

# EE241 ELECTRONICS I

## Section 1111

### Course Policy

### Spring 2009

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## 1 Objective

EE241 Electronics I is a course for students majoring in electrical and computer engineering, as well as for other engineering students interested in the subject. It explores semiconductor device physics so that the operation of diodes and transistors can be understood. The course stresses the use of large- and small-signal equivalent circuits. The course emphasizes both theory and lab work.

The course syllabus lays out in detail the topics which we shall cover in the course. The course syllabus, lesson objectives, and other documents pertaining to the course can be found on the course web site at

<http://www.usna.edu/EE/ee241/>.

The course policy listed on that site, however, is supplanted by this one. A copy of the course policy for Section 1111 can be found on the instructor's web site at <http://www.usna.edu/Users/ee/cameronc/#Courses>.

For a course offering four credit hours, like this one, you should be doing an additional eight hours of work each week outside class time.

## 2 Textbooks

1. Allan R. Hambley, *Electronics*, second edition, Prentice Hall, Upper Saddle River, New Jersey, 2000.

## 3 Homework and Labs

### 3.1 Homework

Homework assignments are mandatory. You will find them, along with the dates they are due, on the course syllabus at

<http://www.usna.edu/EE/ee241>.

I will grade selected problems. I award zero credit for late homework. Exceptions to this policy will be made in cases of illness or other extraordinary circumstances. (Movement orders do not qualify as extraordinary circumstances.) Solutions to the homework problems will be posted on the web.

Collaboration with your fellow Midshipmen is permitted and encouraged. Such collaboration is a hallmark of all professional officers. However, the assignment you hand in must be your own. Claiming someone else's work as your own—plagiarism—is totally unacceptable. List the names of all midshipmen who assisted you with your assignment or lab, sign the list, and include it when you hand in the assignment. Collaboration is not permitted during quizzes, tests, or exams.

Homework must be well organized, legible, and self-contained. To be self-contained there must not be any need to look somewhere else to find out what the question was: the question must be reproduced in full, including any diagrams associated with it. Submit your homework on green engineering paper, stapled together, with the name of the course, your section number, your own name, the assignment number, and the

number of each problem clearly visible. Box the final answers in each problem you submit. It is permissible to photocopy the problem statement, if you prefer, before providing your solution.

If I cannot read your solutions, understand them, identify the answer or answers you claim are right, and match all components in your schematic diagrams to symbols in your solutions, then your solutions will not get full—or possibly any—credit. Include all measurement units (e.g., volts or amperes) where appropriate, using standard SI notation. If I deem your effort to be inadequate I will award you no credit.

On days that homework is due, I will begin the lecture by going over homework problems. During this time, you should refer to your work, marking correct answers and noting corrections using the provided red pens. Do not erase the work you did before class, even if it is wrong, as it is evidence of your effort. Your grade will depend on both your work and on your corrections.

### 3.2 Labs

This course is heavily dependent on lab work. I expect you to keep a lab notebook with detailed plans, schematic diagrams, ideas, methods, and observations. From such notes you will find it easy to prepare lab reports. Avoid erasing material from your lab notebook. Cross it out, annotate it if necessary, and press on. The lab notebook is not intended to be beautiful: it is intended to be practical and complete.

I will grade your lab notebook formally once during the semester. The result will contribute to your overall lab grade. Whenever you seek my help, expect me to ask you to show me a schematic diagram and all supporting work in your lab notebook.

Whenever you design a circuit, include a schematic diagram of it in your lab notebook, along with supporting design equations and observations. Properly labeled schematics include:

1. A name for the circuit or subcircuit.
2. A unique name on or beside each part. It is customary to use prefixes and suffixes, as  $R1, R2, \dots$  for resistors;  $C1, C2, \dots$  for capacitors;  $L1, L2, \dots$  for inductors;  $U1, U2, \dots$  for integrated circuits; and  $D1, D2, \dots$  for diodes.
3. Electrical quantities which are expected at a certain point should be indicated. For example, if you use a voltage source to provide a five volt DC reference level, mark it as 5 V.

