



Syllabus

ELE 231 - Electrical Engineering Fundamentals, 25 Fall

0. Welcome Message



This course is a core foundation in the engineering curriculum, and I am glad to have you on board.

Across many universities, **EE Fundamentals** courses are often considered challenging. For many students, it is the first time diving deeply into electrical systems. Particularly, this area involves **new terminology, abstract thinking, and math modeling**.

To help ease your learning curve, we have re-structured the course to **emphasize weekly learning activities** rather than relying solely on exams. You will have more opportunities to build understanding steadily.

My advice: stay on pace with the course, practice problems, and study collaboratively with group peers. I wish you a good semester ahead!

1. Course Information

1.1 Course staff

Instructor: Prof. **Yue Cao** ycao70@syr.edu
(pronounced “U-A cow”)



Main TAs:

Javaria Aslam jaslam@syr.edu

Recitation M011, M12 and M014

Jiamin Zhao jzhao40@syr.edu

Recitation M009, M010 and M13

Grading for LTspice:

Peiying Chen pchen21@syr.edu

1.2 Help Information

* By Email:

You are encouraged to email the professor or TAs during regular weekday working hours (9:00 AM to 5:00 PM, Monday to Friday).

Email Title Template:

[ELE 231] Question on Knowledge Check 5

[ELE 231] Question on Capacitance Equations

* In person office hour: (start from Week 3)

Day	Time	Person	Location
Mo	5:00 – 5:59 PM	Jiamin Zhao	CST 3-230
Tu	2:00 – 2:59 PM	Yue Cao	CST 2-179
	3:30 – 4:29 PM	Javaria Aslam	TBD
We	5:00 – 5:59 PM	Javaria Aslam	TBD
Th	11:00 – 11:59 AM	Jiamin Zhao	CST 3-230
	1:30 – 2:29 PM	Yue Cao (in lab*)	CST 3-211
Fr	1:30 – 2:29 PM	Yue Cao (in lab*)	CST 3-211

In lab*: Yue Cao is in another lab during this time. You can drop by and ask questions.

2. About the Course

2.1 Description

This is a 3-credit course that includes a weekly recitation session.

2.2 Pre-requisite

MAT 295: Calculus I

2.3 Required Textbook

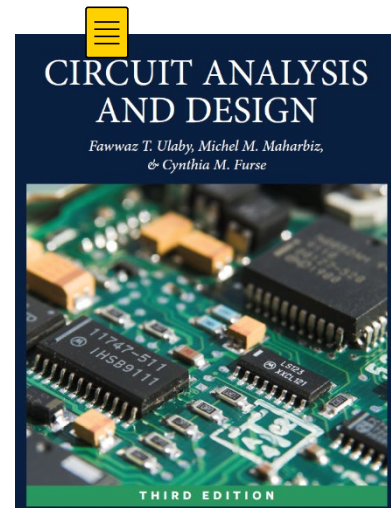
Circuit Analysis and Design (3rd Edition)

Fawwaz T. Ulaby, Michel Maharbiz, and Cynthia Furse

The free PDF version is available for download at:

<https://services.publishing.umich.edu/Books/Electrical-Engineering-Textbooks>

There is no need to purchase a paper copy of the textbook.



3. Learning Outcomes

A student who successfully fulfills the course requirements will have demonstrated the abilities to:

- * Identify and understand the basic electrical components.
- * Differentiate between current and voltage and explain the significance in circuits.
- * Apply Ohm's Law, Kirchhoff's Voltage Law (KVL), and Kirchhoff's Current Law (KCL) to analyze basic electrical circuits.
- * Use mesh analysis and nodal analysis to solve complex linear circuits.
- * Design and analyze basic operational amplifier (op-amp) circuits.
- * Analyze basic logic gate circuits.
- * Analyze differential equations representing RLC circuits.
- * Use SPICE-based simulator to analyze circuits.

4. Course Sessions

Students are required to attend weekly lectures and recitations.

* Monday and Wednesday lectures:

Regular lectures on the core course content.

* Friday lectures:

This is called the "presentation day". In every session, there will be about 4 groups of students presenting, including:

- Technology Brief on applications in electrical engineering.
- Problem-solving presentations on knowledge check, Recitation worksheet, or LTspice homework.

The group setting is same as Recitation. Each group will present only once.

* Recitation:

The TA will begin with a brief instructional lecture, then release a Worksheet for students to work on.

Students will sit in groups. Discussion is encouraged during the Worksheet activity; However, each student must submit their own individual paperwork.

