faculty the responsibility for maintaining the integrity of scholarship, grades, and professional standards”

Labor Day: Monday, September 2nd University closed.

And: Wednesday, October 16th no class.

Academic Integrity

Student Life, Section 2.3.3: “The student shares with the faculty the responsibility for maintaining the integrity of scholarship, grades, and professional standards”. In addition, the (insert college/department/school name) adheres to the policies on academic honesty as specified in General Student Regulations 1.0, Protection of Scholarship and Grades, and in the all-University Policy on Integrity of Scholarship and Grades, which are included in Spartan Life: Student Handbook and Resource Guide.

All course work should be completed entirely on your own. You are encouraged to discuss general concepts and ideas in homework or lab assignments.

Students who commit an act of academic dishonesty may receive a 0.0 on the assignment or in the course.

Classroom Policy

Spartan Life, Section 2.3.5: "The student's behavior in the classroom shall be conducive to the teaching and learning process for all concerned." This means that I do not appreciate sleeping, reading the paper, ringing cell phones, etc. Please try to develop your professional skills while in this class.

Regrade Policy

If you would like for me to look at the grading of an assignment, please send me an e-mail which details the reason why you feel you deserve more credit. Then, re-submit the assignment to me and I will reply to your e-mail with my decision. Be aware that I randomly make photocopies of your assignments.

E-Mail Policy

Send me emails ONLY via D2L online system under "Communication" tab. All e-mails to me regarding this course should start the subject with "**ECE230**". E-mail questions will be replied to within 24 hours of receipt (during the semester). I reserve the right to respond on Monday to e-mails sent to me on Friday. If you wish to request a meeting with me via e-mail, I suggest e-mailing me more than 24 hours in advance. Please send me three days/times that you can meet.

Calculator Policy

Only 'simple' (non-programmable/graphing) calculators are allowed in class.

Assignment Policy

1. All assignments are collected at the beginning of class. It will be closed in **FIVE** minutes after the class starts.

(a) In the case that you have a special event (doctor's appointment, etc.) scheduled during the class time, you should turn your assignment in early (see below). This will account for situations where you get stuck in traffic, etc. It is your responsibility to get the assignment to me on time.

(b) If you are sick, you need to show me a doctor's note stating that you were unable to attend class. I will then accept your late assignment.

(c) If you have a family emergency, please e-mail me as soon as possible. We can make arrangements at a later date. Family comes first.

2. Write neatly.

3. One staple, upper left corner.

4. Box answers, when applicable.

You are strongly encouraged to make a copy of your assignments before turning them in. This is advice that you may want to use in all of your courses. There are at least two benefits to this:

- In case the instructor loses your assignment, at least you have a copy.
- In case the instructor is unable to return the graded assignment in time for an exam, you have a copy.

Note: You are also encouraged to turn assignments in early. Also, if I find the assignment under my office door when I get back from lecture, it will not be accepted.

Accommodations for Persons with Disabilities

Students who have a registered disability may be entitled to an accommodation (note taker, separate room for tests, additional time on tests, etc.). Any student granted an accommodation must inform you and show you a VISA form from the Resource Center for Persons with Disabilities (RCPD). We are obligated to provide the described accommodation. If there are questions or concerns that the accommodation is not reasonable, please discuss with the RCPD staff or with me.

Michigan State University is committed to providing equal opportunity for participation in all programs, services and activities. Requests for accommodations by persons with disabilities may be made by contacting the Resource Center for Persons with Disabilities at 517-884-RCPD or on the web at rcpd.msu.edu. Once your eligibility for an accommodation has been determined, you will be issued a verified individual services accommodation (“VISA”) form. Please present this form to me at the start of the term and/or two weeks prior to the accommodation date (test, project, etc). Requests received after this date will be honored whenever possible.