Course Objectives and Outcomes

ECE 4043 is a senior-level circuit analysis laboratory focusing on the theory and application of analog circuits, primarily linear voltage amplifiers. After successfully completing this lab, you should be able to:

- Evaluate the performance of basic electrical and analog electronic circuits by using laboratory test and measurement equipment
- Understand the theory of DC biasing and AC small signal analysis of amplifier designs
- Design basic electrical and analog electronic circuits, including amplifiers, filters, rectifiers and oscillators to meet given specifications
- Validate designs and laboratory results using circuit simulation software (Multisim)
- Construct and debug analog circuits, and compare theoretical results to experimental measurements
- Understand negative feedback principles
- Assimilate knowledge from throughout the semester to construct a discrete op-amp as the final experiment

Course Format

ECE 4043 is taught IN PERSON, on ATL campus (RESD mode). In-person attendance is expected at all laboratory sessions. Exams are delivered in person during the lecture period.

There are no lab meetings the first week of class, however the lecture *does* meet. (see Course Schedule).

Canvas Navigation

All course information is posted to Canvas. This includes:

- The Syllabus pages
- Course announcements, which are mostly logistical in nature. **Please set your notification settings so that you receive these in a timely manner.** To view all announcements, click Announcements in the sidebar.
- List of labs and exam dates are found under Assignments in the sidebar
- Your grades for all assignments are found under Grades in the sidebar. **Canvas serves as your official grade record – ensure it is correct at all times.**
- The people in your section are listed under the People sidebar

- You can view the course schedule in calendar format by clicking "Calendar" in the main Canvas sidebar.
- **Lecture handouts are posted under "Modules"**. It is very helpful to download or print them out before coming to class.
    - The "Modules" tab also contains the lab report template, sample report, curve tracer user guide, etc.
- **Lecture notes** are now posted under the "OneNote" plugin. You can add the "Class Notebook" to your own copy of Microsoft OneNote to view my in-class notes later on your own.

Students are required to check Canvas regularly for official information. We have tried to remove as much of the clutter from Canvas as possible to help you get to the information you need quickly.

Course Schedule

The course schedule is can be viewed directly in the Canvas calendar under ECE 4043. To view, click “Calendar” in the far left sidebar (above Inbox). Available/due dates for assignments and exams can also be found under the Assignments tab. Exam dates or any changes to the schedule will be communicated with reasonable notice.

Course Coordinators:

Dr. Brian Beck (Lecture Instructor)	Dr. Allen Robinson (Local Analog Expert)
Office: Van Leer E396B	Office: Van Leer E388
bbeck6@gatech.edu	allen.robinson@ece.gatech.edu
• Office hours: • T R 2:30pm - 3:30pm	• Office hours: • TBA

- The laboratory sections of ECE 4043 are taught by graduate teaching assistants (TA’s). Day-to-day questions and issues should be brought to your TA’s attention first (absences, lab report grades, etc.) TA contact information is posted to Canvas once TA assignments have been made, usually the end of the first week of classes.

TA:

- **TBA.** (You may check the People tab to contact once assigned).

Open Lab Hours (Optional, TA will be there):

- **TBA**
- **Lab not available: TBA**
- The lab will generally be open during the day if you wish to work by yourself as well. If the door is closed, see James or Niko in the electronics office (room C352) and they will open the door for you.

Lab Manual:

Marshall Leach, Tom Brewer, and Allen Robinson. *Experiments in Analog Electronic Circuits, 1st Ed.* ISBN: 978-1-4652-3241-0.

Each student must purchase the ECE 4043 lab manual. It is available via the publisher at the following link, or at the GT bookstore:

https://www.kendallhunt.com/analog_electronic_circuits/

Breadboard and Wire Kit:

Each student must furnish their own breadboard and wire kit for building circuits. It is recommended that students obtain a large breadboard; the small ones often used in 3043 do not work well for large circuits. Also, the wire kit wires that have plastic ends are not recommended; I recommend plain wire ends with 90° bends. **These recommended parts can be purchased from HKN during the first week of labs**; purchasing information will be posted here once it is available from HKN.

All other circuit parts (transistors, resistors, capacitors, etc.) will be provided free of charge during lab.

