

**Syllabus**  
**ECE 2290 – Electrical Circuits 2**  
**MWF – 10:30 AM – 11:20 AM**  
**Location: ENG 108**  
**Instructor: Ryan Davidson**  
**Office: EL 241F**  
**Email: [ryan.davidson@usu.edu](mailto:ryan.davidson@usu.edu)**  
**Office Hours: Mon and Wed 1 PM – 2 PM**

**Overview:** This course focuses on continuing circuit theory, analysis, and design for both Electrical and Computer Engineering Majors.

**Prerequisite:** ECE 2250

**Co-Requisite:** MATH 2280

**Required Materials:**

**Textbook:** The required text for the class is *Electric Circuits* by James W. Nilsson and Susan Riedel (8<sup>th</sup>, 9<sup>th</sup>, or 10<sup>th</sup> Edition)

**Computer:** Some homework assignments as well as some in class work will require a computer. Students must have access to a computer either at home or through one of the on-campus computer labs.

**Course Fee:** This course requires a fee that is used to maintain the labs.

**SPICE:** The use of the Simulation Program with Integrated Circuit Emphasis (SPICE) may be an integral part of the course. We will use either Windows software package Cadence OrCAD PSpice Package or the LTSpice package from Linear Technology. Free editions of the software are available from either company's web sites and will be suitable for the course. The full professional version of the Cadence software tools are available in the Engineering Computer Lab.

**Calculator:** A scientific calculator is required. The ability to solve matrix equations and deal with complex numbers is desirable. A phone or tablet application can be used instead of a stand-alone calculator so long as the capabilities are similar to a TI-83 style calculator. If you chose to use a phone or tablet application, your phone or tablet must be in airplane mode. Any indication that your phone or tablet is sending or receiving data will result in you being asked to leave class.

**Course Policies**

**Homework:** Homework will be assigned nearly **every class period** and will be due at the beginning of class (usually) two lectures later. Homework **must** be neat, legible, and follow the attached homework format. Late work and work which does not follow the given format **will not**

**be accepted.** Teaching assistants will grade HW and return it to you at their office hours. Questions/issues about HW grading should be addressed with the TAs before bringing them to my attention

**Quizzes:** Quizzes may be given throughout the semester. The topics of quizzes may encompass material that has or has not been covered in class. Quizzes may occur at any time during class, contain any number of questions, and have a time limit. There may be group or individual quizzes and your grade may be curved or absolute.

There is also a quiz to accompany every homework assignment. These quizzes are pass/fail and must be completed by the time homework is due.

**Exams:** Three in-class tests and a final exam will be given. The final exam will be weighted as the equivalent of two in-class tests. All tests will be individual tests and students are not allowed to interact with one another while taking a test. Students may use a single 3x5 note card with any hand written notes that they feel are needed during the exam. The 3x5 note cards from previous in-class tests may also be used on the later exams and the final. Note cards from previous semesters or classes are not allowed. No other material is allowed during tests. The final exam may cover material from any portion of the course (it is comprehensive). Everyone's lowest exam score will be dropped. Exams will be graded by the instructor with help from the TAs.

**Attendance:** Attendance will be crucial to success in this course. It is, however, not required. Attendance will not be recorded and will not influence your grade directly. Voluntary absence will not excuse a student from any homework, tests, quizzes, or presentations they are responsible for during the class period they missed. Extraordinary circumstances may be considered and a waiver of these rules potentially allowed.

**Grading:** All homework, exams, labs, and quizzes will be graded and that grade will be relayed to the student. In most cases the material being graded will be returned to the student but this isn't required. The breakdown of the contribution of the various categories to your total grade is as follows:

Homework – 15%

Lab – 10%

Exams – 70%

Quizzes – 5%

Point totals will be arbitrary in a given category but will be consistent within a category. Overall grades will be assigned using the following scale:

A	>93%
A-	90-93%
B+	87-90%

B	84-87%
B-	80-84%
C+	77-80%
C	74-77%
C-	70-74%
D+	67-70%
D	64-67%
D-	60-64%
F	<60%

**Tentative Schedule:** An approximate schedule for the class is attached. Exam dates, homework assignments, and holidays are noted. Deviations from this schedule will be posted on Canvas and announced in class. Lab dates will be posted on Canvas.

