

University of Portland (UP)
School of Engineering

EE 301 – Electromagnetic Fields – 3 cr. hrs.

Spring 2018

Tentative Course Outline Sheet

Course Purpose: The purpose of this course is to introduce the students to the basic definitions, concepts and laws that are essential in understanding the characteristics and propagation of electromagnetic waves.

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

- Understand the fundamental differences between lumped-circuit versus distributed-circuit analysis;
- Understand transmission-line fundamentals;
- Understand the Smith chart and its applications;
- Analyze and design impedance-matching networks;
- Become familiar with Maxwell's equations; and
- Understand the properties of uniform plane electromagnetic waves.

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Lecture Hours: MWF 11:25-12:20 (Location: Shiley Hall 101)

Office Hours: M 13:30-15:30; W 14:30-16:30; & F 13:30-14:30

<p><i>"I prefer death to lassitude. I never tire of serving others,"</i> by Leonardo da Vinci (1452–1519)</p>

Textbook: *Engineering Electromagnetics and Waves* by Inan² Said (Pearson, 2015, ISBN 978-0-13-266274-1)

Course Content: Lumped vs Distributed Electrical Circuits (Chapter 1)
Digital Signals Traveling on Transmission Lines (Chapter 2)
Steady-State Waves on Transmission Lines (Chapter 3)
Smith Chart and Impedance Matching (Chapter 3)
Maxwell's Equations (Chapter 7)
Electromagnetic Waves (Chapter 8)

Prerequisites: EE 261, MTH 301, and PHY 205.

Grading Policy: The total numerical grade is computed based on the following percentages:

- 2% for contemporary issues
- 18% for homework

- 50% for the two midterm exams (25% each) and
- 30% for the final exam

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–Wednesday, February 28, 2018
Midterm #2–Monday, April 9, 2018
Final Exam*–Thursday, May 3, 2018, 13:30-15:30
 *Comprehensive and mandatory for all the students.

N☺-Class Dates: Monday-Friday, March 12 through 16, 2018 (Spring Break)
 Friday & Monday, March 30 & April 2, 2018 (Easter Break)
 Tuesday, April 10, 2018 (Founder’s Day Presentations*)
 *Students are expected to attend Founder’s Day presentations.

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.

Contemporary Issues Assignment:
 Due Friday, April 6, 2018. This assignment is worth 10 points (about 2% of the total class grade).
 The purpose of this assignment is to help students become more aware of contemporary issues related to electrical engineering that can affect their careers and lives. To receive credit for this assignment, you need to attend at least one professional meeting or lecture where a contemporary issue related to electrical engineering is presented and write a short summary of the presentation. The summary should be approximately one page long, and should include the following items: Your full name, the title, date, and location of the event, the name of the speaker, and his/her affiliation (company or university), title and summary of the presentation discussing the main points and what you learned from the presentation.

University of Portland’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. Please see the University Bulletin for policy:

<http://up.smartcatalogiq.com/en/2017-2018/bulletin/University-Academic-Regulations/I-Code-of-Academic-Integrity>

University of Portland's Assessment Disclosure Statement:

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

University of Portland'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 your professor to discuss how your accommodation will be implemented. You are responsible for giving sufficient notice to your professor for timely implantation 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 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.

University of Portland'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. The Learning Resource Center provides peer assistance tutoring for writing, math, speech and presentations, group project planning, international languages, etc. For complete information about the Learning Commons Center, please go to:

<https://www1.up.edu/learningcommons/index.html>

University of Portland's Mental Health Statement:

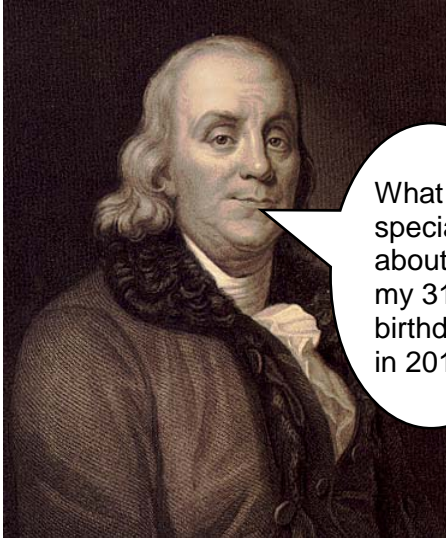
As a college student, you may sometimes experience problems with your mental health that interfere with academic experiences and negatively impact daily life. If you or someone you know experiences mental health challenges at UP, please contact the University of Portland Health and Counseling Center in Orrico Hall (down the hill from Franz Hall and Mehling Hall) at <https://www1.up.edu/healthcenter/> or at 503-943-7134. Their services are free and confidential, and if necessary they can provide same day appointments. Also know that the University of Portland Public Safety Department (503-943-4444) has personnel trained to respond sensitively to mental health emergencies at all hours. Remember that getting help is a smart and courageous thing to do – for yourself, for those you care about, and for those who care about you.

University of Portland's Non-Violent Community Statement:

University of Portland Faculty, Staff, and Students are committed to creating a community free of 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: <https://www1.up.edu/cav/>

Just for fun: Wednesday, January 17, 2018 marks Benjamin Franklin's 312th birthday.



What is special about my 312th birthday in 2018?

Answer: Three eighths of 312 gives my birth date, January 17 (1/17). Furthermore, if my 312th birthday is expressed as 1/17/18, 18 equals 1 plus 17. Additionally, 18 equals the sum of the prime factors of 312. Moreover, the digits of 1/17/2018 add up to 20, the 20th prime number is 71 and three times 71 equals 213, which is the reverse of 312.