ENGR 321
Electronics

Fall 2019

Instructor: **Dr. Siming Guo**

Office Address
Phone Number
Email address
Office Hours

Webpage: We will use the Moodle course management system.

Class Times: MWF, 9-10am, Smith 113

Texts: *Microelectronics, 4th ed,* Donald A. Neamen

Description: This course covers the analysis, modeling and design of electrical circuits that contain electronic devices. Topics include: properties of electronic materials, behavior of devices such as p-n junction diodes, field effect transistors and bipolar junction transistors, operational amplifiers, and transistors in digital circuits. Electronics design principles via a systems approach is emphasized

Outcomes: At the end of the course, the student will be able to:

1. Find voltages and currents throughout a resistive circuit with independent and dependent sources, and calculate the power consumption by each component, using mesh current and node voltage methods
2. Formulate the Thevenin and Norton equivalents for linear circuits
3. Describe and calculate the transient behavior of RLC circuits and filters
4. Represent AC circuit quantities using phasors or complex numbers, and calculate RMS voltages, currents, and power
5. Apply knowledge of mathematics, science, and engineering
6. Identify, formulate, and solve engineering problems

Grading: Grades will be assigned as follows:

A	90.0 – 100	exceptional work, significantly above the expectations of the course
B+	85.0 – 89.9	
B	80.0 – 84.9	excellent work, solid understanding of all concepts
C+	75.0 – 79.9	
C	70.0 – 74.9	good work, solid understanding of main concepts
D+	65.0 – 69.9	
D	60.0 – 64.9	poor work, weak understanding of main concepts

Homeworks:	20%
Exams (3):	60%
Project:	15%
Participation:	5%

Attendance: STUD-SENA-332: Unexcused Absence Penalties – an instructor is permitted to impose a penalty, including assigning the grade of F, for unexcused absences in excess of 25 percent (11 classes) of the regularly scheduled class meetings.
STUD-SENA-332 also lists the valid circumstances for an excused absence, notably:

- Incapacitating illness
- Official representation of the university
- Death of a close relative
- Religious holidays

Homework: Homework will be assigned on a weekly basis. It will be due the following week at the beginning of class (within the first 10 minutes). Late work will incur a penalty of 20% (additive) per day.

Exams: There will be three exams during the semester, in class. If you will miss a test for a valid reason, a make-up test will be arranged. However, you must give me prior notice by email, and supporting documentation will be required. There is no final exam for the class.

Project: There will be a project, due on the last day of class.

Honesty: Code of Student Conduct: Plagiarism, cheating, attempted cheating and all other forms of academic dishonesty is prohibited. This includes copying on homework or tests, using unauthorized aids on tests, and knowingly aiding another student. The Code of Student Conduct provides further information, including other examples of cheating and the list of possible sanctions.

Online resources: You will need to access the circuit simulator Multisim Live (www.multisim.com). You will also need a smartphone or laptop in class to access www.padlet.com.

Contingencies: If normal class and/or lab activities are disrupted due to illness, emergency, or crisis situation, the syllabus and other course plans and assignments may be modified to allow completion of the course. If this occurs, an addendum to your syllabus and/or course assignments will replace the original materials.

Communication: I will try to respond to emails within one business day. Please use your @coastal.edu email.

ADA statement: Coastal Carolina University is committed to equitable access and inclusion of individuals with disabilities in accordance with the Americans with Disabilities Act and Section 504 of the Rehabilitation Act. Individuals seeking reasonable accommodations should contact Accessibility & Disability Services (843-349-2503 or https://www.coastal.edu/disabilityservices/).

Revisions: This syllabus and schedule are tentative and subject to change by the instructor with notice to the student as the semester progresses.

Schedule:

Week		Section	Monday	Wednesday	Friday
1	8/19	Diodes and transistors	No class	Circuit review	Circuit review
2	8/26		pn junction	Diodes	Diode applications
3	9/2		Labor Day	Solar cells, LED	BJT
4	9/9		MOSFETs	Transistor applications	Logic circuits
5	9/16		TBD	Review	Exam 1
6	9/23	Operational amplifiers and stability	Transfer functions	BJT freq. response	FET freq. response
7	9/30		Op amps	Op amp applications	Student Holiday
8	10/7		Op amp applications	Op amp applications	Equivalent circuits
9	10/14		Stability	Non-ideal op amps	Non-ideal op amps
10	10/21		TBD	Review	Exam 2
11	10/28	Power electronics	Power amplifiers	Zener diodes	AC-DC converter
12	11/4		Pulse width modulation	Buck converter	Boost converter
13	11/11		Efficiency	Data sheets and design	Data sheets and design
14	11/18		TBD	Review	Exam 3
15	11/25	Project	Thanksgiving		
16	12/2		Project	Project	Project