You will be required to work singly, without a partner. This is to ensure that you become thoroughly familiar with the lab equipment. However, I do encourage you to help and get help from other students in the lab.

If you are absent from your regular laboratory session you are still responsible for completing the work and submitting the laboratory report at the same time it would normally be due, unless your absence is due to illness or an emergency. The laboratory is generally available from 0800 to 1600, except when in use by scheduled classes. *Always keep the door open while you are in the laboratory and follow the safety rules.*

There will be two lab practical exams administered over the course of the semester where you will be asked to demonstrate key laboratory skills. These practical exams will contribute significantly to your course grade.

Prepare all lab reports using a word processor and print them on  $8.5 \times 11$  inch paper. Prepare graphs and circuit schematic diagrams using a program such as Matlab, PSPICE, Multisim, Excel, or Visio (Visio is on the computers in Ri 008). Submit lab reports at the beginning of the next lab class following that in which the lab was scheduled. For example, if you did a lab on Tuesday, 27 January 2009, then the report would be due on Tuesday, 3 February 2009. If you get help from other students, acknowledge this help and name those students in your report.

Examples of lab notebook entries and lab reports are on the web at

<http://www.usna.edu/Users/ee/cameronc/Miscellaneous/StudentHelp/>.

## 4 Quizzes

There will be five short quizzes on January 23, February 27, March 11, April 10, and April 24. All quizzes will be closed-book, closed-notes. You will not be permitted to communicate with anyone else by any means whatever. Sharing of calculators, batteries, any written materials, or anything else at all with other students in the class during quizzes is likewise prohibited.

Let me know in advance if you will not be able to attend during a quiz. Unexcused absences will result in a grade of zero for that quiz. In the case of excused absences your overall quiz grade will be the average of all quizzes taken.

## 5 Tests and Exams

There will be two midterm tests of length one hour. The final exam will be three hours in length. You are not permitted to use notes or books during tests or exams.

Let me know in advance if you will not be able to attend during an exam. Unexcused absences will result in a grade of zero for that exam.

Exams will have a strict start/stop time. I will announce the start and end of each exam by the commands “*Begin work*” and “*Cease work.*” You shall immediately place any writing instrument in your hand on the desk/table top and close the exam (cover sheet on top). I shall keep the class apprised of the time remaining.

## 6 EE News

Once during the semester, you will be asked to prepare a short (2–3 minutes) presentation to the class on a current trend in electronics. See the EE News assignment on the course homepage for more details.

## 7 Calculators

You may use a calculator in every class, lab, quiz, test, and exam. I will not permit you to share calculators or batteries during tests, exams, or quizzes. If your calculator doesn’t work and you have not brought spare batteries, plan to do arithmetic manually. You may use calculators to store programs but not notes.

## 8 Grades

I mark all problems in quizzes, tests, and homework assignments on a 4.0 scale with a weighting factor proportional to the difficulty of the problem. I convert the total score to an overall 4.0 scale and use it to assign a letter grade. These letter grades correspond to course points: 4 for an A, 3 for a B, 2 for a C, 1 for a D, and 0 for an F. (Converting a numeric score to a letter grade amounts to rounding off your numeric score.)

I then determine composite grades for the course by adding up course points with further weightings proportional to the type of assignment. Course grades nominally are A for 3.5 points or more, B for 2.5 to 3.5 points, C for 1.5 to 2.5 points, D for 0.5 to 1.5 points, and F for

less than 0.5 points. I determine nominal grades using the weightings shown in Table 1 on page 4. However, I reserve the right to alter course letter grades up or down based on your class participation, performance trends, and my overall impression of your performance.

## 9 Extra Instruction

I would prefer that you make an appointment by e-mail for EI. For a list of generally open times, see my schedule at URL

<http://www.usna.edu/Users/ee/cameronrc/>.

