University of Portland (UP)
School of Engineering

EE 261 – Electrical Circuits – 3 cr. hrs.
Summer 2012
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, superposition, the concept of source transformation, Thevenin 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.;
- Find the response of 1\textsuperscript{st} and 2\textsuperscript{nd} –order switching circuits;
- Find the step response of 1\textsuperscript{st} and 2\textsuperscript{nd} –order circuits; and
- Find the steady-state response of ac circuits.

**Instructor:** Aziz S. Inan, Ph.D.
Office#: SH 215
Phone#: 503-943-7429, Fax#: 503-943-7316
e-mail: ainan@up.edu
web page: http://faculty.up.edu/ainan/

**Office hours:** TR 11:30-12:30.

“I prefer death to lassitude. I never tire of serving others,”
by Leonardo da Vinci (1452–1519)

**Lecture hours:** TR 12:40-16:10 (Location: Shiley Hall, Room # 206)


**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 total numerical grade is computed based on the following percentages:
• 50% for two midterm exams (25% for each)
• 35% for the final exam
• 15% for the homework
The final letter grade 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 numerical average of the total numerical grades is assigned to about a B grade.

Exam Dates:
The exam dates are tentatively set as follows:
Midterm #1—Thursday, May 24, 2012 (subject to change)
Midterm #2—Thursday, June 7, 2012 (subject to change)
Final Exam*—Thursday, June 21, 2012 (last day)
*Comprehensive and mandatory for all the students.

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 on time to qualify for consideration to receive a passing grade in the course.

Sorry, but, no late homeworks will be accepted!!☺
Therefore, no late homeworks will be expected!!☺

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 (taken from the University of Portland’s Code of Academic Integrity).

The complete code may be found in the 2011-12 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.

**Accommodation for disability:**

If you have a disability and require an accommodation to fully participate in this class, contact the Office for Students with Disability (OSWD), located in the University Health Center (503-943-7134), as soon as possible.

**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, Benjamín 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?
University of Portland  
School of Engineering

EE 261  
Summer 2012  
A. Inan

Homework # 1  
(Assigned: Tuesday & Thursday, May 15 and 17, 2012)  
(Due Tuesday, May 22, 2012, 12:40p.m.)

These problems are assigned from Introduction to Electric Circuits by Dorf/Svoboda (8th edition):

P 1.7-1. Conservation of energy. (p. 18)  
P 1.7-3. Conservation of energy. (p. 18)  
P 2.4-3. A simple circuit. (p. 45)  
P 2.4-5. A parallel circuit. (p. 45)  
P 2.4-6. A series circuit. (p. 46)  
P 2.5-1. A parallel circuit. (p. 46)  
P 2.5-2. A series circuit. (p. 46)  
P 2.9-1. Switches. (p. 51)  
P 3.2-1. KVL, KCL and power. (p. 88)  
P 3.2-2. KVL, KCL and power. (p. 88)  
P 3.2-3. A resistive circuit. (p. 88)  
P 3.2-5. Power absorbed by each resistor. (p. 88)  
P 3.2-7. A circuit having only sources. (p. 88)  
P 3.2-12. Power received by each resistor. (p. 89)  
P 3.2-20. KVL and KCL. (p. 90)  
P 3.3-7. KVL and voltage divider principle. (p. 93)  
P 3.3-12. Voltage divider principle. (p. 93)  
P 3.4-1. Current divider principle. (p. 94)  
P 3.4-8. A circuit with three current sources. (p. 95)  
P 3.6-9. KVL and KCL. (p. 99)  
P 3.6-12. Equivalent resistance. (p. 99)  
P 3.6-20. Determine voltages and currents. (p. 100)

Please use the following guidelines for your homework solutions:
1) On the first sheet, at the top, indicate that this is EE 261/Summer 2012/HW #1 Solutions and provide your name somewhere on that sheet where the grader can easily see it.  
2) Solve each problem on a separate sheet unless there is a solution which is very short.  
3) Do not use the back of the sheets unless you have to.  
4) Staple your solutions in the above order before you turn them in.

Please turn in your homework on time. The solutions for each homework assignment will be provided as a separate handout on the due date.