



- Instructor: Neil E. Cotter  
3104 MEB  
Office Hours MWF 12:40-1:30 p.m.  
necotter@ece.utah.edu
- Required Text: *Electric Circuits, 7th or 8th or 9th Edition*  
James W. Nilsson and Susan A. Riedel  
Pearson Education Inc: Upper Saddle River, NJ, 2008  
ISBN 13: 978-0-13-611499-4 (9th Ed)  
13: 978-0-13-198925-2 (8th Ed)
- Required Packet: *ECE 2240 Conceptual Tools*  
Neil E. Cotter et al.  
Available at Copy Center in Olpin Union Bldg or [online](#)
- Recommended Text: *Elements of Style*  
William Strunk Jr. and E.B. White  
Macmillan Pub. Co.: NY, NY 1979 or [online](#)
- Recommended Text: *Mastering Matlab<sup>®</sup> 7*  
Duane Hanselman and Bruce Littlefield  
Prentice Hall, NJ, 2001  
ISBN: 0-13-143018-1
- Homework: Due at start of class on day indicated in syllabus.  
No late HW accepted without arrangement before due date.  
Turn in: locker 3rd floor MEB near southeast stairway
- Last day to drop: Wed, August 29  
Last day to withdraw: Friday, October 19
- Cheating: Any form of cheating will result in an "E" grade. Students are encouraged to discuss assignments, but each student must do all their own work on assignments.
- Equal Access: The University of Utah seeks to provide equal access to its programs, services and activities for people with disabilities. If you will need accommodations in this class, reasonable prior notice needs to be given to the instructor and to the Center for Disability Services, 162 Olpin Union Building, 581-5020 (V/TDD) to make arrangements for accommodations.  
All written information in this course can be made available in alternative format with prior notification.

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\* The material in this handout is based extensively on concepts developed by Dr. Carl H. Durney, Professor Emeritus of the University of Utah.

## A Description of the Learning System

The learning system used in ECE 2240 has been designed on the basis of the principles of learning<sup>1-3</sup>. I won't give you a lengthy description of those principles here, but let me state informally two of them that are very important for you to understand because they should guide your work in this course.

1. You learn what you practice and only what you practice.
2. In order to learn, you must obtain feedback about your work.

The first principle is extremely important to you because it tells you that you must practice to learn. You actually learn very little while you are just listening to an instructor, although you may be stimulated and you may get ideas and some information. If you question this statement, test it by listening very carefully to a lecture in which the instructor derives a relation or works out a problem. Then try to do the same derivation or work the same problem without looking at your notes. You will find that you have to do it yourself to learn it. Your learning actually occurs as you practice, that is, as you answer questions, solve problems, design circuits, explain behavior, hook up circuits, measure voltages, measure currents, test devices, plot graphs, take exams, write reports, give talks, and so on. This course is designed to increase your learning through practice.

Now let's discuss the second principle. As you attempt to learn something, for example, to design an RC timing circuit, you must try, find out if what you tried was good or bad, correct your errors, try again, etc. Finding out if what you tried was good or bad is called "feedback." The second principle states that you must get feedback to learn. The best way to get feedback is from the real world, which is what you will be doing in the lab when you construct circuits and get them to work. You will also get feedback from your lab instructor as you check off your lab work with him or her and when he or

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<sup>1</sup> C. H. Durney, "Principles of Design and Analysis of Learning Systems," Engineering Education, March 1973, pp. 406-409.

<sup>2</sup> S. C. Erickson, "Learning Theory and Educational Engineering," ERM, March 1969, pp. 17-18.

<sup>3</sup> C. H. Durney, L. D. Harris, and A. W. Woodruff, "Some Learning Principles and What They Mean," Division for Improved Learning, University of Utah, Salt Lake City, Utah.

she grades your reports. The Study Guides and homework are designed to give you both practice and feedback, and exam solutions will be posted to give you feedback. You should be sure to attend discussion sessions and find out what you did wrong whenever you do something incorrectly on a homework or exam.

### Components of the Learning System

The system consists of:

- a. Learning objectives
- b. Classroom discussions
- c. Study guides
- d. Homework
- e. 50-minute exam for each unit of study material, (see below)
- f. A final exam
- g. Four laboratory problems with formal reports.

Generally speaking, the class work is organized into units, with each unit consisting of a set of learning objectives, a study guide, classroom discussions, and a 50-minute exam that covers one unit. The laboratory problems are an integral part of the course, furnishing the main practice in problem solving. Both the problems and the lab work will be discussed in class and discussion sessions.

