# EEC100 – Circuit II

**Winter Quarter 2019**

**Course Description:** Theory, application and design of analog circuits. Methods of analysis including frequency response, SPICE simulation, and Laplace transform. Operational amplifiers and design of active filters.

**Prerequisites**: ENG 17, Circuits I

**Lecture schedule:** Mon, Wed 4:10-5:30 pm; Mon, Wed 5:40-6:00 pm. 226 Wellman

**Laboratory schedule:** Session A01 (CRN 32335): Fri 10:00am-12:50pm. 2161/2157 Kemper
Session A02 (CRN 32336): Tue 4:10-7:00pm. 2161/2157 Kemper

**Instructor:** Prof. Weijian Yang (wejyang@ucdavis)
Office: 3127 Kemper
Office hour: Mon 2:50-3:50 pm, Wed 1:50-3:50 pm @ 3127 Kemper

**Teaching assistant:** Session A01 (Fri): Hadi Bameri, hbameri@ucdavis
Tongning Hu, tnhu@ucdavis
Session A02 (Tue): Saleh Hassanzadehyamchi, shasanzadeyamchi@ucdavis
Hao Wang, haowang@ucdavis

There will be TA office hours one hour before and one hour after lab sessions in 2161/2157 Kemper:
Tue "3:10-4:10pm", and "7:00-8:00pm"
Fri "9:00-10:00am", and "12:50-1:50pm"

**Textbook:**
*James W. Nilsson and Susan A. Riedel, Electric Circuits, 10th Edition, Pearson, 2014.*
It is very important to read the textbook carefully in additional to the lecture notes.
**Optional reference:**
*C. K. Alexander, and M. N. O. Sadiku, Fundamentals of Electric Circuits, Mc-Graw Hill, 2017.*
*F. Ulaby, M. Maharbiz, and C. Furse, Circuits, National Technology & Science Press, 2015.*

**Chapters covered in textbook:** 5, 9, 12, 13, 14, 15, 16, 18. This course covers a lot of material and it is really important to keep up with the class. It is strongly recommended that you review the course materials right after each lecture, and do not allow yourself to get behind! If you feel you are falling behind, talk to your instructor or your TAs, study harder, come to office hours more and ask for help quickly!

**Review of ENG17:** This course will make heavy use of the material covered in ENG 17, Circuits I. It is strongly suggested that you review Chapters 1-4 and 6-9 and Appendices A & B of the textbook. If you learned the material from another textbook, you should review the corresponding material in that book and then review our textbook to learn of any differences in notation.

**Canvas:** Most of the information for this course will be provided on canvas, including course announcements, lecture notes, homework assignments and solutions, practice tests, etc. This information will be updated frequently during the quarter. Instead of sending emails to the instructor or TA, students are encouraged to post questions and answers in Canvas. Homework solutions should not be discussed in Canvas.

**Homework:** Assigned most weeks on Friday, due by 5:00pm the following Friday. You need to submit both a physical copy of your homework (to homework box in 2131 Kemper) and a scanned copy of your homework through Canvas. Please write your name, homework number, and course number. Late submissions will not be accepted without prior approval from the instructor. The graded homework will be returned in 2131 Kemper one week after the homework is submitted. The homework solutions will be made available on Canvas. Homework copied from others will be considered cheating. All students involved with copying will receive a no-appeal grade F for the course.

**Laboratory:** The instructions for each week's lab session will be posted on Friday of the preceding week on Canvas. You MUST finish the prelab before each lab session. The experimental and simulation work will be done in the ECE lab in rooms 2161 and 2157 on the second floor of Kemper Hall. Report to room 2161 on the first day of lab. Components such as resistors, capacitors, inductors, integrated circuits, and wires will be available. You need to use your Kerberos credentials to login to the laboratory computers.

A complete record of your work in the laboratory is to be maintained in a notebook, as described in the "Lab_info" document uploaded on Canvas. Lab reports are due by the beginning of the next lab session after you complete the experiment. For example, the report for Lab2 is due at the beginning of the lab period when you work on Lab3. Please submit a physical copy of the reports to your TA. In addition, please submit a scanned copy of your lab reports through Canvas.

**Exams:** There will be a midterm and a final examination for this course on the following schedule:
Midterm Exam: Wednesday, February 13th, 4:10-6:00pm, 226 Wellman
Final Exam: Monday, March 18th, 8:00–10:00am, 226 Wellman

The examinations will be closed book, but you can bring one page of notes for the midterm and two pages for the final exam (8 1/2" x 11" paper, both sides). Calculators will be allowed, but will not be critical in the examinations. PDAs, smart phones, laptops, or portable computers, such as pocket PCs, are not allowed. Further information on examination content will be given in class prior to each examination.

Requests for make-up examinations will only be approved in cases that strong written justification can be provided. The instructor must be contacted, in advance, about missing an exam and requests for make-up exams.

**Re-grading:** If you think you deserve more credit for submitted work, write a short note indicating what should be reconsidered and return it to the TA or instructor within one week after the graded material is returned.

**Grading:** letter grade based on the following

- Homework: 12%
- Laboratory reports: 25%
- Quizzes: 3%
- One midterm: 25%
- One final: 35%

**Academic Integrity:** Cheating and plagiarism will not be tolerated. Professional integrity is an important aspect of all engineering and science disciplines.

**Acknowledge the Code of Academic Conduct:** All students are required to acknowledge the Code of Academic Conduct for each registered course, no later than the quarter add deadline. my.ucdavis.edu will notify students online and through email for the action.
Please read the code of Academic Conduct at http://sja.ucdavis.edu/files/cac.pdf
Please also visit https://participate.ucdavis.edu/

**Course flow:**
Week 1: Review of ENG17, operational amplifier (Ch5)
Week 2: Phasor and sinusoidal steady-state analysis (Ch9)
Week 3: Filter (Ch14) [Note: Monday 01/21/2019, university holiday]
Week 4: Filter (Ch14)
Week 5: Active filter (Ch15)
Week 6: Fourier series (Ch16) [Note: Wednesday 02/13/2019, midterm exam]
Week 7: Fourier series (Ch16) [Note: Monday 02/18/2019, university holiday]
Week 8: Laplace transform (Ch12)
Week 9: Laplace transform in circuit analysis (Ch13)
Week 10: Two-port networks (Ch18)
Final exam 03/18/2019