KENNESAW STATE UNIVERSITY

SYLLABUS
KENNESAW STATE UNIVERSITY
ELECTRICAL & COMPUTER ENGINEERING
EE 2305: ELECTRONIC CIRCUITS AND MACHINES
FALL 2024

Course Information

Class meeting time: no in-person meetings – all course material is on D2L
Lab meeting times: Mon or Weds 3:30pm – 6:15 pm
Modality and Location: Lecture online; Lab in person (Q335)
Syllabus is posted in D2L

Instructor Information

Name: Sheila Hill
Email: sdoneho1@kennesaw.edu
Office Location: Q337C
Office phone: (470) 578-2408
Office Hours: Posted on D2L
Preferred method of communication:

- For general questions about course content, assignments, due dates, etc, use the **Ask the Professor a Question** discussion board (you may post anonymously if you wish).
- For specific questions, whether they are personal questions concerning absences, extensions, etc OR if you want me to check your work to see if it's correct before submitting it, email me directly.

Communications will be answered within 24 hours on weekdays and 48 hours on weekends, but in general responses from me are much sooner than that.

Course Description

3 Class Hours, 1 Laboratory Hours, 4 Credit Hours
Prerequisite: PHYS 2212 or ISYE 2600
This course covers the electrical characteristics of fundamental circuit components including resistors, capacitors and inductors in DC circuits, single-phase AC, and three-phase AC circuits. Fundamental concepts of AC power and phasors are examined. The course also introduces the devices that generate and transform electrical power, as well as switching and protection of electrical circuits. Practical applications of motors, generators, transformers, and operational amplifiers will be covered to provide non-electrical engineering majors a comprehensive understanding of electro-mechanical systems.

Course Materials

Suggested Text (not required):

- William Hayt, Jack Kemmerly and Steven Durbin, Engineering Circuit Analysis, 8th Edition, McGraw-Hill Higher Education, 2011, ISBN-13: 978-0073529578.

Reference Texts (current or older editions will work equally well as references):

- James A. Svoboda and Richard C. Dorf, Introduction to Electric Circuits, 9th Edition, John Wiley & Sons, 2013.
- James W. Nilsson and Susan Riedel, Electric Circuits, 10th Edition, Prentice Hall, 2014.
- Joseph A. Edminister and Mahmood Nahvi, Schaum's Outline of Electric Circuits, 5th Edition, McGraw-Hill, 2011.

Technology Requirements

- You must have access to a computer with reliable internet access, sound and video capabilities. Some of the activities may be completed with a tablet, but that should not be your only way to access course materials since some activities, quizzes especially, sometimes don't work properly.
- You will need a word processing program such as MS Word in order to complete lab reports. There are also activities involving Matlab, LTspice and possibly Excel that can be done on your own computer or in the computer lab in Q220. The computers in the EE labs also have all the software you need.
- You must check your campus email regularly - sometimes important information about the class is dispensed this way.

Assignments that require Dropbox submissions (lab reports, test calculations, etc) should be submitted **ONLY in pdf format.** If you have images that need to be submitted, put them into a Word document and save as a pdf file. Images by themselves are not acceptable because they can be very difficult to read.

Course Software Skills

- Students are expected to be familiar with Microsoft Word and Microsoft Excel and should be able to create a pdf file. Some familiarity with MATLAB is helpful but not required.

Learning Outcomes

Upon successful completion of this course, you should be able to perform the following tasks:

1. Define Electrical Terms: Voltage, Current, Resistance and Power and Circuit Laws of Ohm's Law, Kirchhoff's Voltage Law and Kirchhoff's Current Law
2. Use Nodal or Mesh analysis to analyze resistive networks.
3. Analyze or simplify a circuit using Thevenin's equivalence to calculate maximum power transfer.
4. Use fundamental rules of electricity and magnetism related to capacitance and inductance and their effect on voltage and current in network elements and physical forces induced in conductors.
5. Perform basic calculations related to RC and Operational Amplifier circuits for high-pass, low-pass, band-pass, band-stop, and all-pass filtering.
6. Analyze a single-phase AC circuit using knowledge of phasors and impedances.
7. Calculate the real power, reactive power, apparent power, and/or power factor for a circuit or element.
8. Discuss the fundamentals of balanced three phase electric circuits and delta-wye conversion.
9. Discuss the theory behind magnetically coupled circuits and transformers and develop an ability to analyze transformer mechanical design, cooling, cooling media, and safety mechanisms.
10. Discuss theory related to switches, circuit breakers, fuses, lightning arresters, current transformers, potential transformers, protective relays, and associated circuitry.
11. Analyze AC and DC machinery voltages, currents and forces.
12. Discuss theory related to synchronous generators, induction motors and DC motors and analyze them in conjunction with sensors for feedback control.

