



SYLLABUS   
SPCEET  
Electrical Engineering

EE 2301: Circuit Analysis I  
Spring 2022

# Course Information

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Class meeting time: Tu/Thur 9:30AM-10:45AM (Lecture) -- Tu/Thur 11:00AM-1:45PM (Lab)

Modality and Location: Face to Face course at Q107 (with D2L)  
Syllabus is posted in D2L.

# Instructor Information

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Name: Dr. Tete Tevi

Email: ttevi@kennesaw.edu  
Office Location: Norton R2-115

Office phone: TBA

Office Hours: M/W 4:00PM-5:00PM  
Preferred method of communication: Email

# Course Description

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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.

# Prerequisites: Phys 2211, Phys 2211L

**Topics covered**

1. Basic components and electric circuits.
2. Kirchhoff’s voltage and current laws.
3. Basic nodal and mesh analysis.
4. Thevenin and Norton theorems, maximum power and superposition.
5. Capacitors and inductors.
6. Basic RL and RC 1st order transient circuits.
7. Sinusoidal steady-state analysis.
8. Complex forcing functions, impedance and phasors.

# Course Materials

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1. **Required Texts**: W. Hayt, J. Kemmerly, and S. Durbin*, Engineering Circuit Analysis*, 9th Edition, McGraw-Hill, 2019, ISBN 978-0073545516

**Technology requirements**: LTspice circuit simulation software (<https://www.analog.com/en/design-center/design-tools-and-calculators/ltspice-simulator.html>).

MATLAB – use KSU site license. Go to the KSU UITS site > Computing & Software Services > Software Downloads. Log in and find MATLAB for personal computers. This is the license file. You will need to download the software from Mathworks.

# Learning Outcomes

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* Apply voltage division, current division, element combination, and/or source conversion to analyze or simplify a circuit having series and/or parallel elements.
* 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.
* Analyze or simplify a circuit using principles such as superposition, Thevenin/Norton equivalence, maximum power transfer, and delta-wye conversion.
* 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.
* Apply knowledge of phasors and impedances to analyze a sinusoidal steady-state circuit.
* Compute real power, reactive power, apparent power, and/or power factor for a circuit or element.
* 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.
* Use circuit simulation software, such as LTspice, to analyze a circuit. Use mathematical computation software, such as MATLAB or Mathcad, to solve or plot circuit equations.

For more information about KSU’s General Education program requirements and associated learning outcomes, please visit [2020-2021 Undergraduate Catalog](http://catalog.kennesaw.edu/index.php)

# Course Requirements and Assignments

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Labs are required with submission of reports. Homework problems will be assigned.

# Evaluation and Grading Policies

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| **Course Evaluation** | Grade Composition | Grade Scale | |
| **Attendance/Participation** | 5% | 90 – 100 | A |
| **Homework** | 10% | 80 – 89 | B |
| **Test 1** | 20% | 70 – 79 | C |
| **Test 2** | 20% | 60 – 69 | D |
| **Final Exam** | 25% | Below 60 | F |
| **Lab** | 20% |  |  |

The grading scale may be adjusted when it is necessary at the instructor’s discretion. The instructor will return all graded assignments within 10 working days.

# Course Policies

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Late Turn-in and Re-grading

No late assignments will be accepted. Exams will not be considered for regrading later than the next class period after they are returned.

Makeup Exams and Incompletes

Makeup exams will be offered at the discretion of the professor and only for scheduled absences that are requested in writing at least one week in advance. Medical emergencies are the only exception to this rule. In case of such an emergency, the student must contact the professor as soon as possible to discuss the makeup. Grade “I” will be given only in extraordinary circumstances.

COURSE ENROLLMENT POLICY:

Students are solely responsible for managing their enrollment status in a class; nonattendance does not constitute a withdrawal.

Please note that attendance will be randomly taken at the instructor’s discretion.

