KENNESAW STATE UNIVERSITY

SYLLABUS

SOUTHERN POLYTECHNIC COLLEGE OF ENGINEERING AND ENGINEERING TECHNOLOGY
ELECTRICAL AND COMPUTER ENGINEERING
EE 2301: CIRCUIT ANALYSIS I
FALL 2023

Course Information

Class meeting time: *MWF 11:15 AM – 12:05 AM*
Modality and Location: *Hybrid course; ETC 311*
Syllabus is posted in D2L

Instructor Information

Name: *Dr. Craig A. Chin*
Email: cchin2@kennesaw.edu
Office Location: *ETC 344*
Office phone: *(470) 578- 7272*
Office Hours: *MWF 10:00 AM – 11:00 AM, TR 3:00 PM – 4:00 PM (online)*
Preferred method of communication: *email*

Course Description

3 Class Hours 3 Laboratory Hours 4 Credit Hours
Prerequisites: PHYS 2211, PHYS 2211L
This course introduces basic circuit analysis including resistive circuits, voltage and current sources, analysis methods, network theorems, energy storage elements, and AC steady-state analysis. Techniques for analyzing resistive networks are heavily emphasized. In addition, the physical mechanisms of capacitance and inductance are examined along with analysis of transient responses in circuits containing resistors, capacitors, and inductors. Laboratory exercises reinforce the theoretical concepts presented in class and provide various opportunities to become proficient with standard instrumentation used in electrical engineering.

Course Materials

Required Texts:
> *William Hayt, Jack Kemmerly, Jamie Phillips and Steven Durbin, Engineering Circuit Analysis, 9th Edition, McGraw-Hill Higher Education, 2018, ISBN-13: 978-0073545516.*

Recommended Texts:
1. *Robert L. Boylestad, Introductory Circuit Analysis, 12th Edition, Prentice Hall, 2010.*
2. *James W. Nilsson and Susan Riedel, Electric Circuits, 10th Edition, Prentice Hall, 2014*

Technology requirements: *Internet access*

Learning Outcomes

Upon successful completion of this course, you should be able to perform the following tasks:
1. *Apply voltage division, current division, element combination, and/or source conversion to analyze or simplify a circuit having series and/or parallel elements.*
2. *Use nodal or mesh analysis, employing either the supernode or supermesh approach, to write a complete set of equations for a circuit having voltage sources, current sources, and dependent sources.*
3. *Analyze or simplify a circuit using principles such as superposition, Thevenin/Norton equivalence, maximum power transfer, and delta-wye conversion.*
4. *Determine the voltage or current equation for an element in a transient RC or RL circuit having a non-zero initial and/or final voltage or current. Compute the energy being stored in a capacitor or an inductor.*
5. *Apply knowledge of phasors and impedances to analyze a sinusoidal steady-state circuit.*
6. *Compute real power, reactive power, apparent power, and/or power factor for a circuit or element.*
7. *Derive the equation(s) needed to relate the behavior of a circuit to its circuit elements. Select element values that will satisfy specifications for circuit behavior.*
8. *Use circuit simulation software, such as PSPICE, to analyze a circuit. Use mathematical computation software, such as MATLAB or Mathcad, to solve or plot circuit equations.*

Course Requirements

Attending class attendance, whether in-person or online, during scheduled meeting times is expected, but attendance will not be recorded.

Evaluation and Grading Policies

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.

Table 1 - Grade Composition Table

Assessment Category	Percentage Weighting (%)
Tests	40
Labs	25
Final Exam	25
Module Quizzes/Homework Assignments/Group Assignments	10

Assessment Descriptions:
Tests
- *The purpose of the tests is to assess a student's ability to successfully perform tasks associated with the course objectives.*
- *4 tests of 50 minutes duration will be given during the semester.*
- *A test will typically cover the content of 2 chapters.*

Labs
- *All lab grades are equally weighted.*

- All pre-lab requirements must be completed prior to attending the lab in order to receive full marks for the pre-lab portion of the lab. There will be a 30% deduction from the pre-lab portion of your grade for any incomplete pre-lab assignment.
- Unless otherwise specified, laboratory reports will be due by the beginning of the following laboratory period.
- Laboratory reports that are not handed in during the following lab period will receive a 30% deduction.

Final Exam

- Like the 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 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.