For EI, bring your course notes, homework problems, and specific questions or problems confronting you. If you are having trouble learning the material and applying it to solving problems, designing circuits, or designing programs, it would be wise to get extra instruction.

I will accept phone calls at home up to 2200 and will do my best to give decent assistance by telephone. I am almost invariably in my office by 0730, if not earlier.

Finally, you may ask me questions via e-mail, too.

## 10 Administrative Matters

### 10.1 Questions

Feel free to ask questions in class. I would rather clear up a difficulty immediately than see you cease all progress because of a misapprehension. If it is indicated, I may ask you to schedule extra instruction.

### 10.2 Sleeping in Class

Even if you are drowsy, *do not sleep in class*. Stand up quietly and go to the back of the room. You do not need my permission to do so. When you are ready, quietly return to your seat.

### 10.3 Omitted Material

I cannot possibly cover everything during class. If some topic or example is not covered, that does not mean it is unimportant. Refer to the EE241 course objectives on the course home page to make sure you have not overlooked anything.

|                            | 6-week     | 12-week | 16-week | Final Grade |
|----------------------------|------------|---------|---------|-------------|
| Final Exam                 | —          | —       | —       | 30.0%       |
| Test 2                     | —          | 21.4%   | 21.4%   | 15.0%       |
| Lab Practical              | —          | 14.3    | 14.3%   | 10.0%       |
| Test 1                     | 33.3%      | 21.4%   | 21.4%   | 15.0%       |
| Quizzes                    | 33.3%      | 21.4%   | 21.4%   | 15.0%       |
| Lab Reports                | 22.2%      | 14.3 %  | 14.3%   | 10.0%       |
| Homework & Electronic News | 11.1%      | 7.1%    | 7.1%    | 5.0%        |
| Class Participation        | subjective |         |         |             |

Table 1: Grade Weightings

## 10.4 E-mail and the Web

I plan to rely heavily on e-mail and the web to communicate with you. Check your e-mail at least daily so you don't miss something I send you. Bear in mind that e-mail is not instantaneous: although the mail may be in my box, I may not read it for some hours.

## 10.5 Absence/Makeup Policy

You must notify me prior to missing class if you will be absent. Arranging for makeups of exams or labs is *your responsibility* and must be done within one week.

## 10.6 Section Leader's Duties

I will appoint a Section Leader and an alternate during the first class. The alternate will fill in for the Section Leader if the latter is absent. I require the Section Leader to

- call the section to attention and report the names of absent students at the start of class;
- collect and submit all homework and other assignments to me at the start of class. Separate different assignments into different piles;
- call the class to attention for dismissal at the end of class;
- muster the class in the Maury Hall parking lot during emergencies, fire drills, etc., and report absences to me; and
- contact the ECE Department by phone (3-6150) if I am more than 10 minutes late for class to ask

my whereabouts. If I am not expected to arrive at all, direct the class in a study period, collect all homework, and deliver it to the ECE Office before the close of business that day. Do not dismiss the class early.

I am obliged to report Midshipmen who are late or absent or who leave early.

## 10.7 Eating and Drinking in Class

Food and covered drink containers are allowed in the classroom are but not in the lab area. You are both collectively and individually responsible for keeping the classroom clean. Abuse of this privilege will result in food and drinks being banned altogether.

## 10.8 Playing of Music

The computers at your lab stations are capable of playing music. Provided it is not audible to others, you may listen to music during labs either on those computers or on portable music-playing equipment you may own. You may not listen to music during class time, however.

## 10.9 Contacting the Instructor

*Instructor:* CAPT Charles B. Cameron  
*Telephone:* (410) 293-6181 (Work)  
(410) 757-8876 (Home, up to 2200)  
*E-mail:* <mailto:cameronc@usna.edu>  
*Office:* Maury Hall 336