**Laboratory:** Students not performing all of the lab work will fail ECE 2290. Students must have a grade for every lab in order to pass the class. The grading format for the labs will be as follows:

- **Prelim** (5 points): The preliminary work must be completed prior to the lab period and must be checked by the lab instructor within the first 15 minutes of the lab for credit.
- **In Lab** (10 points): The work to be completed in the lab will be checked by the lab instructor at the end of the lab period.
- **Conclusions** (5 points): The completed lab and conclusions will be graded during the following lab period or at an assigned time for lab book turn in.

The lab assistant will be available during the scheduled labs and it is expected that the laboratory exercise will be completed during the scheduled time. A bound quad-ruled notebook is required for the lab. *The National #43-591 is recommended because it is a convenient size.* You will need to have funds on your USU card for the purchase of the various circuit components as needed in the lab. Every student must have a protoboard for use in the labs at USU. These can be purchased from the EE department store for about \$19.00.

All lab work is to be documented in the notebook using blue or black ink. *You must record the work done during the lab time directly in the notebook (no scratch paper allowed).* This saves time and encourages clear thinking and careful preparation. If you make a mistake, simply cross out the error and proceed.

- Pages in the notebook should be numbered, with no pages torn out and dated in the upper corner.
- A title page and a table of contents should appear at the beginning of the notebook.
- The printed hand out for each lab can be neatly glued into your notebook on the first page of the write-up for that lab.
- The format of your write-up for each lab should (usually) consist of the following sections, *with appropriate titles.*

- glued-in pages of essentials from printed hand-outs.
  - solutions to the preliminary exercises. These are to be worked out neatly in the notebook prior to the beginning of the lab period.
  - The various procedures. Include the raw measurements, data in tables, calculations, notes on instrument settings, graphs, and diagrams of circuits as appropriate. Under each procedure write a concise description of what you did, what you were recording, or what you observed.
  - Conclusions. Summarize your findings and evaluate the results relative to the stated objectives for each lab. Also include here responses to questions posed in the hand-out.
- Whenever possible, measured data and results of calculations should be displayed in tables and graphs. These tables and graphs are to be numbered, titled, and labeled using correct units.
  - Put considerable thought and effort into your evaluations and conclusions because this is the most important part of your write-up.

**Student Outcomes:**

<b>Objective</b>	<b>Method</b>
Gaining factual Knowledge (terminology, classifications, methods, trends)	Learning the terminology associated with electrical circuits. (HW, tests, labs)
Learning fundamental principles, generalizations, or theories	Develop a working knowledge of fundamental circuit theory. (HW, tests, labs)
Learning to apply course material (to improve thinking, problem solving, and decisions)	Applying knowledge gained in class to solve homework, test, and lab problems. (HW, tests, labs)

**General Policies**

**Classroom Decorum:** Students are expected to be polite, respectful, courteous, and attentive in class at all times. Interruptions, inappropriate language or comments, disruptions, and disrespectful behavior will not be tolerated. Inappropriate behavior is cause for exclusions from class, grading penalties, and referral to university administration.

**Academic Honesty:** Students are required to honestly and faithfully represent any work they have done or contributed to. Any willful appropriation of others' work or misrepresentation of an individual's work will be grounds for a failing grade on the affected problem, assignment, or the entire course. The instructor has sole discretion in the determination and consequences in cases of academic dishonesty unless they are escalated to the college or university level, at which point these rules are superseded by university policy.

**Disabilities:** Students with legitimate disabilities that require accommodation are encouraged to contact the USU Disability Resource Center and notify the instructor of their situation so that reasonable accommodations can be made. A disability must be disclosed prior to an assignment or test for accommodations to be made. Any reasonable effort will be made to accommodate those that are differently-abled.