# Institutional Policies

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[Federal, BOR, & KSU Course Syllabus Policies](https://cia.kennesaw.edu/instructional-resources/syllabus-policy.php)  
  
ACADEMIC HONESTY:

The high quality of education at Kennesaw State University is reflected in the credits and degrees its students earn. All assignments that take place in and out of the classroom must be your own work and original for this course. The protection of these high standards is crucial since the validity and equity of the University's grades and degrees depend upon it. Any student found to have violated any KSU academic honesty regulation after a hearing before a university hearing panel or before the Vice President for Student Success and Enrollment Services (or his/her designee) shall be suspended for at least one semester, unless the student persuades the deciding body that the circumstances of his or her behavior substantially mitigate the gravity of the violation. These regulations are designed to assist students in (1) developing appropriate attitudes about, and (2) understanding and following the university’s standards relating to academic honesty. The regulations protect students by helping them avoid committing infractions that may compromise the completion of their KSU degrees or damage their reputations.

Student Conduct Pledge/Statement: As a member of the Kennesaw State University community of scholars, I understand that my actions are not only a reflection on myself, but also a reflection on the University and the larger body of scholars of which it is a part. Acting unethically, no matter how minor the offense, will be detrimental to my academic progress and self-image. It will also adversely affect all students, faculty, staff, the reputation of this University, and the value of the degrees it awards. Whether on campus or online, I understand that it is not only my personal responsibility, but also a duty to the entire KSU community that I act in a manner consistent with the highest level of academic integrity. Therefore, I promise that as a member of the Kennesaw State University community, I will not participate in any form of academic misconduct.

See: The KSU Student Code of Conduct at <https://scai.kennesaw.edu/KSU_Codes_of_Conduct_2019-2020.pdf>

Enforcement: This policy is strictly enforced. Please note, I reserve the right to select any paper and/or assignment that are turned in for a grade for plagiarism review. Plagiarism review consists of running your paper/assignment through various search engines and databases at my disposal in order to check for “borrowed” or “bought” information. Students will be required to use TurnItIn.Com to have their papers reviewed for plagiarism. If you are found in violation of academic dishonesty, then you will be subject to the enforcement policies and procedures, as outlined by the University and the Department.

KSU SEXUAL MISCONDUCT POLICY:

Kennesaw State University adheres to KSU’s policy prohibiting sexual misconduct both in and out of the classroom. Questions about this policy should be directed to the KSU Equal Employment Opportunity (EEO) and Title IX officer by telephone at (**470)-578-2904** <https://equity.kennesaw.edu/titleix/title-ix.php> **.**You may also visit the University’s EEO website <https://careers.kennesaw.edu/employers/equal-employment.php> for more information.

COPYRIGHT LAW:

Kennesaw State University adheres to USG’s policy to respect the right of copyright. Holders and comply with copyright laws as set forth in the United States Copyright act. For more information, see the following link to USG’s policy: https://www.usg.edu/copyright/

# KSU Student Resources

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STUDENT RECORDS/FERPA:

Kennesaw State University adheres to the Family Educational Rights & Privacy Act of 1974 – FERPA. See the following link for more information: <https://ferpa.kennesaw.edu/index.php>

ELECTRONIC RECORDING AND SOCIAL MEDIA:

Electronic recording performed without the consent of the people being recorded chills the free exchange of ideas. Academic freedom, free inquiry, and freedom of expression should not be limited by the fear that one’s brainstorming, polemic discourse, speculative inquiry, or any other kind of expressed curiosity made within the space of a university classroom will be made public without one’s consent. This fear is unacceptable regardless of whether one is in an online, hybrid, or face-to-face classroom setting. Accordingly, no person shall make public any electronically recorded class discussion without the written permission of the instructor. This policy is not intended to discourage electronic recording in the classroom or the use of social media when such actions are performed with the written consent of the instructor, and others as appropriate. Note: Faculty accommodate all reasonable requests to electronically record a class discussion; these requests must be documented by the Disabled Student Support Services available at: <https://sds.kennesaw.edu/>

DISRUPTION OF CAMPUS LIFE STATEMENT:

It is the purpose of the institution to provide a campus environment, which encourages academic accomplishment, personal growth, and a spirit of understanding and cooperation. An important part of maintaining such an environment is the commitment to protect the health and safety of every member of the campus community.