Course Requirements and Assignments

Assessment Descriptions:

Tests:

- The purpose of the tests is to assess a student's ability to successfully perform tasks associated with the course objectives.
- Three tests will be given during the semester, generally after weeks 5, 10, and 15 during a regular semester
- General test solutions will be available after the tests are graded.

Final Exam

- Similar to the semester tests, the purpose of the final exam is to assess a student's ability to successfully perform tasks associated with the course objectives.

- The primary difference between a semester test and the final exam is that the scope of topics assessed in the final exam is comprehensive.
- The final exam is 120 minutes in duration.
- The final exam may be exempted if your **TEST** average (not including any bonus points) is 90 or above

Participation

- Participation assignments are activities that are included in some modules but are not homework assignments or tests.
- They can be discussion activities, videos to watch, or other miscellaneous items.
- The lowest participation assignment is dropped.
- Participation assignments are due on Sunday at 11:59pm during the week they are assigned
- Late participation assignments will incur a **50% point penalty** and are **not guaranteed to be graded** depending on date of submission

Homework

- The homework assignments are designed primarily to assist in learning the module objectives.
- There is one homework assignment per weekly module - each homework may be attempted three times.
- Late assignments will not be accepted.
- The two lowest homework assignments are dropped.

Evaluation and Grading Policies

Midterm Grade:

A midterm grade will be assigned by the midterm grade due date identified on this semester's academic calendar. This midterm grade is for assessing mid-semester performance prior to the last day to withdraw without academic penalty. You may view your midterm grade in Owl Express. Note that only your final grade will be officially recorded on your academic transcript.

Grading Scale:

The grading scale that relates your final grade percentage to the letter grade you will be awarded for this course is presented in the table below:

EE 2305 Grading Scale	
Final Grade Percentage	Letter Grade
90 – 100	A
80 – 89	B
70 – 79	C
60 – 69	D
0 – 59	F

Final grades will be rounded up to the nearest whole number.

EE 2305 Grade Composition	
Assessment Category	Percentage Weighting (%)
Tests (3)	30 (final replaces lowest)
Final Exam	20
Participation Assignments	15
Homework	15
Lab	20

Course Policies

Attendance Policy:

- Each student is responsible for the lecture content covered on D2L.
- No make-up tests will be administered, unless a credible excuse is given prior to your absence, or in the case of an emergency, on the day of your return to class.
- Students are solely responsible for managing their enrollment status in a class; nonattendance does not constitute a withdrawal.

Appealing a Grade:

- You may appeal any grade received.
- All appeals for re-evaluation of a grade must be made within **one week** of the assessment being returned to you.
- The instructor reserves the right to re-grade the entire exam, homework assignment, or project.

Netiquette Guidelines

- Kennesaw State University's netiquette guidelines can be found here
- Basically, treat people well and everything will be fine.

Feedback in a Timely Manner:
The following table lists the maximum turn-around times on the different types of assessments used in this course.

EE 2305 Feedback Times	
Assessment Category	Max. Turn-around Times
Semester Exams	1 week
Final Exam	1 week
Participation Assignments	Immediate
Homework Assignments	Immediate

Institutional Policies

Federal, BOR, & KSU Required Syllabus Policies

KSU Student Resources

This link contains information on help and resources available to students: KSU Student Syllabus Resources

Course Schedule

KEY:

P = Participation Exercise

HW = Homework

T = Test

EE 2305 Course Schedule Fall 2024			
Week	**Dates**	**Content Covered**	**Due Dates**
01	08/12 – 08/18	Voltage, Current and Resistance	Syllabus Quiz / HW1 due 08/18
02	08/19 – 08/25	Ohm's Law and Power	VT Intro / HW2 due 08/25
03	08/26 – 09/01	KVL & KCL	HW3 due 09/01
04	09/02 – 09/08	Nodal & Mesh Analysis	HW4 / P01 due 09/08
05	09/09 – 09/15	Thevenin's Theorem & Max Power Transfer	HW5 due 09/15
06	09/16 – 09/22	Operational Amplifiers	T01 due 09/18 P02 / HW6 due 09/22
07	09/23 – 09/29	Capacitors & Inductors	HW7 due 09/29
08	09/30 – 10/06	Impedance & AC Circuits	P03 / HW8 due 10/06
09	10/07 – 10/13	Filters	HW9 due 10/13
10	10/14 – 10/20	Integrators, Differentiators & PIDs	P04 / HW10 due 10/20
11	10/21 – 10/27	Single-Phase AC Power	T02 due 10/23 HW11 due 10/27
12	10/28 – 11/03	Transformers & 3-Phase Power	P05 / HW12 due 11/03
13	11/04 – 11/10	Generators & Motors	HW13 due 11/10
14	11/11 – 11/17	Synchronous & Induction Motors	P06 / HW14 due 11/17
15	11/18 – 11/24	Circuit Protection Devices	T03 due 11/20 / HW15 due 11/24
	11/25 – 12/01	**Thanksgiving Break**	
	12/03 – 12/04	Final Exam Available (due 12/04)	