



University of Wisconsin Platteville
Department of Electrical and Computer Engineering

Course Syllabus

GE 2930 Applications of Electrical Engineering

Spring 2019

Instructor

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Lectures-B

Tuesday and Thursday, 12.00 p.m.-12.50 p.m., Engineering Hall, Room 0107

Laboratory-L1

Tuesday / Thursday, 1.00 p.m.-1.50 p.m.; Engineering Hall 0337

Office Hours

Time	Monday	Tuesday	Wednesday	Thursday	Friday
8.00AM					EE 1020 – L2 - Lab
9.00AM		EE 3770 – L2 - Lab			
10.00AM	EE 1210 – A1 - Lab		EE 1210 – A2 - Lab	Office Hour	EE 1210 – A3 - Lab
11.00AM	EE 1210 - B - Lecture	EE 1210 – B3 - Lab	EE 1210 - B - Lecture	Office Hour	EE 1210 - B - Lecture
12.00PM	EE 1210 – B2 - Lab	GE 2930 – 01 - Lecture		GE 2930 – 01 - Lecture	EE 1210 – B1 - Lab
1.00PM		GE 2930 – L1 - Lab	Office Hour	GE 2930 – L1 - Lab	Office Hour
2.00PM	Office Hour		Office Hour		
3.00PM	EE 1020 – L1 - Lab		Office Hour	Office Hour	
4.00PM			Office Hour	Office Hour	
5.00PM					

Updated office hour will be available on **Canvas**. Students can also meet me any other times by appointment.

Topics Covered & Prerequisites

Voltage, current, resistance, power, and impedance. Op-amps. Phasors. Ohm's law, Kirchhoff's laws, superposition, source transformation, and Thevenin's and Norton's theorems applied to the modeling of zero-order networks. Complex numbers and algebra. AC circuit analysis.

Prerequisites: PHYSICS 2340 General Physics II. Not open to Electrical Engineering majors.

Textbooks

1. *Fundamentals of Electrical Circuits (5th Ed.)*, by C. K. Alexander and M. N. O. Sadiku

Additional books: *(Student doesn't need to buy these books)*

1. Circuits (3rd Edition) by Fawwaz T. Ulaby, National Technology & Science Press, 2016
2. Engineering Circuit Analysis (7th edition), by William H. Hayt, Jr. and Jack E. Kemmerly, McGraw-Hill Companies, 2007.
3. Introductory Circuit Analysis (10th edition), by Robert L. Boylestad, Prentice Hall PTR Upper Saddle River, NJ, USA ©2002.
4. Electric Circuits (10th Edition), by James W. Nilsson, Susan Riedel, Pearson, 2014.

Expected Learning Outcomes

1. Ability to calculate voltage, current, and power in electrical circuits with Kirchhoff's and Ohm's laws. (1)
2. Ability to solve DC/AC electrical circuits with nodal and mesh analysis, linearity, superposition, and Thevenin's and Norton's theorems. (1)
3. Understanding of phasors, impedance, resistance, reactance, admittance, conductance, and susceptance. (1)
4. Ability to analyze and design simple amplifier circuits that use op amps. (1 and 6)
5. Ability to use power supplies and to measure various quantities with a multimeter. (6)
6. Ability to construct circuits on a breadboard and to test them experimentally. (1 and 6)
7. Ability to work safely in a laboratory. (1, 2, and 6)
8. Ability to use a function generator and oscilloscope. (1, 2, and 6)
9. Ability to write good reports. (3)

Associated Program Outcomes

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3. An ability to communicate effectively with a range of audiences
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies

Course Outline

- Units and circuit elements (1-2 classes)
- Ohm's law, Kirchhoff's laws, and combinations of resistors (2-4 classes)
- Nodal and Mesh Analysis (2-3 classes)

→ Midterm 1

- Linearity, superposition, and source transformations (2-3 classes)
- Thevenin's and Norton's theorems (2 classes)
- Op-Amp circuit (3-4 classes)

→ Midterm 2

- Capacitor and inductor (3-4 classes)
- Complex number and algebra (1-2 classes)
- AC Analysis (3-4 classes)

→ Final Exam

Homework

Homework will consist of assigned problems from textbooks. Any question from homework will be answered during the lecture times or during the office hours. All the homework will be considered in your grade, and it is strongly recommended that you complete ALL the homework. The presentation of all the completed homework assigned prior to each exam is required to make any appeal on the exam grade.

