

**Department of Electrical & Computer Engineering
The University of Kansas**

EECS 212- Circuits II

Spring, 2024

Catalog Data: EECS 212 Circuits II (4). Continued study of electrical circuits: Steady state power analysis, three-phase circuits, transformers, frequency response, two-port network analysis. Prerequisites: EECS 202

Textbook: **Fundamentals of Electric Circuits**, 7th edition by Alexander and Sadiku, McGraw Hill, 2021

Software: **Cadence** (which includes Pspice and PCB Layout) is available on EECS network computers under the program heading “Cadence PSD”

Course Objectives:

This course is to complete the study by sophomores in electrical engineering and computer engineering of the basics of the analysis of linear electrical circuits and to provide an introduction to their design.

Prerequisites by Topics:

Basic dc and ac circuit analysis
Pspice computer program for circuit analysis

Course Topics:

Review of steady state sinusoidal analysis
Frequency response, Bode diagrams
Magnetically coupled networks
ac power analysis
Polyphase circuits
Two-port networks
Distributed Circuits & Transmission Lines

Tools Usage:

Pspice circuit analysis and pcb layout software
Circuit test equipment

Laboratory topics:

AC/DC circuits
Transient circuits
Operational Amplifiers
Transformers
Frequency response and filters
Two-port network measurement techniques

Estimated Course Content: Engineering science: 4.0 hours or 100%

Instructor: Kenneth R. Demarest

3028 Eaton Hall 864-7395

email: demarest@ku.edu website: <http://people.eecs.ku.edu/~demarest>

Office Hours: 1:00 - 3:00 MWF

9:30-10:30 and 1:30-3:00 T,Th

Zoom: Meeting ID: 955 1144 2187 Passcode: 411316 (arrange with email)

Lab TA: Anjana Lamsal email: lamsalanjana@ku.edu

website: https://people.eecs.ku.edu/~j400d084/eecs212_lab/

Grading: The following percentages will be used to arrive at the final grade scores

| | |
|----------------------|-------|
| Exam I | .22.5 |
| Exam II | .22.5 |
| Final Exam | .25 |
| Laboratory | 20 |
| Homework.. | .10 |

Final letter grades are determined from the final grade scores using a scale determined at the end of the semester by the instructor's evaluation of the overall class performance and the difficulty and curve of the exams, but is typically similar to the traditional 90-100 A, 80-90 B, etc. **A passing grade must be earned in each of the three grade categories (exams, lab, and homework) to earn a passing grade for the course. In addition, a composite exam score of C or above must be attained to earn a course grade of C or above.** EECS 212 will *not* utilize +/- grading system. Changes announced in class supersede these written instructions.

Homework: Homework will be collected at the beginning of class on roughly a weekly basis. Late homework is not accepted, except for unusual circumstances. Collaboration with classmates is permitted. Copying from any source is *not* permitted and will be penalized.

Special Needs: Any student who has a disability that demands special accommodations should contact the instructor personally in order to make arrangements. Also, members of KU sanctioned organizations (band, athletic teams, etc.) that have special needs should also contact the instructor as the need arises.

Make-ups: Make-up exams are given rarely, and only if: 1) I am informed IN ADVANCE, and 2) I deem the reason to be sufficiently meritorious (job interviews and pleasure trips are not). If the reason is illness, I REQUIRE documentation of the illness from a health-care professional. I do not consider a cold to be an illness.

Academic Misconduct: Instances of cheating failure of class and referral to the Dean. Cheating includes, but is not limited to: copying another exam or lab report, copying of hardcopy or online solution manuals or previously worked homework papers, having another person do your work, etc.

Syllabus

| <u>Week</u> | <u>Topic/Chapter</u> |
|---|---|
| 1 | Laplace/Phasor Analysis Review/ Chapter 10, 16 & Instructor Notes |
| 2 | AC power / Chapter 11 |
| 3-4 | 3-phase power / Chapter 12 |
| 5 | Magnetically coupled circuits and Trnasformers/ Chapter 13 |
| Exam I (Wednesday, February 28- tentative). | |
| 6-9 | Network Transfer Functions/ Frequency response / Chapter 14 |
| 10-11 | Two-port networks/ Chapter 19 |
| Exam II (Monday, April 15 - tentative). | |
| 12-15 | Distributed circuits & transmission lines |
| Final Exam (comprehensive, Thursday, May 9 from 10:30am – 1:00pm). | |