

**UNIVERSITY OF UTAH**  
**Department of Electrical and Computer Engineering**  
**ECE 2280 Fundamentals of Engineering Electronics**  
**Syllabus**

**Prerequisites:** MATH 2250, PHYCS 2220, and ECE 2240

**Lecturer:** Professor Angela Rasmussen  
Office: MEB 2266  
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**Website:** CANVAS

**Textbook:** Fundamentals of Microelectronics, Behzad Razavi, 2<sup>nd</sup> Edition, ISBN: 978-1118156322

**Course Objectives:**

- Understanding of signals and frequencies (Bode Plots)
- Characteristics, analysis, and design using operational amplifiers
- Characteristics of diodes, BJTs, and FETs
- Analysis and design of diodes, BJTs, FETs in electronic circuits
- Efficient at using PSPICE
- Become a better problem solver

**Lecture:** It is essential that you attend the lecture and take complete and accurate notes. Not all material given in lecture will necessarily be from the text. You are responsible for all topics, discussions, handouts and announcements made in class.

**Homework:** Assignment due dates are noted in the tentative schedule and due online or in the lockers located on the 3<sup>rd</sup> floor of the MEB at the time noted on CANVAS. **No late assignments will be accepted.** However, your lowest homework grade will be dropped. **Homework will not be accepted late.**

Although collaboration with fellow students on homework assignments and studying is encouraged, you will benefit most from the homework if you attempt to do the problems before consulting with your friends. While it is perfectly reasonable to discuss your approach to solving the problems with a friend, the final write-up of the solution must be your own work. Copying or allowing another student to copy your work is considered cheating.

The homework problems will be graded only for correct answers and basic approach. A homework solution displaying both a correct approach and correct answer will receive 1.5 points. The correct approach is worth 1.0 points, and the correct answer will receive 0.5 points. Detailed grading will be left to the student. Solutions to the homework will be posted on the course website soon after the homework is due.

**Quizzes:** The Thursday after homework is due, there will be a quiz (typically given at the beginning of class). The quiz will cover material from class, lab, and homework. **No make-up quizzes will be given.** However, your lowest quiz score will be dropped. **Open book/notes.**

**SIMULATION Projects:** Three computer simulation problems will be assigned during the semester. One letter grade (10% off grade) will be dropped per day late or per weekend that the completed project is late. These simulations can be completed late and will be given at least 25 pts. These projects can be performed using PSPICE or Multisim. PSpice only will be supported this semester.

**Exams:** Three exams and a final will be given as noted on the class schedule. Exams will be **closed notes and book**. You will be allowed 1 sheet (8 ½ by 11) front and back of handwritten notes for each exam. The final will be broken into 3 parts. The final is optional. If the final is not taken, the midterm exam scores will be used to calculate the final grade. If the final is taken, the higher of the two grades between the midterm and the final exam will be used to calculate the final grade. The first part corresponds to the material of the first exam. The second part corresponds to the material of the second exam and similarly for the third part of the final. You will be allowed 1 sheet for each part of the final. In NO CASE will make-up exams be given unless the student obtained approval from the instructor PRIOR to the time of the exam. Approved makeup exams will be an oral exam. In emergency situations, students will be expected to produce a doctor's certificate indicating the nature and time of the medical emergency.

**Labs:** Lab will be held every week. Many of the subjects covered in lab aren't covered anywhere else in class, so make sure you pay attention and read the lab handouts. You will have to keep a laboratory notebook as a requirement of the lab. Your lab TA will grade these notebooks.

Labs are **not optional**. Be sure to make-up any labs you miss or fail by making arrangements with your TA. **You will be given an F grade** for the course if lab work falls below 70%. Lab work is only accepted late to the date noted on the schedule. If you turn it in before or on the late date noted in the schedule and still want to get a better grade, you may rework on the lab for partial credit of the docked points. For example, if you received 50pts and turned it in before the late date you may rework the lab. The most you can receive for reworking a lab is 80% of the total points. If you rework the lab before the late date, you will not be docked any points.

**Extra Credit:** At any time during the semester you are welcome to do extra credit. You can either do a project on your own, or you can alter any of the existing lab experiments/projects to work with the MyDAQ. If doing an independent project, research an idea and present it to me. The project needs to have at least 1 BJT and/or MosFet operating in an analog (not digital) mode. Once I approve the project, you need to simulate the design, build the circuit, and get it to work correctly. Once you get the circuit working, you need a TA to verify its correct operation to receive the extra credit (2% of grade). If altering existing experiments and/or projects, you need to first get an approval from the instructor. You need to supply appropriate documentation describing the differences from the current experiments to what you needed to do to get it working with the MyDAQ. You also need to show a TA the operating experiments and/or projects. If you choose to do one of the projects, you will get the extra credit in addition to the normal points you would receive for the project.

**Grading:** Your final grade will be determined based on the following distribution:

Homework – 9% (lowest score dropped)	Lab (experiments/projects) – 15%
Quizzes – 7% (lowest score dropped)	3 Exams – 60%
Simulation – 9%	Extra Credit – 2%

**Grades:** Your score will determine your grade as follows:

A	93.1 - 100	B	83.1 - 87	C	73.1 - 77	D	63.1 - 67
A-	90.1 - 93	B-	80.1 - 83	C-	70.1 - 73	D-	60 - 63
B+	87.1 - 90	C+	77.1 - 80	D+	67.1 - 70	F	< 60

If you observe cheating at any time, please come and talk to me or the proctor about it.

#### **Americans with Disabilities Act Information:**

If you will need accommodations in this class, please contact the Center for Disability Services, 162 Olpin Union Building, 581-5020 (V/TDD) to make arrangements. If other accommodations or modifications are needed, please contact me.