



ECE 285 - ELECTRIC CIRCUIT ANALYSIS I
Spring 2014
Electric Circuit Analysis – ECE 285 - 001

1. Logistics

Lectures: MW 12pm - 1:15pm, Robinson Hall A349.

Recitation: Friday 1:30pm-2:20pm, in Robinson Hall B124.

Lab: Mondays 4:30-6:30pm, in room 3203.

Instructor: Dr. Nathalia Peixoto, npeixoto@gmu.edu

Office # 3912, Nguyen Engineering Building

Nathalia's office hours: Wednesdays 2 to 3 pm and by appointment, in room 3912.

Lab/recitation instructor: Mary Hatfield

TA's office hours: Fridays 12 to 1pm

2. Course Description: Circuit analysis hands-on and theory using superposition, equivalent circuits, transient and steady state analysis of RL, RC and RLC circuits. PSPICE as a circuit analysis tool will be used. A lab demonstrating and investigating circuit analysis concepts is included. Students are expected to be familiar with basic circuit analysis terms and concepts (current, voltage, resistance and Ohm's Law) prior to entry into ECE 285.

3. Textbook: *Fundamentals to Electric Circuits*, by Alexander and Sadiku, 5th Edition

Publisher: McGrawHill. With **Connect Plus**. Homework assignments will be through Connect.

Textbook is put on reserve under Theresa Calcagno, at the Johnson Center Library. The copy can be borrowed for 2h at a time.

4. Honor Code: All students are expected to abide by the *George Mason University Honor Code*. Sharing of ideas and comparison of answers on homework is acceptable, but copied work will not be accepted. In-class exams will be closed notes unless specifically stated by the instructor. All work must be your own. Any reasonable suspicion of an honor violation will be reported to the Honor Committee.

5. <u>Grading:</u> Two class exams (15% each)	30%
Final exam	15%
Homework, class participation and recitation attendance	15%
Labs	20%
Projects (ECP1 and ECP2)	20%

Final course grades will be assigned based upon weighted percentages as indicated above.

A 90– 100

C 70-79

F 59 and lower

B 80 – 89

D 60 – 69

No make up for missed exams. In extreme circumstances if a makeup exam is to be given, arrangements may be made during the comprehensive final exam day. In the extreme case of a makeup exam, the student is given only 50% of the credit (what one earns in the makeup exam). The makeup exam may be an oral exam.

If you achieve less than 50% in the comprehensive final exam, you will receive a grade “F” in the course.

6. Homework Policies: the majority of the homework will be assigned via Connect (McGrawHill, embedded into Blackboard) during the period a chapter is being covered.

7. Grade Changes: A student requesting that the grade of a homework or exam problem be reconsidered must provide the instructor with the following information in writing on the same day the work is returned to the class:

a. The number of the problem(s) to be reconsidered; **b.** A description of your mistakes made in the problem(s); and **c.** The reason that you feel that you should receive additional points for the problem(s). i.e. material the instructor did not see that was on the exam or homework paper.

Note: The entire exam and homework may be reconsidered by the instructor at this time.

PROPOSED SCHEDULE (for details please see updated weekly schedule)

week	Subject	Chapter	Recitation	Lab
1	Ohm’s Law, Kichhoff’s laws	2.2-2.4	Pspice Intro	Lab intro
2	Series and parallel resistors	2.5, 2.6	2.7	EXP1
3	Nodal analysis	3.2, 3.3	2.8	EXP2
4	Mesh analysis	3.4, 3.5	3.9	EXP3
5	Superposition and source transformation	4.3, 4.4	quiz	ECP1 prototypes
6	Midterm 1	1-3	4.8	EXP4
7	Thevenin and Norton theorems	4.5, 4.6	4.9	ECP1 due
8	Operational amplifiers	5.2-5.4	5.9	EXP5
9	Opamp circuit analysis	5.5-5.8	5.10	EXP6
10	Midterm 2	1-5.4	quiz	EXP7
11	Capacitors and Inductors	6.2-6.5	6.6	EXP8
12	First Order Circuits RC, RL	7.2, 7.3	7.8	ECP2 prototypes
13	Step responses	7.4-7.6	7.7	EXP9
14	Second Order Circuits, source-free RLC	8.2-8.4	8.9	ECP2 tests
15	Step response RLC series and parallel	8.5-8.7	quiz	ECP2 due
16	Comprehensive Exam	2 through 8	-	

