Course Syllabus and Schedule Spring 2018

ECE 3043—Electrical and Analog Electronic Circuits Laboratory

Instructors

• T. Brewer

Lead Instructor
OFFICE: Van Leer E-376
PHONE: 404.894.8206 (office); 404.294.4842 (home)
E-MAIL: tom.brewer@ece.gatech.edu
OFFICE HOURS: M-R afternoons (Schedule posted on office door)

• Allen Robinson

Senior Academic Professional
OFFICE: Van Leer E-388
PHONE: 404.894.0176 (office)
E-MAIL: robinson@ece.gatech.edu
OFFICE HOURS: TBA

Text


The text may be purchased from either bookstore or directly from the publisher Kendall-Hunt.


Attendance Policy

Mandatory for all laboratory sessions and expected for recitation. Any absence from an exam or laboratory session will result in a grade of zero which may be made-up at the discretion of the instructor. An absence from a pop-quiz will not be made-up and a grade of zero will be assigned.
Grade Policy

All letter grades assignments are made by the recitation instructor and are based on the ranking in each individual laboratory session. The course grade point average is a random variable for which

\[ Probability \{2.9 < GPA < 3.1\} = 0.9. \]

The formula for determining the ranking is as follows:

\[ CA = 0.10(LQ) + 0.20(HW) + 0.25(LR) + 0.10(E1) + 0.10(E2) + 0.25(FE) \]

where
\begin{align*}
CA &= \text{Course Average} \\
LQ &= \text{Laboratory Quizzes} \\
HW &= \text{Homework} \\
LR &= \text{Laboratory Reports} \\
E1 &= \text{Lecture Exam 1 (one hour closed book and note written exam)} \\
E2 &= \text{Lecture Exam 2 (one hour closed book and note written exam)} \\
FE &= \text{Final Exam (one hour closed book and note comprehensive exam)}
\end{align*}

All assignments are individual assignments; this includes laboratory reports, homework assignments, computer simulations, and exams. There are no laboratory partners.

Pop-quizzes will count as one homework assignment.

All students must participate in all phases of the course. Any student who does not attend the laboratory and perform the experiments or prepare and submit all the assignments in a timely manner is unlikely to pass.

Classroom Behavior

Whilst attending a lecture students are required to pay rapt attention to the lecturer and his/her lecture. This requires that all non-medical devices be turned off such as cell phones, PDAs, cameras, etc. Laptops are permitted only if they are being used to view material directly related to the lecture. Calculators may be used only during quizzes. No inter-student communication is to occur during a lecture; this specifically includes all forms of oral and written communication. Students are, of course, permitted and encouraged to ask pertinent questions to the lecturer. Do not leave the lecture before it concludes or arrive late unless a medical emergency arises. Do not engage in an activity that disrupts the lecture. Students are expected to take copious notes during the lectures given by each instructor.

Whilst attending a laboratory, students are required to perform the experiment. Do not dine, sleep, or socialize in a laboratory. No food or drink of any kind should ever be brought into a laboratory. Do not leave personal possessions at a laboratory station.

Standards of decorum require that all members of the Georgia Tech community are to be addressed by their proper title, e.g. Mr., Miss, Ms., Dr., Professor, Dean, Provost, President, Chancellor, etc.
## Spring 2018 SCHEDULE

