

# ECE 363: Analysis and Design of Electronic Circuits

Fall 2019

Instructor: Prof. Takashi Buma

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Office Hours: Mon & Tue (2 – 3 PM) and Wed (9 – 10:30 AM)

- **Website:** <http://minerva.union.edu/bumat>
  - The course website contains lecture notes (“Before” and “After”), homeworks (assignments, due dates, solutions), quiz solutions, last year’s exams + solutions, labs, datasheets, and suggested textbook reading. When in doubt about any aspect of the course, first check the website!
- **Textbook:** “Electronic Principles, 8<sup>th</sup> Edition” by A. Malvino and D. J. Bates (2016)
  - This is the same textbook as ECE 248. The course website will also have some reading materials.
- **Homework:** Assignments (100 pts each) and due dates are posted on the course website.
  - You are encouraged to work together, but **YOU MUST TURN IN YOUR OWN WORK.**
  - **Assignments turned in more than six days after the assigned date will receive a zero.** Of course, these rules will be waived for good reason (such as illness, family emergency, conference travel, athletic tournament, etc.). Whenever possible, please let Buma know if you need an extension!
- **Labs:** There will be six lab topics spread out over the 10-week term.
  - Some labs (but not all) will involve prelab assignments. Prelabs are due at the beginning of the lab session. They usually consist of some calculations and circuit simulations. You may work together, **BUT YOU MUST TURN IN YOUR OWN WORK.**
  - Lab session involves construction and testing of circuits. Each student must build and test his/her own circuit. You are encouraged to work together and share test equipment, **BUT YOU MUST DEMO YOUR OWN WORK.** A grossly messy circuit is a 10 pt deduction for that specific lab.
  - Not all labs require a lab report (gasp!). A report template will be provided (see course website).
- **Quizzes:** There will be seven quizzes.
  - Each quiz will cover material from the most recently completed homework.
  - On a quiz day, the quiz will take place during the first 30 minutes of class.

- **Grading:** The final grade for the course will be calculated as follows:

Homeworks	10%				
Quizzes	10%				
Labs	20%				
Exam 1	17.5%	(Curved)			
Exam 2	17.5%	(Curved)			
Final	25%	(Curved)	(cumulative)		

The final course grade will follow the schedule shown below. The instructor reserves the right to lower these standards, but he will not raise them.

A	93-100	B	83-86	C	73-76		
A-	90-92	B-	80-82	C-	70-72		
B+	87-89	C+	77-79	D	60-69	F	<60

- **Course Topics:**

Emitter Follower

Linear Regulator

*Lab 1 (requires report): (a) Zener Follower (b) Linear Voltage Regulator*

Op Amp Basics

Op Amp Current Boosters

*Lab 2: Audio Amplifier*

Class AB amplifier design

Op Amp imperfections

*Lab 3 (requires report): Design Project #1 (a) Prototype (b) Soldering/testing*

BJT switches

FET switches

*Lab 4: Buck converter*

Oscillators

Comparators

*Lab 5: Servo Motor Controller*

Active Filters

Differential Amplifiers

*Lab 6 (requires report): Design Project #2 (a) Prototype (b) Soldering/Testing (c) Demo*

Feedback Topologies

Stability