5. Course Deliverables

There are totally 5 types of course deliverables. The maximum points a student can get is 105 points.

5.1 Weekly Knowledge Check (15 pts)

Each week, students are required to complete pre-class reading mostly from the textbook. Afterward, they must answer a set of knowledge questions on Blackboard. These questions may cover both material from the pre-class readings or from last-week lectures. This is individual work.

5.2 Weekly Worksheet in Recitation (20 pts)

Each week, students are required to complete a Worksheet during the Recitation session. The Worksheet will be provided in digital format on Blackboard, and students must submit a paper copy of their answers to the TA before the end of the recitation.

Students can discuss in groups. The final submission should be their individual paperwork.

Please bring a pen and blank paper to each Recitation.

TA can refuse to accept the Worksheet if a student is unexcused late for Recitation.

5.3 LTspice Homework (20 pts)

The LTspice homework is designed to help you apply circuit analysis concepts through simulation and visualization.

Students will submit their answers as a group.

5.4 Classroom Activity (10 pts)

5 points – Friday group presentation.

5 points – In-class questions.

There will be pop-up questions during random class sessions.

There will be more than 10 pop-up questions thru the semester, each worth 0.5 points.

5.5 Exams (Mid1 10 pts + Mid2 10 pts + Final 20 pts)

Exams are individual, open-note, closed-to-Internet.

Students may bring any amount of paper notes.

Computers or tablets can only be used to view the digital version of the textbook.

Calculators are allowed to use.

Cell phones are not allowed to use.

* **Midterm 1:** Oct 1 (Wednesday), 10:35AM - 11:30AM,
Heroy 001 Auditorium, Heroy Geology Laboratory,
([View the exam room via this link](#))

* **Midterm 2:** Nov 5 (Wednesday), 10:35AM - 11:30AM,
Heroy 001 Auditorium, Heroy Geology Laboratory

* **Final:** Dec 15 (Monday), 3:00PM - 5:00PM,
Gifford Auditorium, Huntington Beard Crouse,
([View the exam room via this link](#))

6. Grade

6.1 Grade Breakdown

The grade determination breakdown is as follows:

Knowledge Check: 15 pts

Recitation Worksheet: 20 pts

LTspice Homework: 20 pts

Classroom Activity: 10 pts

Exams: 40 pts (Mid1 10 + Mid2 10 + Final 20)

5.2 Grade Scale

90-105	A
87-89.99	A-
83-86.99	B+
80-82.99	B
77-79.99	B-
73-76.99	C+
70-72.99	C
67-69.99	C-
60-66.99	D
Below 60	F

** There is no extra curve adjustment to the final grade.

6. Late Policy

6.1 Late Knowledge Check

Not accepted.

One lowest grade thru the semester will be dropped.

6.2 Late LTspice Homework

-10% per day. After 5-day delay, grade will be zero.

6.3 Late Recitation Worksheet

- with Orange Success notification: email your corresponding TA for situation-based delay.
- without Orange Success notification: not accepted

6.4 Missing pop-up questions

Only if with Orange Success notification, the grade can be added back.

7. Attendance

Attendance in classes is expected in all courses at Syracuse University. It is a federal requirement that faculty promptly notify the university of students who do not attend or cease to attend any class. Faculty will use Early-Semester Progress Reports and Mid-Semester Progress Reports in Orange SUccess to alert the Registrar and Financial Aid Office on non-attendance. For more information visit:

<https://registrar.syr.edu/students/non-attendance/>

If a student is unable to participate in-person or virtually for an extended period of time (48 hours or more), the student may request an absence notification from their home school/college Dean's Office or through Student Outreach and Support office. Instructors will be notified via the "Absence Notification" flag in Orange SUccess.

Barnes Center at the Arch (Health, Counseling, etc.) staff will not provide medical excuse notes for students. When Barnes Center staff determine it is medically necessary to remove a student from classes, they will coordinate with Student Outreach and Support case management staff to provide appropriate notification to faculty through Orange Success. For absences lasting less than 48 hours, students are encouraged to discuss academic arrangements directly with their faculty.

8. Academic Integrity and Artificial Intelligence

As a pre-eminent and inclusive student-focused research institution, Syracuse University considers academic integrity at the forefront of learning, serving as a core value and guiding pillar of education. Syracuse University's Academic Integrity Policy provides students with the

necessary guidelines to complete academic work with integrity throughout their studies. Students are required to uphold both course-specific and university-wide academic integrity expectations such as crediting your sources, doing your own work, communicating honestly, and supporting academic integrity. The full Syracuse University Academic Integrity Policy can be found by visiting class.syr.edu, selecting, “Academic Integrity,” and “Expectations and Policy.”