Belligerent, abusive, profane, threatening and/or inappropriate behavior on the part of students is a violation of the Kennesaw State University Student Conduct Regulations. Students who are found guilty of such misconduct may be subject to immediate dismissal from the institution. In addition, these violations of state law may also be subject to criminal action beyond the university disciplinary process.

STUDENT SUPPORT/RESOURCES

The following resources and policies are found under this link: <https://cia.kennesaw.edu/>

DISABLED STUDENT SUPPORT SERVICES

In compliance with applicable disability law, qualified students with a disability may be entitled to reasonable accommodation. Any student with a documented disability (hidden or visible) needing academic adjustments, including classroom or test accommodations is requested to notify the instructor within the first two weeks of the course. Verification from KSU Disabled Student Support Services is required. All discussions and documentation will remain confidential.

Disabled Student Support Services

Please visit the [Student Disabilities Services website](https://sds.kennesaw.edu/) (<https://sds.kennesaw.edu/index.php>)for more information.

**Student Rights and Responsibilities**

Students of Kennesaw State University are entitled to an environment that is conducive to learning and individual growth. To this end, students enrolling at Kennesaw State University assume a responsibility to abide by the policies and regulations expressed in this section. By doing so, students may fulfill their responsibilities and enjoy the exercise of their own rights while also respecting the rights of others.

All rights and responsibilities may be found in the University Catalog at <http://catalog.kennesaw.edu/>

**COVID-19 Syllabi Statements**

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**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](https://www.kennesaw.edu/coronavirus/).

**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 Schedule**

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| **Week** | **Date** | **Topic** | **Textbook Reference** |
| --- | --- | --- | --- |
| 1 | Jan 11 / Jan 13 | Introduction, basic components and electric circuits | 1.1 – 1.5, 2.1-2.3 |
| 2 | Jan 18 / Jan 20 | Basic components and electric circuits | 2.4 |
| 3 | Jan 25 / Jan 27 | Voltage and current laws | 3-1-3-6 |
| 4 | Feb 1 / Feb 3 | Voltage and current laws | 3.7-3.8 |
| 5 | Feb 8 / Feb 10 | **Test 1 (2/10),** Nodal and mesh analysis | 4.1-4.3 |
| 6 | Feb 15 / Feb 17 | Nodal and mesh analysis | 4.4-4.5 |
| 7 | Feb 22 / Feb 24 | Nodal and mesh analysis, circuit analysis techniques | 4.6, 5.1-5.4 |
| 8 | Mar 1 / Mar 3 | Circuit analysis techniques, capacitors and inductors | 5.5-5.6, 7.1-7.2 |
|  | Mar 8 / Mar 10 | **Spring Break** |  |
| 9 | Mar 15 / Mar 17 | **Test 2 (3/15),** Capacitors and inductors, RL and RC circuits | 7.3-7.4, 8.1-8.2 |
| 10 | Mar 22 / Mar 24 | RL and RC circuits | 8.3-8.7 |
| 11 | Mar 29 / Mar 31 | RL and RC circuits | 8.8-8.9 |
| 12 | Apr 5 / Apr 7 | Sinusoidal steady-state analysis | 10.1-10.2 |
| 13 | Apr 12 / Apr 14 | Sinusoidal steady-state analysis | 10.3-10.4 |
| 14 | Apr 19 / Apr 21 | AC circuit power analysis | 11.1-11.2 |
| 15 | Apr 26 / Apr 28 | AC circuit power analysis, Review for Final Exam | 11.3-11.5 |
| Finals Week | Thursday, May 5, 2022 | Final Exam (Thursday, May 5, 2022 @ 10:30AM) |  |