- All homework submissions will be on Canvas within specific due time.
- **All Canvas submissions must be in pdf and all other submission format will get zero.**
- Homework must be completed in a neat and orderly fashion, using only one side of the sheet of paper with enough work shown that the solution can be easily followed. **No credits will be given, if you just copy the answer without any reasonable derivation or explanation unless permission has been given in the assignment sheet.**
- Your name and section number must be at the upper right-hand corner of first page;
- If there are multiple pages, add them in a **single pdf file**.
- Both the assignment number and the problems included must be listed below your name on the first page.
- Each problem in the assignment must be clearly labeled.

Exams

There will be 2/3 midterm examinations and one comprehensive final exam. Student must participate each exam for the passing grade and each exam date will be announced ahead of time. Exams will be closed book, and closed notes. Any material presented in reading assignments, homework, laboratory or lecture through the lecture prior to the test day may be on the exam.

Note: Make-up exam might allow only in justified cases (e.g., medical and emergency issues).

Laboratory

There will be 5/6 laboratory projects and **all labs must be completed to receive a passing grade for the course. Department will supply all the lab equipment's needed for the labs.**

1. Student will work in a group (i.e., 2 students per group).
2. Each group should go through the whole procedure, collect data and write one report per group.
3. Each lab report must follow the Informal Lab Report Format. (see the link below)
https://campus.uwplatt.edu/files/college-of-ems/PDFs/electrical_engineering_report_formats.pdf
4. Student must submit their lab report on **Canvas** within the due time.
5. **All Canvas submissions must be in pdf (other submission format will get zero)**
6. If there are multiple pages, add them in a single pdf file.

Lab grades will be based on the followings:

1. Pre-laboratory preparation.
2. Demonstration of measurements to the instructor in the laboratory (the instructor may ask questions to make sure he/she understands the contents covered in the lab).
3. Overall quality of the written report.

Class Attendance Policy

Class attendance is not required but strongly recommended. Since, we will do example problems, group works, and random quizzes, so attendance will strongly influence your grade. You are responsible for materials covered in classes you missed, and you should get copies of notes from the students who were present.

Late Submission Policy

Student must follow the due dates for any submission (e.g., homework, quiz, and lab report, etc.) and **no late submission will be accepted unless it's an emergence** (e.g., family emergence or health issues). In case of emergence, student must contact the instructor immediately and submit enough proof for that (e.g., medical report or doctor visit etc.). For any circumstances, **student must avoid the following excuses:**

1. Somehow forget the due date and looking for the extended due date.
2. Mistakenly submit work from another course and want to resubmit.
3. Submit only one page and forget to add all pages as a mistake.
4. No health issue excuse without proper documents.
5. Prepare for the exam for other courses and looking for the extended due date.
6. If you cannot submit it online because of any technical error, you must show the exact error message as a proof.
7. You submit it online, but it's not showing as an error.

Grading Policy

Grades will be based on quizzes (10%), homework (20%), midterm examination (25%), laboratory assignments (20%), and a final exam (25%).

A = 4.00 (>93.0%)	B+ = 3.30 (87.0-89.9%)	C+ = 2.30 (77-79.9%)	D+ = 1.30 (67-69.9%)
A- = 3.70 (90.0-92.9%)	B = 3.00 (83.0-86.9%)	C = 2.00 (73-76.9%)	D = 1.00 (60-66.9%)
	B- = 2.70 (80.0-82.9%)	C- = 1.70 (70.0-72.9%)	F = 0.00 (<60%)

Grades on individual pieces of work will not be changed more than one week after the assignment is returned to the class. This includes any late work or any appeals (see homework section below).

Grades on individual pieces of work will be posted in Canvas. Unless otherwise indicated, grades reported on Canvas represent only the score for each individual piece of work. Any computation of grades performed by the Canvas software should be disregarded. Course grades can be determined by the formula given in the syllabus. The instructor's grading spreadsheet contains the only copy of official grades.

Academic Misconduct

Cheating on any assignment will result in reduction of the students' grade or dismissal from the course. Any submitted work with an overwhelming similarity between two or more students work will be deemed as plagiarism, and only 50% of the lowest point given among the similar works will be distributed between the grades of those with the similar works. **Studying in a college is an honor for everyone, and every credit he/she earned must result from his/her own efforts.**

Religious Observances

Students have the right to miss class for religious observances. Students wishing time off for this reason should let the instructor know within the first two days of class.

SSWD

If you need an accommodation due to a disability, please make an appointment to see me during my office hours. A VISA from Services for Students with Disabilities authorizing your accommodations will be needed. Contact 608-342-1818 for more information about SSWD.

Computer Uses

MS Word, Power Point, and Excel will be used.

How to Access Course Materials?

Please follow the steps below:

1. Follow the link below and log on to Canvas with your NetID
<https://campus.uwplatt.edu/canvas>
2. Select the course (Applications of Electrical Engineering) from the Dashboard