ECE 2040 – Circuit Analysis

Course Syllabus

ECE 2040: Circuit Analysis

Credits: 3

Fall 2026

Instructor Information

Instructor: Yorai Wardi

Office: 429 TSRB

Email: ywardi@ece.gatech.edu

Office Hours:

- Mondays, 1:00 PM -- 2:00 PM
- Wednesdays, 11:00 AM — 12:00 PM

Graduate Teaching Assistant: TBD

TA Office Hours: TBD

Lecture Time: Monday and Wednesday, 8:00–9:15 am

Lecture Location: Klaus Advanced Computing Building, Room 2443

Course Description

This course covers the analysis of linear electric circuits, including basic electrical quantities, circuit elements, and operational amplifiers. Topics include Kirchhoff's laws, nodal and mesh analysis, network theorems, transient and sinusoidal steady-state behavior, frequency response, and power analysis, with an emphasis on modeling and problem solving in engineering applications.

Learning Outcomes

Upon successful completion of this course, students will be able to:

1. Analyze small RLC circuits by hand.
2. Use nodal and mesh analysis to formulate equations for large linear circuits.
3. Apply Thevenin and Norton theorems for circuit analysis and maximum power transfer.
4. Apply linearity and superposition in circuit and network analysis.
5. Analyze circuits containing ideal operational amplifiers.
6. Understand steady-state behavior as a fundamental concept in circuit theory.
7. Apply phasor techniques to AC circuits in sinusoidal steady state.
8. Analyze the frequency response of circuits containing inductors and capacitors.

Required Course Materials

- **Textbook:**

  Introduction to Electric Circuits
  James A. Svoboda and Richard C. Dorf
  9th Edition, John Wiley & Sons, March 2013
  ISBN: 1118477502

- **Additional Materials:**

  TESSAL laboratory equipment (one set per laboratory team)

Grading Policy and Weighting

Grades will be determined using the following components:

- Midterm Exam 1 (September 16): 20%
- Midterm Exam 2 (October 20): 20%
- Homework Assignments (cumulative): 5%
- TESSAL Laboratory Experiments: 5%
- Final Exam (December 10, 8:00–10:50 am): 50%

Final Grade Determination

Final grades will be calculated using two methods:

1. **Absolute scale:**
   a. 85–100 = A
   b. 75–84 = B
   c. 65–74 = C

    d. etc.
2. **Relative performance scale**
    a. **TBD**

The final course letter grade will be the **higher of the two results**.

Attendance Policy

Attendance is not mandatory; however, regular attendance is strongly recommended. Students are responsible for all material covered in lectures, including announcements, examples, and clarifications.

Additional Criteria for Successful Completion of the Course

To successfully complete the course, students must:

- Complete all exams, homework assignments, and laboratory experiments
- Submit required work by posted deadlines
- Demonstrate individual mastery of course content on exams
- Follow all course policies related to submissions, collaboration, and academic integrity

Academic Integrity

All exams in this course will be closed-book, closed-notes, with no internet access. Students are encouraged to study together and may collaborate in small teams on homework; however, all submitted homework solutions must be written and submitted individually. Exams must be completed independently with no assistance from others. Laboratory experiments will be submitted by teams of two students (with one team possibly consisting of three students).

Violations of academic integrity policies will be handled in accordance with the Georgia Tech Honor Code (link)

Student Conduct (Student-Faculty Expectations Agreement)

Students are expected to maintain a professional and respectful learning environment. The Student-Faculty Expectations Agreement outlines mutual responsibilities and expectations and is available in the Georgia Tech Course Catalog. Respect for others, academic honesty, and constructive participation are essential to the success of the course.

Disability Services Statement

Georgia Tech's policies regarding disability accommodations are administered by the **Office of Disability Services (ODS)**. Students with disabilities or other conditions requiring accommodations are encouraged to contact ODS at http://disabilityservices.gatech.edu and to provide the instructor with an accommodations letter as early as possible.