

Course Syllabus and Schedule Spring 2012

ECE 3041—Instrumentation and 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)

- Michael Laughter

Lecturer, Assistant Coordinator, Undergraduate Professional Communication Program, ECE

OFFICE: Van Leer C-444

PHONE: 404.894.4894

E-MAIL: michael.laughter@ece.gatech.edu

OFFICE HOURS: MW 10-12, TR 1-3

- Allen Robinson

Academic Professional

OFFICE: Van Leer E-388

PHONE: 404.894.0176 (office)

E-MAIL: robinson@ece.gatech.edu

OFFICE HOURS: TBA

Text

Brewer, *An Introduction to Electrical Measurements*, 5th. ed. (ISBN: 10:0-7575-3319-1) (Required)

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. The two laboratory sessions labeled “Writing Assignment” in the schedule are not weeks “off”. The first hour of these sessions is set aside for a lecture on a relevant technical writing topic, to be delivered in the lab by Michael Laughter. The remainder of these sessions should be spent gathering data and/or experimental results needed specifically for the writing assignments.

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

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

The formula for determining the ranking is as follows:

$$CA = 0.10(LQ) + 0.15(HW) + 0.15(LR) + 0.10(E1) + 0.10(E2) + 0.20(WA) + 0.20(FE)$$

where

CA=Course Average

LQ=Laboratory Quizzes

HW=Homework

LR=Laboratory Reports

E1=Lecture Exam 1 (one hour closed book and note written exam)

E2=Lecture Exam 2 (one hour closed book and note written exam)

WA=Writing Assignments

FE=Final Exam (one hour closed book and note comprehensive exam).

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 writing 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 2012 SCHEDULE

Week of	Recitation Session (F)	Lab Session (T-W-R)
January 9	Orientation and Signal Parameters	None
January 16	Dc Meter Loading	Exp 1—Orientation Experiment
January 23	Ac Meter Loading	Exp 2—Signal Characteristics
January 30	Oscilloscope Fundamentals	Exp 4—Meter Loading
February 6	Exam 1 (February 10)	SPICE and Mathcad Workshop
February 13	First Order Circuits	Exp 5—Oscilloscope Fundamentals
February 20	Second Order Circuits	Exp 6—Computer Control of Instruments
February 27	RC Filter Design	Exp 7—First-Order Transients
March 5	Transformers	Exp 8—RC Filter Design
March 12	Exam 2 (March 16)	Exp 9—Second Order Circuits
March 19	Spring Break	Spring Break
March 26	Spectral Analysis	Exp 10—Transformers
April 2	Diodes	Writing Assignment
April 9	Review for Final Exam	Exp 11—Spectral Analysis
April 16	Final Exam (April 20)	Exp 12—Diodes
April 23	None	None

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://www.deanofstudents.gatech.edu/Honor/>. 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, writing assignments, 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, lab instructors, or writing consultants. 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 or cut-and-paste from any websites, textbooks, lab manuals, etc. simply to create material for your reports. Citing other sources can be a valuable way to bolster your conclusions, and direct quotes may be appropriate at times, but should you find it necessary to consult these types of resources, you **must** cite your source(s). The IEEE style of citation should be used. Instructions for properly citing sources may be found in the following places.

- <http://www.mhhe.com/mayfieldpub/tsw/doc-ie3.htm> [IEEE Citation Guidelines]
- <http://www.mhhe.com/mayfieldpub/tsw/doc-elec.htm> [Citing Electronic Sources]
- http://upcp.ece.gatech.edu/content/3041/citing_sources.pdf [Users Guide Example]

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 quote, appropriate, or attribute any words that are not your own without clear citation.

Do not cut and paste any graphic without detailed citation.

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.

Each student signs a **Pledge of Academic Honesty** when submitting any writing assignment. The Pledge reads as follows.

On my honor, I pledge that I have neither given anyone else assistance or information on this writing assignment nor have I received assistance or information from anyone other than Drs. Brewer and/or Robinson, Instructors Laughter and Bourgeois, or the GTA lab assistants or writing consultants. I further pledge that I am in full compliance with every stature and codicil of the Georgia Tech Honor Code and that all of the work that appears in this report is my own, unless it is attributed to another source. I understand and agree that any violations of the Georgia Tech Honor Code will be forwarded to the Dean of Students for adjudication.

