

University of Portland
School of Engineering

EE 271 – Electrical Circuits Laboratory – 1 credit hour
Spring 2016
Course Outline

Purpose: The goal of this laboratory is to teach the students how to construct and test simple electrical circuits, measure various physical quantities, such as voltage, current, and resistance, using different types of test instruments, and verify the relationships as well as observe and record the differences between theory and practice.

Learning Outcomes: At the successful completion of this course, the student is expected to gain the following skills:

- Become familiar with the basic circuit components and know how to connect them to make a real electrical circuit;
- Become familiar with basic electrical measurement instruments and know how to use them to make different types of measurements;
- Be able to verify the laws and principles of electrical circuits, and understand the relationships and differences between theory and practice;
- Be able to gain practical experience related to electrical circuits, and stimulate more interest and motivation for further studies of electrical circuits;
- Be able to carefully and thoroughly document and analyze experimental work.

Co-requisite: EE 261—Electrical Circuits

Instructors: EE 271-Section A—T 14:30-17:30
EE 271-Section C—Th 14:30-17:30
Dr. Aziz S. Inan
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Office: Shiley Hall 215

EE 271-Section B—W 14:40-17:40
Dr. Peter M. Osterberg
Phone#: 503-943-7416; Fax#: 503-943-7316
E-mail: oster@up.edu
Office: Shiley Hall 225

Lab Location: Shiley Hall 309

Textbook: A lab manual will be provided.

Notebook: Every student is required to have a lab notebook to be used for reporting their lab work. The lab notebook brand should be *Roaring Spring* Compositions, which is a QUAD. RULED, 5 lines to 1", 9¾ in. X 7½ in., sewn-binding, 100-page notebook. It is available at UP Bookstore.

Lab Experiments: Each experiment is designed for one lab period (i.e., ~3 hours) unless stated otherwise.

Lab Dates: The lab dates are tentatively scheduled as follows:

No lab on January 12-14, 2016 (First week)

Exp. # 1—Ohm's & Kirchhoff's Laws—January 19-21, 2016

Fun Project # 1—January 26-28, 2016

Exp. # 2—Simple Resistive Circuits—February 2-4, 2016

No lab on February 9-11, 2016

Exp. # 3—Electrical Circuit Theorems—February 16-18, 2016

Exp. # 4—DAC R-2R Ladder Network*—February 23-25, 2016

No lab on March 1-3, 2016

No lab on March 8-10, 2016 (Spring Break)

Exp. # 5—Intro. to Oscilloscope & Op-Amp Circuits—March 15-17, 2016

No lab on March 22-24, 2016 (Easter Break)

Exp. # 6—Capacitor & Inductor Circuits—March 29-31, 2016

Fun Project # 2—April 5-7, 2016

No lab on April 12-14, 2016 (Founder's Day)

No lab on April 19-21, 2016 (Last week)

*Formal lab report

Assessment/

Grades:

The total score and grade for the course will be computed based on the following percentages:

- 30% for lab quizzes
- 20% for the lab notebook (pre-lab assignments, accuracy and presentation of the measurements, error analyses, discussions and conclusions; organizations, neatness, completeness)
- 20% formal lab report
- 20% fun projects
- 10% for lab performance based on instructor observation

The final letter grade for the course is assigned based on the following total score/grade brackets over a scale of 100 possible points:

- 90–100 A⁻-A (Excellent Performance)
- 80–89 B⁻-B⁺ (Good Performance)
- 70–79 C⁻-C⁺ (Average Performance)
- 60–69 D⁻-D⁺ (Poor Performance)
- <60 F (Inadequate Performance)

Typically, the class average of the course grade is a B⁻.

Pre-lab

Assignments:

Pre-lab assignments will be assigned for each experiment. These pre-lab assignments are mandatory, that is, every student is expected to complete these assignments in their lab notebook before coming to the lab.

Lab Quizzes:

There will be a 15-minute lab quiz at the beginning of some of the lab periods. The lab quizzes will mostly be on the pre-lab assignments of that week's experiment.

UP's Code of Academic Integrity:

Academic integrity is openness and honesty in all scholarly endeavors. The University of Portland is a scholarly community dedicated to the discovery, investigation, and dissemination of truth, and to the development of the whole person. Membership in this community is a privilege, requiring each person to practice academic integrity at its highest level, while expecting and promoting the same in others. Breaches of academic integrity will not be tolerated and will be addressed by the community with all due gravity (taken from the University of Portland's Code of Academic Integrity).

The complete version of the code may be found in the 2015-2016 University of Portland Student Handbook and as well the Guidelines for Implementation. It is each student's responsibility to inform him or herself of the code and guidelines.

UP's Disabilities Statement:

If you have a disability and require an accommodation to fully participate in this class, contact Accessible Education Services (AES) located in Buckley Center 163 as soon as possible. If you have an AES Accommodation Plan, you should make an appointment to meet with me to discuss your accommodations. Also, you should meet with me if you wish to discuss emergency medical information or special arrangements in case the building must be evacuated.

UP's Assessment**Disclosure****Statement:**

Student work products for this course may be used by the University for educational quality assurance purposes.

UP's Green Dot**Statement:**

University of Portland Faculty, Staff, and Students are committed to creating a community free from interpersonal violence, in which all members feel safe and respected. Each of us has a personal responsibility to reject violence or intimidation of any kind. Resources for those experiencing or wishing to report violence can be found on our Community Against Violence website: <http://www.up.edu/cav/>.

UP's Transportation Policy:

If you plan to drive to off-campus events as part of this course, you must read the University Vehicle and Transportation Policy for Students: <http://www.up.edu/showingimage/show.aspx?file=21092>. The policy requires drivers of private or University vehicles to attend a one-time safe driving course, offered by Public Safety, and to submit a trip itinerary to Public Safety prior to each off-campus trip. The itinerary form must be signed by the instructor.