HKN Lab Supplies Purchasing Information:

(Flyer will be posted once available from HKN)

Assignments, Grades, and Attendance

Letter Grades

All letter grade assignments are made by the course instructor and are based on your total score and how the section performs overall. The traditional scale (greater than 90 = A, 80-90 = B, etc.) may be used as a general guide, but the actual ranges in a particular semester may be adjusted to determine the course letter grades. **The minimums of the traditional scale will never be increased in determining the final letter grades. For example, if your final score is greater than 80, you will earn at least a B. It is possible to**

earn a B with a final score less than 80, depending on the distribution of scores in your section. The GPA of the class will be consistent with ECE guidelines for a 4000-level course. In calculating your course score, each graded item is given the following weights:

Grade Item	Weight
Lab Reports	50%
Exams (Equally Weighted)	50%

There are no dropped assignments. Any questions that you have about the method of grading or the numerical grade on an assignment must be brought to the attention of your TA or the course coordinator within **one week** of the assignment's return. You must check your grades weekly on Canvas and promptly report any grading errors to the TA or the course coordinator. **A "blank" or "missing" score on Canvas will be considered a zero at the end of the semester.** Be sure to bring this to your instructor's attention if this happens!

Assignments

All assignments are individual assignments.

Homework:

Homework problems are intended to give you practice with circuit analysis and theory covered during the lecture and in labs. **Homework is not for a grade**. Non-detailed answers are provided to check your work. Homework is assigned approximately weekly; the "due dates" are a suggestion to help you pace yourself in the course.

Exams:

Three (2 in summer) 50-minute, **closed book / closed note, non-cumulative** exams will be given during the lecture period during the semester. A calculator is permitted. A formula sheet is provided; it will be shown in advance so that students know what equations they will have access to.

Lab Reports:

Lab reports are due during the lab period one week after that experiment concludes in the course schedule. Reports must adhere to the formatting requirements, which are posted to Canvas. **Late lab reports are penalized 7% per day until the score reaches zero. Exceptions to the late policy will no longer be granted; it is already extremely generous.**

All assignment dates are shown under the Assignments tab; any changes will be communicated with reasonable notice.

Late Assignments

Late lab reports will be **penalized 7% per day** until the score reaches zero (**no exceptions**). Missed exams will receive a grade of zero unless the absence is excused and a makeup scheduled in advance.

Attendance Policy

Attendance during your scheduled lab session is mandatory. Any unexcused absence will result in a grade of **zero** for the laboratory report or exam for that week (unless a multi-week lab is already finished). Any absence must be approved by your instructor at least a week in advance and a makeup lab/exam scheduled within 1 week, or as specified by the instructor. **Any student who has unexcused absences for more than two lab experiments will receive an F in the course.**

Attendance during open lab periods is optional.

Attendance during non-exam lecture periods is also optional. Lectures (and any notes posted to Canvas) are provided for your benefit.

Academic Misconduct and ODS Students

Student-Faculty Expectations Agreement

- At Georgia Tech, it is important to strive for an atmosphere of mutual respect, acknowledgement, and responsibility between faculty members and the student body. See https://catalog.gatech.edu/rules/21/
- Links to an external site. for an articulation of some basic expectations that you can have of us and that we can have of you. Respect for knowledge, hard work, and cordial interactions will help achieve this atmosphere. You are encouraged to remain committed to the ideals of Georgia Tech while in this class.

Academic Misconduct

- All students taking this course are required to strictly adhere to the Georgia Tech Honor Code. Any violation of the Georgia Tech Honor Code are considered academic misconduct and will be submitted to The Office of Student Integrity for appropriate action. Information about the Honor Code may be found at http://www.policylibrary.gatech.edu/student-affairs/academic-honor-code

- Links to an external site.. **There are no lab partners in ECE 4043.** Any evidence that any part of any assignment has been copied in any manner (manually, optically, or electronically) from another person is plagiarism, which is academic misconduct. Copying or permitting another student to copy an assignment such as homework, computer assignments, tests, or any other assignment is plagiarism which is academic misconduct. Although it is normal and permissible for students to discuss, in broad general terms, the same or similar assignments, copying is expressly forbidden; an engineer is a creative thinker and not a scribe. Any instance of misconduct will be forwarded to The Office of Student Integrity for adjudication. **The course coordinators reserve the right to assess any and all penalties due to academic misconduct at their sole discretion.**

Policy for Students Repeating the Course

- Students who are repeating the course must perform all of the assignments from scratch. This includes all laboratory reports, homework problems, etc. Material from a previous semester is unacceptable. Attempts to alter dates or names on assignments will result in a charge of Academic Misconduct.

Accommodations for Students with Disabilities

- If you are a student with learning needs that require special accommodation, contact the Office of Disability Services at (404)-894-2563 or http://disabilityservices.gatech.edu Links to an external site., as soon as possible, to make an appointment to discuss your special needs and to obtain an accommodations letter. **If you are a student with established accommodations, please bring this to your instructor's attention as soon as possible during the semester.**