This Pledge is included on the Evaluation Form to be submitted with each writing assignment. All Evaluation Forms are accessible on the UPCP website. **Any student not signing the Pledge will receive a zero for that particular writing assignment.**

Policies for Students Repeating the Course

Students who are repeating the course must perform all of the assignments anew. This includes all laboratory reports, writing assignments, 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.

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 of the student. Each homework problem that involves the use of computer software such as SPICE, 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.

Background Requirements

Prerequisite: ECE 2040 and ECE 2031

Technical Writing

ECE 3041 is the second in a series of five communication intensive courses in the major. Two writing assignments are required and will be explained in detail during designated laboratory sessions. Writing is integrated into the course to reinforce the skills learned in the laboratory, to reinforce the concepts behind those skills, and to encourage the kind of analysis engineers will need to advance both in the institute and in the workplace. Several resources are available to assist students during all stages of the writing process, including the UPCP website (<http://upcp.ece.gatech.edu>) and GTA writing consultants (office hours and contact info listed on the UPCP website).

WA	Genre	Topic	Presentation	Due
	Recommendation Report	RLC Notch Filters	April 2	April 23

Every writing assignment must be submitted with the following two sheets attached to the report cover.

(1) A signed and completed Verification Sheet.

All Verification Sheets may be found at

<http://www.ece.gatech.edu/academic/courses/ece3041/>

(2) A signed and completed Evaluation Form

All Evaluation Forms may be found at

http://upcp.ece.gatech.edu/3041/eval_sheets.html

Special Policies Governing Writing Assignments

Assignment Submittal

All writing assignments must be submitted **in person** to a UPCP writing consultant or Michael Laughter. No other method of submittal will be accepted. At the time of submittal, you may be asked to show your Buzz Card for ID verification.

The easiest method for submitting your assignments is to be present in your lab when your writing consultant drops by to pick up reports for your section. You will always receive an e-mail from your consultant notifying you of this time. This time will always fall within the 3-hour period in which your lab section meets.

If, for some reason, you cannot be present at the time that your writing consultant picks up a particular assignment, and if you do not want to be subject to a late penalty (see below), then you must submit your paper early. But again, submittal must be **in person** to Michael Laughter. See the list of Writing Resources at the end of this document for availabilities and locations of UPCP staff.

Late Papers

Any writing assignment submitted after your writing consultant has picked up papers in your lab (even if he/she has just left the lab and is walking down the hall) will be considered late. **Late papers will generally be accepted, but will be penalized 20 points for each day late.** Saturday and Sunday or Institute holidays are not considered late days, as UPCP staff are, in general, not available for paper submittal on the weekends. The number of days late is determined in relation to the precise time at which your paper is due. The following examples demonstrate the policy.

Due Date: Friday, 12:30 pm

	Date	Days late	Late Penalty
Submittal Date 1	Friday, 12:29 pm	0	0 pts
Submittal Date 2	Friday, 12:31 pm	1	- 20 pts
Submittal Date 3	Monday, 12:29 pm	1	-20 pts
Submittal Date 4	Monday, 12:31 pm	2	-40 pts

Extenuating circumstances that prevent a timely submittal of the report may be treated more leniently, but must be discussed with Michael Laughter **at least 24 hours prior to the due date**. Extenuating circumstances include a death in the family or serious injury or illness. Schedule conflicts (having a test in another course the same day the report is due), technological difficulties (corrupted disks, printer problems, crashing computers), and procrastination (waiting until the night before the report is due to begin writing) will not be treated as extenuating circumstances. Please plan accordingly; **save all files in multiple locations**.

Electronic Copies of Papers

It is highly recommended that students to keep electronic copies of all papers submitted. Alternately, students should keep one hard copy of each paper submitted for their own files. ECE writing and engineering faculty reserve the right to request additional copies of student work at any time after the due date. Failure to

produce a copy will throw into question the authenticity of the original copy, and may result in a zero for that assignment and/or disciplinary action.