Electric Circuits Projects (ECP): Electric Circuit Projects (ECP1 and ECP2) are required. Results from projects are posted on youtube (see <http://www.youtube.com/user/ECE280GMU> for fall 2012 pilot class). The youtube channel to post projects is www.youtube.com/user/ece285gmu . Further instructions will be given through Blackboard throughout the semester.

Labs: There are 9 experiments, all designed to be simple circuits. You are required to come to the lab having read the lab and simulated the circuits in PSPICE. During the lab you run the experiment and show your results to the TA (as well as the simulated circuits). After the lab you have one week to write a one page lab report in English, with no pictures, no equations, ideally no numbers. Please read the “lab how to” for a more detailed explanation of what is expected of you in terms of the lab report.

Learning outcomes:

Upon successful completion of Electric Circuit Analysis I, students will be able to (1) solve any circuits containing resistors, capacitors, operational amplifiers, and inductors; (2) describe the implications of short circuits and open circuits; (3) have practical experience in basic debugging techniques; (4) explain in lay terms what a circuit does and how it accomplishes an objective; (5) design a circuit to meet specific criteria (for example, power consumption or current levels, voltage levels); (6) use at least two methods to solve any one circuit; (7) describe circuit theorems that are critical in circuit design and circuit analysis.

Cell phones: Please note it is the university policy that all sound emitting devices shall be turned off during classes unless otherwise authorized by the instructor. If you have an emergency and want to keep the cell phone out you must talk with me prior to class. You are however allowed to take pictures of the whiteboard, using your cell phone, during class – at any time.

IMPORTANT INFORMATION

ACADEMIC INTEGRITY

GMU is an Honor Code university; please see the University Catalog for a full description of the code and the honor committee process. The principle of academic integrity is taken very seriously and violations are treated gravely. What does academic integrity mean in this course? Essentially this: when you are responsible for a task, you will perform that task. When you rely on someone else's work in an aspect of the performance of that task, you will give full credit in the proper, accepted form. Another aspect of academic integrity is the free play of ideas. Vigorous discussion and debate are encouraged in this course, with the firm expectation that all aspects of the class will be conducted with civility and respect for differing ideas, perspectives, and traditions. When in doubt (of any kind) please ask for guidance and clarification.

GMU EMAIL ACCOUNTS

Students must use their Mason email account to receive important university information, including messages related to the class. See <http://masonlive.gmu.edu> for more information

OFFICE OF DISABILITY SERVICES

If you are a student with a disability and you need academic accommodations, please see me during the first week of classes and contact the Office of Disability Services (ODS) at 993-2474. All academic accommodations must be arranged through the ODS. <http://ods.gmu.edu>

OTHER USEFUL CAMPUS RESOURCES:

WRITING CENTER: A114 Robinson Hall; (703) 993-1200; <http://writingcenter.gmu.edu>

UNIVERSITY LIBRARIES "Ask a Librarian" <http://library.gmu.edu/mudge/IM/IMRef.html>

COUNSELING AND PSYCHOLOGICAL SERVICES (CAPS): (703) 993-2380; <http://caps.gmu.edu>

UNIVERSITY POLICIES

The University Catalog, <http://catalog.gmu.edu>, is the central resource for university policies affecting student, faculty, and staff conduct in university academic affairs. Other policies are available at <http://universitypolicy.gmu.edu/>.

OFFICE OF STUDENT CONDUCT: <http://studentconduct.gmu.edu/>