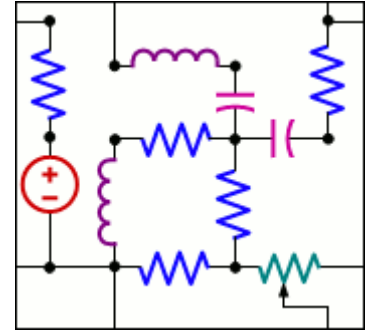


Electric Circuit Analysis

(Phys 332)
Spring 2024

What am I doing here? At the end of this course, you will be able to analyze the properties and behavior of linear electronic systems. You will understand the difference between DC and AC circuits, as well as the differences between steady-state and transient behaviors. You will be able to develop both analytic solutions and simulations to characterize circuits. You will be exposed to analysis in both time and frequency domains.

The textbook for this class is *Principles and Applications of Electrical Engineering*, by G. Rizzoni & J. Mark Kearns (6th edition, Wiley; ISBN 978-0-07-352959-2). You may also use other editions, since assignments will use CAPA.



Do I have to get anything besides the textbook? You will be required to use a free software package called “CircuitMod” to complete some of your assignments. This software lets you draw virtual electric circuits and examine their behavior. You should download it from the maker here:

<https://sourceforge.net/projects/circuitmod/>

How will I be graded? Your grade will be determined by:

Assignments:	25%
Quizzes:	10%
Midterm Exams:	40% (20% each for 2 exams)
Final Exam:	<u>25%</u>
	100%

When are the tests? Here is a **tentative** schedule of exams. Exams #1 and #2 are currently scheduled as “in class” exams. If the entire class (including Dr. Pogo) agrees, then any exam time, date, or length can be changed (to a two hour evening exam, for example). Such changes will not affect the exam questions itself. In any case, the time limit for these exams will not exceed two hours.

Exam #1: Tuesday, March 5, 2024

Exam #2: Tuesday, April 9, 2024

Exam #3: Friday, May 10, 2024 (final exam, noon)

What if I have trouble with the homework? Visit me during office hours on Discord (see times listed above, using the server <https://discord.gg/GjKWREU>) and I’ll try to point you in the right direction. Also, I know that most of you will work in groups, and I won’t attempt to stop it. However, the learning is in the doing. Nobody on this planet learns from copying somebody else’s work, no matter how clear or correct it is. Every part of every problem that you let somebody else do for you is something that you are deciding that you just don’t want to learn. You will not have their help on exams!

ECA: Tentative Schedule

Tuesday, January 23, 2024 Class 1: Circuit Elements & Terminology	Thursday, January 25, 2024 Class 2: Kirkhoff's Laws; Ohm's Law
Tuesday, January 30, 2024 Class 3: Series, Parallel, Delta, "Y" Assign #1 Due	Thursday, February 1, 2024 Class 4: Matrix Methods
Tuesday, February 6, 2024 Class 5: Simplification & Linear Algebra Assign #2 Due	Thursday, February 8, 2024 Class 6: LEDs; Wheatstone Bridge
Tuesday, February 13, 2024 Class 7: Switches, Relays, Diodes	Thursday, February 15, 2024 Class 8: Intro to Transistors Assign #3 Due
Tuesday, February 20, 2024 Class 9: NPN Transistors	Thursday, February 22, 2024 Class 10: Ideal Op-Amps
Tuesday, February 27, 2024 No Class: Diversity Summit	Thursday, March 29, 2024 Class 11: Op-Amp Applications Assign #4 Due
Tuesday, March 5, 2024 Class 12: Exam #1	Thursday, March 7, 2024 Class 13: Photodiodes
Tuesday, March 12, 2024 Spring Break	Thursday, March 14, 2024 Spring Break
Tuesday, March 19, 2024 Class 14: Thevenin & Norton Equivalences Assign #5 Due	Thursday, March 21, 2024 Class 15: Capacitors & Inductors
Tuesday, March 26, 2024 Class 16: 1 st Order Transient Behavior Assign #6 Due	Thursday, March 28, 2024 Class 17: 2 nd Order Transient Behavior
Tuesday, April 2, 2024 Class 18: Transients, part III Assign #7 Due	Thursday, April 4, 2024 Class 19: AC Circuits & Phasors
Tuesday, April 9, 2024 Class 20: Exam #2	Thursday, April 11, 2024 Class 21: Phasors & Complex Analysis
Tuesday, April 16, 2024 Class 22: RLC Filters Assign #8 Due	Thursday, April 18, 2024 Class 23: Frequency Response
Tuesday, April 23, 2024 Class 24: AC Rectifiers Assign #9 Due	Thursday, April 25, 2024 Class 25: Gytrators
Tuesday, April 30, 2024 Class 26: Transformers Assign #10 Due	Thursday, May 2, 2024 Class 27: Transformers, part II
Tuesday, May 7, 2024 Class 28: Review	
Wednesday, May 8, 2024 Assign #11 Due	Friday, May 10, 2024 Final Exam (noon)

SUNY Geneseo
Department of Physics and Astronomy
Class: TR 11:00am; ISC 229
Web: www.geneseo.edu/~pogo

Online Office Hours:
MW 8:30-10:20; T 8:30-9:20; M 1:30-2:20 (<https://discord.gg/GjkWREU>)

Dr. Pogo
Office: ISC 228D
E-mail: pogo@geneseo.edu

Learning Outcomes:

At the end of this course, students will:

- be able to analyze the properties and behavior of linear electronic systems
- understand the principles of common non-linear electronic elements (relays, diodes, transistors)
- understand the difference between DC and AC circuits
- understand the differences between steady-state and transient behaviors
- be able to develop simulations to characterize electronic circuits.
- be exposed to analysis in both time and frequency domains.