University of Portland (UP)
School of Engineering

EE 261 – Electrical Circuits – 3 cr. hrs.
Fall 2016
Tentative Course Outline Sheet

Course purpose: The purpose of this course is to introduce students to the basic elements of an electrical circuit and teach the fundamental laws and principles that they need to understand, analyze, and design electrical circuits.

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

- Become familiar with basic elements of circuits (such as resistors, capacitors, inductors, voltage and current sources, etc.) and their mathematical models;
- Learn and apply the basic laws (such as Ohm's law, Kirchhoff's laws, node voltage method, superposition, the concept of source transformation, Thévenin and Norton equivalent circuits, maximum power transfer theorem, etc.);
- Analyze an electric circuit and be able to calculate voltage values, current values, power dissipation, etc.;
- Analyze and design basic op-amp circuits;
- Find the response of 1st and 2nd –order switching circuits;
- Find the unit-step response of 1st and 2nd –order circuits; and
- Find the steady-state response of ac circuits.

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Office hours: M 11:30-13:30; W 11:30-12:00; Th 12:00-14:30

Lecture hours: MWF 13:35-14:30 (Location: SH 101)

Textbook: *Introduction to Electric Circuits* by Dorf & Svoboda
(9th ed., John Wiley & Sons, ISBN 978-1-118-47750-2, 2014)

Co-requisites: EE 271, MTH 202, and PHY 205

Course content: Overview of circuit analysis (Chapter 1)
Circuit elements, concepts, Ohm's law (Chapter 2)

Kirchhoff's laws and resistive circuits (Chapter 3)
Node voltage and mesh current analyses (Chapter 4)
Circuit theorems (Chapter 5)
Capacitors and inductors (Chapter 7)
Response of first-order switching dc circuits (Chapter 8)
Response of second-order switching dc circuits (Chapter 9)
Sinusoidal steady-state (ac) circuits (Chapter 10)

Grading policy: The <u>total numerical grade</u> is computed based on the following percentages:
- 20% for homework
- 50% for the two midterm exams (25% each) and
- 30% for the final exam

The <u>final letter grade</u> in the course is assigned based on the following total numerical grade intervals out of a total of 100 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 average of the total numerical grades is B^-.

Exam Dates: The exam dates are tentatively set as follows:

<u>Midterm #1</u>–Friday, October 7, 2016
<u>Midterm #2</u>–Friday, November 18, 2016
<u>Final Exam</u>*–Monday, December 12, 2016, 10:30-12:30
*Comprehensive and mandatory for all the students.

N☺-class Dates: Monday-Friday, October 17 through 21, 2016 (Fall Break)
Thursday & Friday, November 24 & 25, 2016 (Thanksgiving Break)

Homework: Weekly homework will be assigned. Solutions for each homework assignment will be provided on the due date. Homework assignments are mandatory, that is, every student is expected to do the homework assignments <u>on time</u> to qualify for consideration to receive a passing grade in the course.

Sorry, but, <u>no late homeworks will be accepted</u>!!☹
Therefore, <u>no late homeworks will be expected</u>!!☺

Laboratory: EE 271–Electrical Circuits Laboratory is a co-requisite for EE 261. In this laboratory, the students will learn to build, test, and take measurements on real simple electric circuits. The

EE 271 laboratory compliments the theory of circuits taught in EE 261 with hands-on practical experience.

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.

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 Accessible Education Services (AES): Students who experience a disability and require an accommodation to fully participate in this class, contact the Accessible Education Services office located in Buckley Center, Rm. 163 or call 503-943-8985. If you have an AES accommodation plan that includes academic accommodations that apply to this course, make an appointment to meet with the professor to discuss how your accommodation will be implemented. You are responsible for giving sufficient notice to your professor for timely implementation of your accommodation; therefore it is recommended you speak with your professor in the first week of the semester or as soon as your accommodation plan is activated. Also, meet with the professor if you have an AES Safety Plan and/or wish to discuss emergency

medical information or special arrangements in case the building must be evacuated. Requests for an alternate location for exams and/or extended exam time should, when possible, be made two weeks in advance of an exam, and must be made at least one week in advance of an exam.

_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 Shepard Academic Resource Center (SARC): The Learning Resource Center, located on the first floor of Buckley Center within SARC (BC 163), provides peer assistance tutoring for writing, math, speech and presentations, languages, business and economics, sciences and nursing. For complete information about SARC, go to http://www.up.edu/sfrc/default.aspx?cid=13615&pid=8862

_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.

Matching Game (Optional): On the next page, you see the pictures of 16 extraordinary men who lived in the past and made significant contributions in the areas of electricity and magnetism. The names of these men are Andre Marie **Ampere**, Thomas Alva **Edison**, Michael **Faraday**, Benjamin **Franklin**, Luigi Aloisius **Galvani**, Oliver **Heaviside**, Hermann Ludwig Ferdinand von **Helmholtz**, Joseph **Henry**, Heinrich Rudolf **Hertz**, Gustav Robert **Kirchhoff**, James Clerk **Maxwell**, Edward Lawry **Norton**, Georg Simon **Ohm**, Nikola **Tesla**, Leon Charles

Thevenin, and Alessandro Giuseppe Antonio Anastasio **Volta**. These names are provided in an alphabetical order and don't match the order in which the pictures are provided. Can you match the names and the pictures?
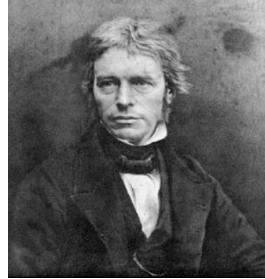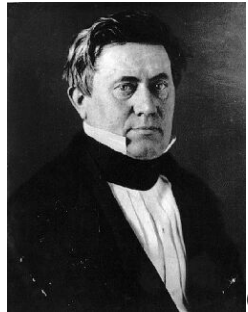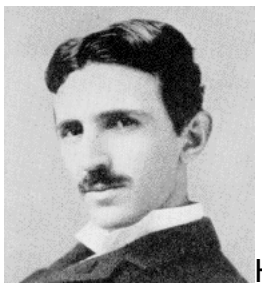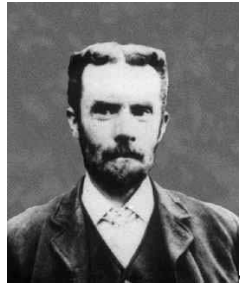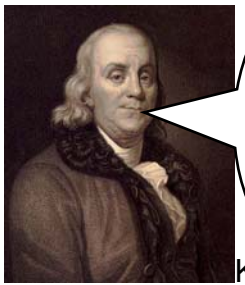

A

B

C

D

E

F

G

H

H

I

J

K

What is special about my 310th birthday?

L

M

N

O

How about my next, 311th birthday?