Date	Day	Book Sections Covered	HW Assigned	HW Due
1/9/2017	Mon	Syllabus, Ch. 7 Review		
1/11/2017	Wed	8.1	HW 1	
1/13/2017	Fri	8.2	HW 2	
1/16/2017	Mon	MLK Day		
1/18/2017	Wed	8.2	HW 3	HW 1
1/20/2017	Fri	8.2	HW 4	HW 2
1/23/2017	Mon	8.3	HW 5	HW 3
1/25/2017	Wed	8.4	HW 6	HW 4
1/27/2017	Fri	9.1, 9.2	HW 7	HW 5
1/30/2017	Mon	Appendix B	HW 8	HW 6
2/1/2017	Wed	9.3	HW 9	HW 7
2/3/2017	Fri	9.4	HW 10	HW 8
2/6/2017	Mon	Review		HW 9
2/8/2017	Wed	Exam 1		
2/10/2017	Fri	Exam 1 Review	HW 11	
2/13/2017	Mon	9.5,9.6	HW 12	HW 10
2/15/2017	Wed	9.7	HW 13	HW 11
2/17/2017	Fri	9.8	HW 14	HW 12
2/20/2017	Mon	Presidents' Day		
2/22/2017	Wed	9.9	HW 15	HW 13
2/24/2017	Fri	9.10	HW 16	HW 14
2/27/2017	Mon	9.11	HW 17	HW 15
3/1/2017	Wed	10.1, 10.2	HW 18	HW 16
3/3/2017	Fri	10.3,10.4	HW 19	HW 17
3/6/2017	Mon	Spring Break		
3/8/2017	Wed	Spring Break		
3/10/2017	Fri	Spring Break		
3/13/2017	Mon	10.5	HW 20	HW 18
3/15/2017	Wed	10.6	HW 21	HW 19
3/17/2017	Fri	Review		HW 20
3/20/2017	Mon	Exam 2		
3/22/2017	Wed	Exam 2 Review	HW 22	
3/24/2017	Fri	11.1, 11.2	HW 23	HW 21
3/27/2017	Mon	11.3, 11.4	HW 24	HW 22
3/29/2017	Wed	11.5	HW 25	HW 23
3/31/2017	Fri	14.1, 14.2	HW 26	HW 24
4/3/2017	Mon	14.3	HW 27	HW 25
4/5/2017	Wed	14.4	HW 28	HW 26
4/7/2017	Fri	14.5	HW 29	HW 27
4/10/2017	Mon	Review		HW 28
4/12/2017	Wed	Exam 3		
4/14/2017	Fri	Exam 3 Review	HW 30	
4/17/2017	Mon	Appendix E	HW 31	HW 29
4/19/2017	Wed	15.1	HW 32	HW 30
4/21/2017	Fri	15.2	HW 33	HW 31
4/24/2017	Mon	15.3	HW 34	HW 32
4/26/2017	Wed	15.4		HW 33
4/28/2017	Fri	Final Review		HW 34
5/3/2017	Wed	Final Exam (11:30-1:30)		

Staple

Problem Number

<p>Given</p> <p>Find</p> <p>Sketch of Problem</p>
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*This must completely Define Problem for Later Reference*

*Seperate problem statement with a single line*

**General format for homework problems assigned in Electrical and Computer Engineering circuit classes.**

*Circuit diagram, working sketch, etc where appropriate*

1. Use engineering [E-2] paper, one side only, do not fold.
2. Staple multiple pages, more than one problem may be worked on the same sheet if space is available.
3. Use pencil and erasers, no pen and no cross outs.
4. Print, no script, all printing must be neat and horizontal.
5. Use a straight-edge for lines.
6. Include the name of and the symbolic form of all equations used.
7. Use symbolic format/variables as much as possible in your solution.
8. Show numerical values with 3 significant figures, but carry accuracy as far as possible on your calculator.
9. Organize your solution so that it can be easily followed.
10. Underline intermediate answers, double underline final answers.
11. Seperate multiple part problems with a single line across the page and end the problem with a double line across the page.
12. Include units with all intermediate and final answers.
13. Reference any tables or figures used to import information.
14. Each problem should be completed so that a textbook does not have to be referenced to understand the problem / solution.
15. Your work must have a professional appearance and be neat.

Intermediate answers and units

Answer and units

*double lines to show end of problem*