

CSE 403 – Circuit Design and Analysis

SYLLABUS

Spring 2019

Instructor: Professor Yunfei Hou

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Office Hours: Monday, Wednesday 1 pm - 2 pm, and by appointment.

Class meeting time and place: **Lecture:** Monday, Wednesday 2:00 pm - 3:15 pm CE104; **Lab:** Monday, Wednesday 3:30 pm - 4:50 am JB 356.

Learning Management System: <http://blackboard.csusb.edu>

Student Learning Outcomes: This course introduces the student to the principles of analysis and design of digital and analog circuits. Specifically, students are expected to:

- Master basic circuit elements (e.g., resistors, capacitors, inductors, op-amps)
- Analyze analog circuits that include energy storage elements in the time and frequency domains, both theoretically and experimentally.
- Master the fundamental methods and principles in electric circuit theory so that they can extend these principles as a way of thinking to solve problems in mathematics, science, and engineering.
- Learn how to work efficiently both individually and in groups.
- Be able to evaluate their personal understanding of the concepts and ideas discussed in the class

Prerequisites: CSE 310, MATH 251, and PHYS 150. To receive credit for this course, you must also be registered in the lab part of it.

Grading: Assignments 25%, Labs 25%, Midterm 25%, Final 25%

Letter grades are assigned using the following criteria. The average referenced is calculated using the breakdown shown above.

A:	$\text{average} \geq 93.333$
A-:	$93.333 > \text{average} \geq 90$
B+:	$90 > \text{average} \geq 86.667$
B:	$86.667 > \text{average} \geq 83.333$
B-:	$83.333 > \text{average} \geq 80$
C+:	$80 > \text{average} \geq 76.667$
C:	$76.667 > \text{average} \geq 73.333$
C-:	$73.333 > \text{average} \geq 70$
D+:	$70 > \text{average} \geq 66.667$
D:	$66.667 > \text{average} \geq 65$
F:	$65 > \text{average}$

At the end of the quarter, a curve may be applied to help the class. Determination of whether a curve will be applied occurs at the end of the quarter after all graded components have been graded. Individual components are not curved.

Textbook (Required): *Basic Engineering Circuit Analysis 11th Edition* by J. David Irwin, R. Mark Nelms, Wiley 2014, ISBN-13: 978-1118992661, ISBN-10: 1118992660

Final: Friday, June 14th, 2019 2:00 PM - 3:50 PM

Attendance: It is expected that the student will attend all lectures. The student is responsible for all material covered in class, and also for all announcements made therein, e.g. the date of the Midterm Exam. Attending and participating during lectures and labs is important in doing the homework and completing the labs.

Labs: Labs are an important component of understanding the material of the course. You will be working in groups of two. Both partners are expected to contribute equally to the projects. If both names appear in a report, it will be normally assumed that the partners contributed equally. A partner must not put the name of a non-contributing partner on a report. Any partner has the right to dismiss the other partner. Unfinished labs will require work outside the lab sessions to be completed. The instructor and the teaching assistant are not to write program code for you. Debugging is part of the learning process, and sometimes can be time consuming and frustrating.

Homework: Homework, approximately four assignments, is to be done **individually**. It is due at the beginning of the class meeting on the due date. Homework must be neat, preferably typed. Illegible homework will not be graded. Problems must be in sequence with all work shown. Points will be deducted for sloppy work. Late submissions will result in a 20% penalty per day. A day is defined as 24 hours after the day/time the assignment is due (excluding weekends or school holidays). After five (5) school days, the assignment will no longer be accepted. Extenuating circumstances will be considered. Documentation may be asked. In such cases, the student must inform the instructor via email or in person as soon as the problem arises or at least 3 days before the due day.

Grading questions: All questions regarding a grade must be made within 7 calendar days from the day the graded work has been returned in class or from the day grades for the class have been recorded on Blackboard. It is the student's responsibility to inquire for unpicked work or an unrecorded grade (which is interpreted as zero) within the 7-days. After that, the grade will be fixed. Work done in pencil may not be considered for re-grade.

Electronic devices: All devices capable of electronic communication, such as mobile phones or tablets, must be turned off in class. Electronic devices and accessories must not be visible or worn during an exam. Disrupting the class via technology, or otherwise, will not be allowed.

Material collection: Copies of some graded work will be retained for accreditation purposes. All returned graded work must be saved in case it is asked for accreditation purposes.

Academic integrity: According to the CSUSB Catalog of Programs, plagiarism and cheating may result in penalties up to and including expulsion. Students are allowed and encouraged to discuss the material related to assignments, however writing down the solutions must be done individually. Exchanging solutions or parts of solutions is not allowed. When it comes to the attention of a student that possibly dishonest behavior took place, the student must report it to the instructor. At the very least cheating on an assignment will result in a grade of zero.

Consult the Academic Regulations and Procedures for University Policies: <http://bulletin.csusb.edu/academic-regulations/>

Accessibility: If you are in need of an accommodation for a disability in order to participate in this class, please see the instructor and contact Services to Students with Disabilities at (909)537-5238.

If you require assistance in the event of an emergency, you are advised to establish a buddy system with a buddy and an alternate buddy in the class. Individuals with disabilities should prepare for an emergency ahead of time by instructing a classmate and the instructor.

Outline of Course: (Approximate and subject to change)

Week	Topic
1	Chap. 1, 2: Introduction, KVL, KCL, serial/parallel resistors, wye-delta transformation
2	Chap. 3: Nodal and loop analysis
3	Chap. 4: Operational amplifiers
4	Chap. 5: Additional analysis techniques
5	Chap. 6,7: Capacitors, First- and second-order transient circuits
6	Midterm Exam, Chap. 8: AC steady-state analysis
7	Chap. 8,11: Sinusoidal steady-state analysis, Three phase circuits
8	Chap. 13, 14: Laplace transform theory and properties, Laplace transform in circuit analysis
9	Chap. 13: Fourier transform
10	Chap. 15: Fourier analysis techniques