### Laboratory Work

You will be required to keep a laboratory notebook, and you must have a notebook for the first laboratory session. The notebook must have duplicate pages that create a copy of what you write on each page. The notebook should be approximately 8-1/2" x 11" in size and must have fastened-in pages. You will tear out the duplicate pages or scan or copy the notebook pages and hand them in when you complete each lab, (along with a separate, complete lab report). The notebook must be kept in ink. Date and number each page. The notebook should be a working record. Don't write things on pieces of paper and then copy them into your notebook later on. Make entries directly in your notebook. You won't have time to write things twice. If you make a mistake, cross

it out but leave it legible underneath. Avoid spending a lot of time trying to make tables and figures fancy. The main purpose of the notebook is to provide a record of the work you did. Write down all information that is pertinent, including notes about procedures, things that didn't make sense, etc. If your notebook is a good one, you should be able to reproduce work recorded in it one year later, which would obviously require carefully including details about equipment and procedures. The laboratory instructors will grade your notebook on completeness and reproduceability.

If bench space is limited, you may share an equipment station. **You must, however, individually design, construct, and test the circuit. You must also make all your own, unique measurements and individually write your formal reports.** As your lab instructor checks off your lab work, he or she will ask you questions to determine whether you have a good understanding of the problem solution, and grade you accordingly. In addition, exam problems will be designed to test your ability to solve problems similar to the laboratory problems, especially on the final exam. If you do not thoroughly understand the laboratory problems, you will find some of the exam problems very difficult.

**You must attend your laboratory class weekly, and you must show your laboratory instructor your work, demonstrate your measurements, and check off with him or her each week by having them initial and date your notebook. If you do not check off with your laboratory instructor each week, you will be penalized and possibly receive no credit for an entire laboratory assignment.**

**Only if you receive approval in advance from your TA may you work on your laboratory project at times other than your regularly scheduled laboratory class period.**

### The Formal Report

In addition to keeping records in a laboratory notebook you will write formal engineering reports on the laboratory problems. These reports must be in IEEE paper format as described in handouts listed in the "Instructions for writing lab reports" section

on the course web site. All rules described in these documents must be followed with the following exceptions:

- 1) The report may be one column rather than two-column, and
- 2) Section numbering must match the numbers listed in the "Lab Report pts" pages as listed on the course web site.

This means the reports must be written in good form, with complete sentences and neat, well-labeled diagrams, etc. The emphasis is on communication, so the writing should encourage your reader's interest by clearly stating the purpose and objective of the report and providing the necessary information to facilitate your reader's understanding of what you did and how you arrived at your conclusions.

The abstract, introduction, and conclusion sections of your report are very important. The abstract gives a succinct summary of the report. This motivates the reader by providing them with the key points they will be looking for as they read the report. The introduction sets the context in which the laboratory work was performed, gives background information to justify the project, and sets out the organization of the entire document. The conclusion lists key quantitative results, major conclusions reached, and insightful observations regarding why your circuit performed the way it did. The conclusion may also include comments on how performance could be improved upon if, as an electrical or computer engineer, you were tasked to redesign the project.

Sloppy reports will not be accepted. You should write your solutions like you would like to see a textbook example written. Write your report so that one of your classmates who is unfamiliar with the problem could read your report and understand it without difficulty. Be concise; long reports are neither necessary nor desirable.

### Grading Procedures

Unit exams. The unit exams will be graded in the conventional way. Partial credit will be given only if the work is explained clearly enough. I will instruct the grader how much credit to give for each part of the problem. If you make a mistake in an early step of a problem and then proceed to finish the problem with a correct procedure,

but incorrect work resulting from the early mistake, you will be given appropriate credit for the correct procedure.

Solutions to the exams will be posted on the course website soon after the exam is given. If you feel that the grader made a mistake in grading your exam, write on the upper right-hand cover of the exam exactly what you feel was incorrectly graded. If the grader has made a mistake, he or she will change your grade. If you still have a question about how your exam was graded after the grader has seen it, come and see me.

If you request that your exam be regraded, you must do so **before the next exam is given. After the next exam is given, changes in grades on previous exams will not be given.**

Homework. The homework problems will be graded only for correct answers and basic approach. A homework solution displaying both a correct approach and correct answer will receive 1 point. The correct approach is worth 0.8 points, and the correct answer will receive 0.2 points. Detailed grading will be left to the student. Solutions to the homework will be posted in a display case near the ECE Office soon after the homework is due. **Late homework will not be accepted without prior approval from the instructor.** Homework due dates are listed in the course schedule.

Laboratory problems. Laboratory instructors will grade the laboratory problems. 50% of the grade will be based on the written report and 50% on the copy of your notebook you hand in at the conclusion of the laboratory exercise.

The grade for the written report will be based on how well the criteria in the instructions for writing lab reports are met and the point breakdown listed on the course web site. The grade for the notebook will be based on how well the criteria in the rules for the laboratory notebook are met and the point breakdown listed on the course web site.