<table>
<thead>
<tr>
<th>Week of</th>
<th>Recitation Session (R,F)</th>
<th>Lab Session (T-W-R-F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>January 8</td>
<td>Orientation, Mathcad, Matlab, and SPICE</td>
<td>None</td>
</tr>
<tr>
<td>January 15</td>
<td>First-Order Passive Circuits</td>
<td>Exp 1—Orientation, Stand Alone Instruments</td>
</tr>
<tr>
<td>January 22</td>
<td>Second-Order Passive Circuits</td>
<td>Exp 2—Computer Control of Laboratory Instruments</td>
</tr>
<tr>
<td>January 29</td>
<td>Basic Op-Amps</td>
<td>Exp 3—First-Order Passive Circuits</td>
</tr>
<tr>
<td>February 5</td>
<td>Exam 1 (February 8,9)</td>
<td>Exp 4—Second-Order Passive Circuits</td>
</tr>
<tr>
<td>February 12</td>
<td>Active Op-Amp Filters</td>
<td>Exp 5—Op-Amps I</td>
</tr>
<tr>
<td>February 19</td>
<td>Linear Op-Amp Oscillators</td>
<td>Exp 6—Op-Amps II</td>
</tr>
<tr>
<td>February 26</td>
<td>Relaxation Op-Amp Oscillators</td>
<td>Exp 7—First-Order Active Op-Amp Filters</td>
</tr>
<tr>
<td>March 5</td>
<td>Semiconductor Diodes</td>
<td>Exp 8—Second-Order Active Op-Amp Filters</td>
</tr>
<tr>
<td>March 12</td>
<td>Exam 2 (March 15,16)</td>
<td>Exp 9—Linear Op-Amp Oscillators</td>
</tr>
<tr>
<td>March 19</td>
<td>Spring Break</td>
<td></td>
</tr>
<tr>
<td>March 26</td>
<td>BJT</td>
<td>Exp 10—Relaxation Op-Amp Oscillators</td>
</tr>
<tr>
<td>April 2</td>
<td>MOSFETs</td>
<td>Exp 11—Semiconductor Diodes</td>
</tr>
<tr>
<td>April 9</td>
<td>Review for Final Exam</td>
<td>Exp 12—BJTs</td>
</tr>
<tr>
<td>April 16</td>
<td>Final Exam (April 19,20)</td>
<td>Exp 13—MOSFETs</td>
</tr>
</tbody>
</table>

## Exams

Unless otherwise explicitly stated by the course instructor, all exams are closed book and note. Only a standard or programmable calculator may be used. At the beginning of any and all exams all cell phones, PDAs, pagers, etc. must be turned off for the duration of the exam. The only electronic device that may be used in an exam is the before mentioned calculator. Students who require hearing aids or other electronic health aids must alert the instructor prior to the exam. Only pencil, eraser, and calculators are permitted on exams.

## Academic Misconduct

All students taking this course are required to strictly adhere to the Georgia Tech Honor Code, whose complete text may be found at

http://osi.gatech.edu/content/honor-code

Any violations of the Code are considered academic misconduct and will be submitted to the Office of the Dean of Students for appropriate action. Several violations of the Code are elaborated upon below.

**Do not engage in unauthorized collaboration.** All of the assignments in this course are to be completed individually; there are no laboratory partners. Each assignment — laboratory reports, homework problems, exams — must reflect only the efforts of the student whose name appears on the assignment. Students may, of course, discuss assignments in general terms with one another, but all work should be generated individually. Likewise, students may receive assistance on assignments from the course instructors, or lab instructors. However, students are expected to write their own reports and do their own work. Copying or allowing peers
to copy all or portions of any assignment is considered plagiarism (see below) and is expressly forbidden; an engineer is a creative thinker and not a scribe.

Do not plagiarize. Georgia Tech and the School of ECE define plagiarism as “Submission of material that is wholly or substantially identical to that created or published by another person or persons, without credit notations indicating authorship” (Section XVII. C. Academic Misconduct, General Catalog). Plagiarism constitutes a serious violation of the Honor Code and will be reported immediately to the Dean of Students.

Do not copy—even the smallest portion—of another student’s report.

Do not attempt to falsify data and/or experimental results, or to secretly alter a paper after submission.

Do not attempt to forge the signature of someone else.

Do not confer or consult with any other lab student about any portion of an assignment.

Do not engage in disruptive behavior or hooliganism, which includes, but is not limited to, the abuse and/or theft of Institute equipment and/or littering.

Policies for Students Repeating the Course

Students who are repeating the course must perform all of the assignments anew. 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. This course must be taken simultaneously with ECE 3040.

Policies for Homework

All assignments are individual assignments. Each homework assignment must have a cover sheet with the course number, section number, section day and time, and a bitmap photo of the student. Each homework problem that involves the use of computer software such as National Instruments SPICE (Multisim) and/or Mathcad must be digitally signed by pasting a bitmap photo of the student onto the solution. Any unsigned homework will be assigned a grade of zero. All SPICE plots must have the time/date stamp on the printout or it will be assigned a grade of zero.

Policy for Late Assignments

Assignment turned in late but within two days of the due will be penalized 10%. Within a week 20%. No assignments will be accepted after one week of the due date. Exceptions may be made if there is an official excuse from the Dean of Students. Job interviews, vacations, visiting relatives, attending conferences, etc. are not valid excuses for class absences or submitting late assignments.
Background Requirements

Prerequisite: ECE 2040

Materials Required

Lab Manual—one per student
  Proto-Board or Breadboard—one per student
  ECE 3043 Parts or Chip Set
  Calculator
  One USB Memory Stick
These materials must be brought to each lab session.