Module Quizzes

- Module quizzes are administered online through D2L and are used to perform basic assessments of a student's understanding of content associated with a specific module.
- Typically, you should NOT attempt a module quiz without reviewing the content of that module first. This is because questions in the module quiz may be based on key concepts found in the module.
- Grading of module quizzes are performed online immediately after submission.

Homework

- The homework assignments are designed primarily to assist in learning the module objectives.
- As a result, grading will place a greater emphasis on how the problem is solved as opposed to simply arriving at a correct answer.
- Each problem will have a grade value of 4 points.
- The points will be awarded to a problem according to the table below.
- On the due date of a homework assignment, half of a class period will be devoted to answering any assignment questions.
- If you will be absent on the due date of a homework assignment, you will have the option of submitting it to an assignment folder by the due date.
- Homework solutions will be posted on D2L after the corresponding due date.
- Only the top 4 of 8 homework assignments will be counted towards your final grade.
- **Late assignments will not be accepted.**

Table 2 - Homework Problem Grading Guideline

Homework Problem Task	Grade (Points)
Write out the problem (given values), including any associated diagrams	0.5
Indicate the values to find	0.5
Show your work	2.5
Correct Answer	0.5

Group Assignments

- The purpose of a group assignment is to give each student a more thorough understanding of salient concepts taught in a class/module, that is, the module objectives.
- Group assignments will also help to prepare you for the demands of a real work environment, in which projects are completed by a team of professionals.

- *Groups consisting of no more than three members will be assigned by the professor for the class session in which a group assignment is being held.*
- *The answers to all group assignment questions will be posted the day the assignment has been completed.*
- *If you are going to miss a group assignment session, you can complete the assignment on your own and submit it to an assignment folder on that session date.*
- ***Late assignments will not be accepted.***

Grading Scale:

Table 3 - Grading Scale Table

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

I will round up grades if they are >= .0 or above, for example, an 89.0 is an A, but 78.9 is a C.

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

Table 4 - Assessment Feedback Times

Assessment Category	Max. Turn-around Times
Tests	2 weeks
Labs	2 weeks
Final Exam	1 week
Module Quizzes	Immediate
Homework Assignments	1 week
Group Assignments	1 week

Course Policies

Attendance Policy
- *Attendance must be regular and punctual.*
- *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, test, lab, homework assignment, or group assignment.*

Classroom Behavior
- Students are expected to be attentive during class, that is, there should be no sleeping, no texting, and no sustained, casual conversations.
- Students are expected to take an active part in classroom activities.

Course Technology
- As noted in the previous section on grading, some assessments can only be completed by accessing D2L.
- In addition to this, a large number of course resources will be made available online through D2L.
- As a result, students are expected to access the internet outside of the classroom.
- If you do not have internet access at home, please obtain access in one of the various computer labs on campus.

Department or College Policies

COVID-19 Policies

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 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.

Institutional Policies

[Federal, BOR, & KSU Course Syllabus Policies](#)

[Student Resources](#)

[Academic Integrity Statement](#)

KSU Student Resources

This link contains information on help and resources available to students: [KSU Student Resources for Course Syllabus](#)

Course Schedule

Table 5 - Course Schedule

Day	Date	Topic	Reading (Textbook Sections)	In-Class Activities	Out-of-Class Activities
1	08/14	Syllabus Review, Introduction	1.1 – 1.12	Lecture	Syllabus Quiz
2	08/16	Basic Components and Electric Circuits	2.1 – 2.2	Lecture, instructor-led problem-solving	
3	08/18	Basic Components and Electric Circuits	2.3 – 2.4	Lecture, instructor-led problem-solving	Voltage and Current Laws pre-module quiz
4	08/21	Voltage and Current Laws	3.1	Ch. 2 HW review, lecture, instructor-led problem-solving	Ch. 2 HW assignment due
5	08/23	Voltage and Current Laws	3.2 – 3.5	Lecture, instructor-led problem-solving	
6	08/25	Voltage and Current Laws	3.6 – 3.8	Lecture, instructor-led problem-solving	
7	08/28	Voltage and Current Laws		Lecture, instructor-led problem-solving	
8	08/30	Voltage and Current Laws		Group assignment	Basic Nodal and Mesh Analysis pre-module quiz
9	09/01	Basic Nodal and Mesh Analysis	4.1	Ch. 3 HW review, lecture, instructor-led problem-solving	
	09/04	**Labor Day**			
10	09/06	Basic Nodal and Mesh Analysis	4.1	Lecture, instructor-led problem-solving	Ch. 3 HW assignment due
11	09/08	Basic Nodal and Mesh Analysis	4.2	Lecture, instructor-led problem-solving	
12	09/11	**Test 1 (Ch. 2 and Ch. 3)**			
13	09/13	Basic Nodal and Mesh Analysis	4.3	Lecture, instructor-led problem-solving	
14	09/15	Basic Nodal and Mesh Analysis	4.4 – 4.6	Lecture, instructor-led problem-solving	
15	09/18	Basic Nodal and Mesh Analysis		Group assignment	

