

EE223 Electrical Circuits

Spring 2020, 3 credit hrs

- Class Info:** Time: T/R 2:00 - 3:15 PM
Location: AER 135
- Instructor:** Prof. Xian Cao
AERB 346, Phone: 293-9684
Email: xacao@mix.wvu.edu
- Web Page:** eCampus – Handouts, assignments, solutions and grades will be posted on the web page. Time critical information will be sent to your MIX e-mail account.
- Office Hours:** T/R 12:30-1:30 pm, 3:30-4:00 pm, or by appointment. If my door is open at other times, feel free to step by and ask questions.
- Pre/** Pre-requisite: EE 221, EE 222, MATH 251, and PHYS 112.
Corequisites: Co-requisite: EE 224
- Required Text:** *Fundamentals of Electrical Circuits*, 6th edition, by Alexander and Sadiku.
- Supplemental Reading** William H. Hayt, Jack E. Kemmerly, and Steven M. Durbin, *Engineering Circuit Analysis*, 8th Ed., McGraw-Hill, 2012, ISBN 0073529575.
- Objectives:** To perform power analysis of 3-phase AC circuits, understand magnetically coupled circuits and transformers as circuit components, perform transient analysis of RL, RC, and RLC circuits, and become acquainted with the fundamentals of the Laplace and Fourier transforms as they apply to electric circuit analysis.
- Outcomes:** Students will be able to
- Perform single-phase and balanced three-phase power calculations
 - Solve problems of magnetic coupling and transformers in linear circuits
 - Find the natural and step responses of RL, RC and RLC circuits
 - Solve linear circuit problems using the Laplace transform
 - Perform circuits analysis in the frequency domain

Tentative Class Schedule:

<u>Major lecture topics to be covered</u>	<u>Approx. Week</u>
Course description	1
Brief review of EE221 (Chaps. 1-6, 9-11)	1
Three-phase circuits (Chap. 12)	2, 3
Magnetically coupled circuits (Chap. 13)	4, 5
Exam #1	
First-order RL and RC circuits (Chap. 7)	6-8

Second-order RLC circuits (Chap. 8)	8-11
Exam #2	
Complex frequency and the Laplace transform (Chap. 15)	12, 13
s-domain circuit analysis (Chap. 16)	14, 15
Fourier circuit analysis (Chap. 18)	16
Final Exam	

Grading Policy:

Homework	12%
Exam #1&2	56% (2 at 28% each)
Final Exam	32%
Grades will generally be 90-100% =A, 85-89%=A-, 75-84% =B, 65-74% =C, etc.	

Homework and Exams: You need to practice to be successful in this class. There will be approximately six homework assignments given throughout the semester. Homework is due at the start of class on the due date. *Late homework will not be accepted.* Your solutions should be neatly written or typed and printed. All work submitted for the homework and exams must be your own unaided work. However, you may confer with your colleagues on interpretation and approach to homework problems. Each set of homework will be given a letter grade. If you believe that the grader has made a mistake in grading, you may come to see me and request a re-grade within one week that the assignment or exam is returned.

Attendance: Attendance is strongly encouraged. Attendance may be recorded at random times throughout the semester. In any case, you will be responsible for all the material covered in class and posted on the course webpage even if it is not in the textbook. It is your responsibility to make sure that all assignments are turned in on time and that you are aware of all announcements made in class. Please arrive to class on time. Consistent with WVU guidelines, students are allowed to make up class work (e.g. homework assignments and exams) missed due to university sanctioned absences (<http://catalog.wvu.edu/undergraduate/enrollmentandregistration/#enrollmenttext>). For absences due to other reasons, make-up exams may not be given unless you have the absences approved before the scheduled exams.

Academic Integrity: The integrity of the classes offered by any academic institution solidifies the foundation of its mission and cannot be sacrificed to expediency, ignorance, or blatant fraud. It is important for you to maintain the highest ethical standards as outlined in WVU’s Student Conduct Code and Discipline Procedure, which can be found online at <http://bit.ly/2hBUt4P>. The definitions of acts considered to fall under academic dishonesty and possible academic penalties are described in WVU Catalog: <http://bit.ly/2hDAeUa>. Rigorous standards of academic integrity will be enforced in all aspects and assignments of this course. *The use of smart devices (including smart-phones, smart watches, tablets, cameras, wearable devices, etc.) on exams and quizzes is prohibited.* Should you have questions about any activity that may be interpreted as an attempt at academic dishonesty, please see me to discuss the matter.

Social Justice Statement: The West Virginia University community is committed to creating and fostering a positive learning and working environment based on open communication, mutual respect, and inclusion. If you are a person with a disability and anticipate needing any type of accommodation in order to participate in this class, please advise me and make appropriate arrangements with the Accessibility Services (293-6700). For more information on West Virginia University's Diversity, Equity, and Inclusion initiatives, please see <http://diversity.wvu.edu>.