Upholding Academic Integrity includes the protection of faculty’s intellectual property. Students should not upload, distribute, or share instructors’ course materials, including presentations, assignments, exams, or other evaluative materials without permission. Using websites that charge fees or require uploading of course material (e.g., Chegg, Course Hero) to obtain exam solutions or assignments completed by others, which are then presented as your own violates academic integrity expectations in this course and may be classified as a Level 3 violation. All academic integrity expectations that apply to in-person assignments, quizzes, and exams also apply online.

Students found in violation of the policy are subject to grade sanctions determined by the course instructor and non-grade sanctions determined by the School or College where the course is offered. Students may not drop or withdraw from courses in which they face a suspected violation. Any established violation in this course may result in course failure regardless of violation level.

Syracuse’s academic integrity expectations extend to the fast-growing realm of artificial intelligence (AI). For this course, **the usage of generative AI tools is:**

- ❖ **Allowed during study to help you understand concept**
- ❖ **Not allowed to finish any Knowledge Check, Worksheet, or LTspice homework**

Overall, in this class, generative AI is expected to be used as a learning tool to help you progressively build your understanding, rather than to directly solve the final problems.

9. Disability Syllabus Statement

Syracuse University values diversity and inclusion; we are committed to a climate of mutual respect and full participation. There may be aspects of the instruction or design of this course that result in barriers to your inclusion and full participation in this course. I invite any student to contact me to discuss strategies and/or accommodations (academic adjustments) that may be essential to your success and to collaborate with the Center for Disability Resources (CDR) in this process.

If you would like to discuss disability-accommodations or register with CDR, please visit Center for Disability Resources. Please call (315) 443-4498 or email disabilityresources@syr.edu for more detailed information.

The CDR is responsible for coordinating disability-related academic accommodations and will work with the student to develop an access plan. Since academic accommodations may require early planning and generally are not provided retroactively, please contact CDR as soon as possible to begin this process.

10. Discrimination or Harassment

Federal and state law, and University policy prohibit discrimination and harassment based on sex or gender (including sexual harassment, sexual assault, domestic/dating violence, stalking, sexual exploitation, and retaliation). If a student has been harassed or assaulted, they can obtain confidential counseling support, 24-hours a day, 7 days a week, from the Sexual and Relationship Violence Response Team at the Counseling Center (315-443-8000, Barnes Center at The Arch, 150 Sims Drive, Syracuse, New York 13244). Incidents of sexual violence or harassment can be reported non-confidentially to the University's Title IX Officer (Sheila Johnson Willis, 315-443-0211, titleix@syr.edu, 005 Steele Hall). Reports to law enforcement can be made to the University's Department of Public Safety (315-443-2224, 005 Sims Hall), the Syracuse Police Department (511 South State Street, Syracuse, New York, 911 in case of emergency or 315-435-3016 to speak with the Abused Persons Unit), or the State Police (844-845-7269). I will seek to keep information you share with me private to the greatest extent possible, but as a professor I have mandatory reporting responsibilities to share information regarding sexual misconduct, harassment, and crimes I learn about with the University's Title IX Officer to help make our campus a safer place for all.

11. Faith Tradition Observances

Syracuse University's Religious Observances Policy recognizes the diversity of faiths represented in the campus community and protects the rights of students, faculty, and staff to observe religious holy days according to their traditions. Under the policy, students are given an opportunity to make up any examination, study, or work requirements that may be missed due to a religious observance, provided they notify their instructors no later than the academic drop deadline. For observances occurring before the drop deadline, notification is required at least two academic days in advance. Students may enter their observances in MySlice under Student Services/Enrollment/My Religious Observances/Add a Notification.

12. Health & Wellness Considerations

Mental health and overall well-being are significant predictors of academic success. As such it is essential that during your college experience you develop the skills and resources effectively to navigate stress, anxiety, depression, and other mental health concerns. Please familiarize yourself with the range of resources the Barnes Center provides (<https://ese.syr.edu/bewell/>) and seek out

support for mental health concerns as needed. Counseling services are available 24/7, 365 days, at 315-443-8000.

13. Emergency Situations

In the event of an emergency, please use one of the following numbers to reach ORANGE ALERT:

From any phone: 315.443.2224

From your cell phone: #78 (#SU)

Campus landline: 711