16	09/20	Handy Circuit Analysis Techniques	5.1 – 5.2	Lecture, instructor-led problem-solving	
17	09/22	Handy Circuit Analysis Techniques	5.3	Lecture, instructor-led problem-solving	
18	09/25	Handy Circuit Analysis Techniques	5.3	Ch. 4 HW review, lecture, instructor-led problem-solving	Ch. 4 HW assignment due
19	09/27	Handy Circuit Analysis Techniques	5.3	Lecture, instructor-led problem-solving	
20	09/29	Handy Circuit Analysis Techniques	5.4 – 5.5	Lecture, instructor-led problem-solving	
21	10/02	Capacitors and Inductors	7.1	Ch. 5 HW review, lecture, instructor-led problem-solving	Ch. 5 HW assignment due
22	10/04	Capacitors and Inductors	7.1	Lecture, instructor-led problem-solving	
23	10/06	Capacitors and Inductors	7.2	Lecture, instructor-led problem-solving	
24	10/09	**Test 2 (Ch. 4 and Ch. 5)**			
25	10/11	Capacitors and Inductors	7.3 – 7.4	Lecture, instructor-led problem-solving	
26	10/13	Basic RL and RC Circuits	8.1 – 8.2	Lecture, instructor-led problem-solving	
27	10/16	Basic RL and RC Circuits	8.3	Ch. 7 HW review, lecture, instructor-led problem-solving	Ch. 7 HW assignment due
28	10/18	Basic RL and RC Circuits	8.3 – 8.4	Lecture, instructor-led problem-solving	
29	10/20	Basic RL and RC Circuits	8.5 – 8.6	Lecture, instructor-led problem-solving	
30	10/23	Basic RL and RC Circuits	8.6 – 8.7	Lecture, instructor-led problem-solving	
31	10/25	Basic RL and RC Circuits	8.8 – 8.9	Lecture, instructor-led problem-solving	Sinusoidal Steady-State Analysis pre-module quiz
32	10/27	Sinusoidal Steady-State Analysis	10.1	Lecture, instructor-led problem-solving	
33	10/30	Sinusoidal Steady-State Analysis	10.2	Ch. 8 HW review, lecture, instructor-led problem-solving	Ch. 8 HW assignment due
34	11/01	Sinusoidal Steady-State Analysis	10.2 – 10.3	Lecture, instructor-led problem-solving	
35	11/03	Sinusoidal Steady-State Analysis	10.4 – 10.5	Lecture, instructor-led problem-solving	
36	11/06	**Test 3 (Ch. 7 and Ch. 8)**			
37	11/08	Sinusoidal Steady-State Analysis	10.6 – 10.8	Lecture, instructor-led problem-solving	
38	11/10	Sinusoidal Steady-State Analysis		Group assignment	
39	11/13	AC Circuit Power Analysis	11.1	Ch. 10 HW review, lecture, instructor-led problem-solving	Ch. 10 HW assignment due
40	11/15	AC Circuit Power Analysis	11.2	Lecture, instructor-led problem-solving	
41	11/17	AC Circuit Power Analysis	11.3 – 11.5	Lecture, instructor-led problem-solving	

	11/20 – 11/26	**Fall Break**			
42	11/27	AC Circuit Power Analysis		Ch. 11 HW review	Ch. 11 HW assignment due
43	11/29	Test 4 Review	8		
44	12/01	**Test 4 (Ch. 10 and Ch. 11)**			
45	12/04	Course Review			
	12/06	**Final Exam (10:30 AM – 12:30 PM)**			