When grading, laboratory instructors will provide more detailed feedback on certain sections of each report: Lab 1 Abstract, Lab 2 Conclusion, Lab 3 Introduction, Lab 4 Results.

Course grades. Course grades are awarded on the basis of the number of points achieved from the following list of points possible:

	<u>Points Possible</u>
100 homework problems*	100
4 laboratory problems	200
4 unit exams**	300
Final exam	<u>200</u>
Total	800

\*\* You will write 20 homework solutions but the lowest homework score will be replaced with a score of 5.

\* You will take four unit exams but the one with the lowest score will be dropped.

Each unit exam is worth 100 points.

Your overall grade will be determined by the percentage of total points that you earn according to the following schedule:

<u>Minimum percentage of total points required for the given grade</u>	<u>Course grade</u>
93	A
90	A-
87	B+
83	B
80	B-
77	C+
73	C
70	C-
67	D+
63	D
60	D-
Below 60	E

### Schedule

The examinations will be given on dates listed in the schedule. The dates are firm.

Lab instructors will announce laboratory problem due dates during lab sessions.

Late reports are accepted only with the instructor's consent and receive reduced credit, at the instructor's discretion. A 25% reduction in scores is applied to reports handed in late up to one week. Each additional week results in an additional 25% reduction in credit. All work must be turned in by the time of the final exam.

# COLLEGE OF ENGINEERING GUIDELINES

<http://www.coe.utah.edu>

Fall Semester 2012

## Appeals Procedures

*See the Code of Student Rights and Responsibilities, located in the Class Schedule or on the UofU Web site for more details*

### Appeals of Grades and other Academic Actions

If a student believes that an academic action is arbitrary or capricious he/she should discuss the action with the involved faculty member and attempt to resolve. If unable to resolve, the student may appeal the action in accordance with the following procedure:

1. Appeal to Department Chair (in writing) within 40 business days; chair must notify student of a decision within 15 days. If faculty member or student disagrees with decision, then,
2. Appeal to Academic Appeals Committee (see <http://www.coe.utah.edu/current-undergrad/appeal.php> for members of committee). See II Section D, Code of Student Rights and Responsibilities for details on Academic Appeals Committee hearings.

## Americans with Disabilities Act (ADA)

The University of Utah seeks to provide equal access to its programs, services, and activities for people with disabilities. If you need accommodations in a class, reasonable prior notice needs to be given to the instructor and to the Center for Disability Services, 162 Olpin Union, 581-5020 (V/TDD) to make arrangements for accommodations. All written information in a course can be made available in alternative format with prior notification to the Center for Disability Services.

## Repeating Courses

When a College of Engineering class is taken more than once, only the grade for the second attempt is counted. Grades of **W**, **I**, or **V** on the student's record count as having taken the class. Some departments enforce these guidelines for other courses as well (e.g., calculus, physics). See an advisor or departmental handbook. Students should note that anyone who takes a required class twice and does not have a satisfactory grade the second time may not be able to graduate.

## Withdrawal Procedures

*See the Class Schedule or web for more details* \*\* Please note the difference between the terms "drop" and "withdraw". Drop implies that the student will not be held financially responsible and a "W" will not be listed on the transcript. Withdraw means that a "W" will appear on the student's transcript and tuition will be charged. \*\*

### Drop Period – No Penalty

Students may DROP any class without penalty or permission during the FIRST TEN calendar days of the term (Wednesday, August 29, 2012).

### Withdrawal from Full Term Length Classes

Students may WITHDRAW from classes without professor's permission until **Friday, October 19, 2012**. From August 30- September 3 a "W" will appear on the transcript but NO tuition will be charged. Between September 3 and October 19, a "W" will appear on the transcript AND tuition will be charged. Refer to Class Schedule, Tuition and Fees for tuition information.

### Withdrawal from Session I & Session II

See the web page for details:

<http://registrar.utah.edu/academic-calendars/fall2012.php>

Withdrawals **after October 19** will only be granted due to **compelling, nonacademic emergencies**. A petition and supporting documentation must be submitted to the Dean's Office, 1602 Warnock Engineering Building or University College (450 SSB) if you are a pre-major. Petitions must be received before the last day of classes (before finals week).

## Adding Classes

**Please read carefully:** All classes must be added within two weeks of the beginning of the semester (deadline: September 4). Late adds will be allowed September 4 – 11th, requiring only the instructor's signature. Any request to add a class after September 11th will require signatures from the instructor, department, and Dean, and need to be accompanied by a petition letter to the Dean's office.

**A \$50 FEE WILL BE ASSESSED BY THE REGISTRAR'S OFFICE FOR ADDING CLASSES AFTER September 11. \*\*\***