Grade Disputes

All students have the right to ask questions about the grades they receive on assignments. However, “haggling” or negotiating over points or grades will not be tolerated. Students who wish to discuss their grade must follow the procedures outlined below:

1. Make an appointment to discuss the grade with the GTA who evaluated the assignment.
2. If you still have questions or concerns about the grade, send an e-mail to Michael Laughter, which clearly and concisely explains the problem.
3. Sometimes an e-mail response from Mr. Laughter may be enough to solve the problem, but he may request that you make an appointment to discuss the grade, or you may feel it necessary to request an appointment yourself.
4. Understand that your score could go up or down upon review or re-grade.
5. In some instances, Mr. Laughter may consult with Ms. Bourgeois. Their decision will be final.

Writing Consultations

Writing consultants are available five days a week in the Professional Communication Studio (Van Leer C-448) to assist you with your ECE writing assignments and with other technical writing tasks. You may also schedule an appointment with Michael Laughter, who is here daily. All students are required to attend one, thirty-minute individual writing consultation with the GTA writing consultant to discuss WA1. Details about the mandatory consultation will be explained in lab by Michael Laughter. Consultants will be happy to assist you in the following areas.

- Getting started
- Overcoming writer’s block
- Planning papers
- Reorganizing and revising drafts
- Documenting research papers using IEEE format
- Improving basic grammar and punctuation skills

Writing consultants are *NOT* required to assist you with the following tasks.

- Find and fix all grammar and punctuation errors
- Guarantee a particular grade on an assignment
- Separate form and content—we take a holistic approach to reviewing documents

- Write papers for our students

To ensure that you make the most of your consultation session, please come to the Studio prepared with the following:

- A functional draft (hard copy) of the assignment you are working on
- A copy of the assignment sheet or writing guidelines
- A pen or pencil for taking notes
- Specific questions and comments about your draft.

Individual writing consultant office hours are posted outside the Lab and on the UPCP website. (See *Writing Resources*.)

*All students are **required** to attend a 30-minute mandatory writing consultation for one writing assignment TBA. The writing consultant assigned to your lab section will explain the procedure for scheduling this consultation.*

Use of the Professional Communication Studio Resources

The Professional Communication Studio (Van Leer C-448) is equipped with several Dell PCs with flat panel displays and one network printer for student use. Each PC is loaded with a wide range of software used by ECE undergraduates, including MS Office, Matlab, Mathcad, and PSpice. Students working on ECE writing assignments have priority on these machines, though when available, they may be used to work on other ECE assignments. Recreational use of these machines is not permitted.

Please clean up after yourself and respect those trying to work around you.

Writing Resources

Christina Bourgeois, Coordinator, Undergraduate Professional Communication Program

`christina.bourgeois@ece.gatech.edu`

Van Leer E-268

Availability: M-F, by appointment only

404.894.9597

Michael Laughter, Assistant Coordinator, UPCP

`michael.laughter@ece.gatech.edu`

Van Leer C-444

Availability: M-F, office hours posted on office door and UPCP website

404.894.4894

ECE Professional Communications Studio – This is where all writing consultants hold their office hours.

Van Leer C-448

Availability: Posted on Entrance Door and UPCP website; Writing Consultant office hours are posted outside the Studio and on the UPCP website.

UPCP Website: <http://upcp.ece.gatech.edu>

Here you will find all of the writing resources for this course, including downloadable templates, tip sheets, examples of properly labeled figures, and much, much more.

L. Perelman, J. Paradis, and E. Barrett, The Mayfield Handbook of Technical and Scientific Writing. Mountain View, CA: Mayfield Publishing Company, 1998.

URL: <http://www.mhhe.com/mayfieldpub/tsw/toc.html>

On-Line Resources

- <http://www.ece.gatech.edu/academic/courses/ece3041/> [ECE 3041 Course Website]
- <http://upcp.ece.gatech.edu/> [UPCP website]

Materials Required

Lab Manual—one per student

Proto-Board or Breadboard—one per student

ECE 3041 Chip Set

Calculator

One USB Memory Stick

These materials must be brought to each lab session.