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Electronic Circuits and Machines

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Electronic Circuits and Machines EE 2305
Electrical Engineering Department
Southern Polytechnic College of Engineering and
Engineering Technology
Kennesaw State University

Faculty and Course Information

Prof Sheila D Hill, PE

Office: Q337C

Phone: [\(470\) 578-2408](tel:4705782408)

Email: sdoneho1@kennesaw.edu

Class Location: D2L

Class Meeting Times: D2L

Lab Location: Q335

Lab Meeting Times: Monday or Wednesday 9:30am - 12:15 pm (see lab schedule for details)

Course Communication – My office hours for this semester are posted on the home page for this course on D2L. The best way to communicate with me outside of office hours is to send a message to either my email account or through D2L. Any communications sent to me by email or D2L will typically be answered within 24 hours, with the exception of weekend communications, where my response time may be 48 hours. Please note that direct email communication will generally be answered faster than communication through D2L.

Electronic Communications – The University provides all KSU students with an “official” email account with the address “students.kennesaw.edu.” As a result of federal laws protecting educational information and other data, this is the sole email account you should use to communicate with your instructor or other University officials.

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

References:

1. James A. Svoboda and Richard C. Dorf, Introduction to Electric Circuits, 9th Edition, John Wiley & Sons, 2013.
2. James W. Nilsson and Susan Riedel, Electric Circuits, 10th Edition, Prentice Hall, 2014.

3. Joseph A. Edminister and Mahmood Nahvi, Schaum's Outline of Electric Circuits, 5th Edition, McGraw-Hill, 2011.
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COVID-19 Special Conditions for Fall 2022

Course Delivery

KSU may shift the method of course delivery at any time during the semester in compliance with University System of Georgia health and safety guidelines. In this case, alternate teaching modalities that may be adopted include hyflex, hybrid, synchronous online, or asynchronous online instruction.

COVID-19 illness

If you are feeling ill, please stay home and contact your health professional. In addition, please email your instructor to say you are missing class due to illness. Signs of COVID-19 illness include, but are not limited to, the following:

- Cough
- Fever of 100.4 or higher
- Runny nose or new sinus congestion
- Shortness of breath or difficulty breathing
- Chills
- Sore Throat
- New loss of taste and/or smell

COVID-19 vaccines are a critical tool in "Protecting the Nest." If you have not already, you are strongly encouraged to get vaccinated immediately to advance the health and safety of our campus community. As an enrolled KSU student, you are eligible to receive the vaccine on campus. Please call [\(470\) 578-6644](tel:4705786644) to schedule your vaccination appointment or you may walk into one of our student health clinics.

For more information regarding COVID-19 (including testing, vaccines, extended illness procedures and accommodations), see KSU's official [Covid-19 website](#).

Face Coverings

Based on guidance from the University System of Georgia (USG), all vaccinated and unvaccinated individuals are encouraged to wear a face covering while inside campus facilities. Unvaccinated individuals are also strongly encouraged to continue to socially distance while inside campus facilities, when possible.

Course Description, Credit Hours and Prerequisites

3 Class Hours 3 Laboratory Hours 4 Credit Hours

Prerequisite: PHYS 2212 or pre-approval of instructor

Corequisite: MATH 2306

This course covers basic component characteristics of resistors, capacitors and inductors in DC circuits and in single-phase and three-phase AC circuits. AC power is examined so that devices that generate, transform, switch and protect electrical power can be covered. An introduction of the practical application of motors, generators, transformers and motor controls will provide non-electrical engineering majors a basic understanding of electro-mechanical system

Course Objectives

The primary objectives of this course is for the students to:

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.

Requirements/Grading Scale

Grading

Grade Composition:

The table below lists the categories of assessments that will be used throughout the semester and the percentage weighting that each category will contribute towards your final grade.

EE 2305 Grade Composition	
Assessment Category	Percentage Weighting (%)
Tests (3)	30
Final Exam	20
End of Module Homework	15
Participation	15
Lab	20

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

Assessment Descriptions:

Tests

- The purpose of the tests is to assess a student's ability to successfully perform tasks associated with the module objectives.
- There are three tests per semester, generally given after weeks 5, 10, and 15.

Final Exam

- 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 tests 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 and will be available during final exam week.
- The final exam may be exempted if your **test** average (not including any bonus points) is 90 or above.

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.

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

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.
- The only assignments that require Dropbox submissions are lab materials and submitted work for tests. These 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.

- You MUST have access to a webcam for use during the three semester tests and the final exam.

Course Policies

Attendance Policy

- Each student is responsible for the content covered in class.
- Laboratory exercises are required and must be attended on time.
- No make-up exams 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.

Course Behavior

- Students are expected to be courteous and abide by proper internet protocol: be respectful of others in the class when posting, no foul language or otherwise offensive communications.
- Students are expected to take an active part in laboratory activities.

Course Technology

- The online coursework can only be completed by accessing D2L.
- Students are expected to access the internet outside of the classroom. It is a good idea to have a couple of backup locations for internet access in case of outages.
- Students should know how to use MS Word/Excel
- Students should have a scientific calculator, either graphing or non-graphing

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 Time
Tests	1 week
Final Exam	1 week
Homework Assignments	Instant
Participation	1 week
Laboratory Reports	2 weeks

Course Withdrawal

Please refer to the [KSU Undergraduate Catalog](#).

Academic Integrity

Every KSU student is responsible for upholding all provisions of the Student Code of Conduct, as published in the Undergraduate and Graduate Catalogs. The Code of Conduct includes the following:

- Section II of the Student Code of Conduct addresses the University's policy on academic honesty, including provisions regarding plagiarism and cheating, unauthorized access to University materials, misrepresentation/falsification of University records or academic work, malicious removal, retention, or destruction of library materials, malicious/intentional misuse of computer facilities and/or services, and misuse of student identification cards. Incidents of alleged academic misconduct will be handled through the established procedures of the University Judiciary Program, which includes either an "informal" resolution by a faculty member, resulting in a grade adjustment, or a formal hearing procedure, which may subject a student to the Code of Conduct's minimum one semester suspension requirement.
- Students involved in off-campus activities shall not act in a disorderly or disruptive fashion, nor shall they conduct any dangerous activity.
- Students involved in off-campus activities shall not take, damage or destroy or attempt to take, damage or destroy property of another.

Federal, BOR & KSU Course Syllabus Policies

Information contained in the links below constitutes the Federal, BOR, and KSU course

syllabus policies and procedures and may be referenced by faculty members in their course syllabi. These policies are updated on the Academic Affairs Website annually.

[Academic Affairs - Federal, BOR, & KSU Policies](#)

[Academic Affairs - KSU Student Resources for Syllabus](#)