University ☺f P☺rtland (UP)
Sch☺☺l ☺f Engineering

EE 301 – Electromagnetic Fields – 3 cr. hrs.
Spring 2019
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.

Instructor: Aziz S. Inan, ainan@up.edu; http://faculty.up.edu/ainan/
Office#: Shiley Hall 215
Phone#: 503-943-7429, Fax#: 503-943-7316

Lecture Hours: MWF 11:25-12:20 (Location: Shiley Hall 124)

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

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

Textbook: *Engineering Electromagnetics and Waves* by Inan[2] 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

- 10% for the mini-project
- 40% for the two midterm exams (20% 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 27, 2019
Midterm #2–Monday, April 8, 2019
Final Exam*–Tuesday, April 30, 2019, 8:00-10:00
*Comprehensive and mandatory for all the students.

N☺-Class Dates: Monday-Friday, March 4 through 8, 2019 (Spring Break)
Friday & Monday, April 19 & 22, 2019 (Easter Break)
Tuesday, April 9, 2019 (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 12, 2019. 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.

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 Accessibilty Statement:
The University of Portland endeavors to make its courses and services fully accessible to all students. Students are encouraged to discuss with their instructors what might be most helpful in enabling them to meet the learning goals of the course. Students who experience a disability are also encouraged to use the services of the Office for Accessible Education Services (AES), located in the Shepard Academic Resource Center (503-943-8985). If you have an AES Accommodation Plan, you should make an appointment to meet with your faculty member to discuss how to implement your plan in this class. Requests for alternate location for exams and/or extended exam time should, where possible, be made two weeks in advance of an exam, and must be made at least one week in advance of an exam. Also, you should meet with your faculty member to discuss emergency medical information or how best to ensure your safe evacuation from the building in case of fire or other emergency.

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://www.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-Violence Statement:
The University of Portland is committed to fostering a community free from all forms of violence in which all members feel safe and respected. Violence of any kind, and in particular acts of power-based personal violence, are inconsistent with our mission. Together, we take a stand against violence. Join us in learning more about campus and community resources and reporting options, along with our prevention strategy, Green Dot on our Community Against Violence website, www.up.edu/cav.

University of Portland's Ethics of Information Statement:
The University of Portland is a community dedicated to the investigation and discovery of processes for thinking ethically and encouraging the development of ethical reasoning in the formation of the whole person. Using information ethically, as an element in open and honest scholarly endeavors, involves moral reasoning to determine the right way to

access, create, distribute, and employ information including: considerations of intellectual property rights, fair use, information bias, censorship, and privacy. More information can be found in the Clark Library's guide to the Ethical Use of Information at libguides.up.edu/ethicaluse.

The Learning Commons:
The Learning Commons, located in Buckley Center 163, offers a variety of peer tutoring programs that facilitate your active learning and mastery of skills and knowledge. For questions about the Learning Commons, please send all correspondence to Jeffrey White, Administrator, at white@up.edu. The Learning Commons is a program of the Shepard Academic Resource Center.

Math Resource Center: Monday through Thursday, 6:00 p.m. through 9:00 p.m. during the first week of classes. Regular shifts begin the Sunday after the first week. For a course-specific schedule visit www.up.edu/learningcommons, or the reception desk in BC 163.

Writing Assistance: Start brainstorming ideas for your paper with a Writing Assistant. Visit www.up.edu/learningcommons to access our Writing Center schedule.

The Language Studio: Contact the language assistance hotlines to schedule a time to meet throughout the semester at chinesetutor@up.edu, frenchtutor@up.edu, germantutor@up.edu, or spanishtutor@up.edu.

Natural Sciences Center: Send your tutoring requests to biotutor@up.edu, chemtutor@up.edu, or physicstutor@up.edu.

Speech & Presentation Lab: Improve your presentations by requesting an appointment at speech@up.edu.

Group Work Lab: Make an appointment for your group project at groupwork@up.edu.

Nursing Tutoring: Our peer tutors for pathophysiology will begin providing peer support in BC 163 during the first week of classes to help you start the semester on the right path. Tutoring is available on a walk-in or appointment basis. Up-to-date schedule information is at www.up.edu/learningcommons/nursing.

Economics and Business Tutoring: For support in economics, OTM, finance, accounting, and business law courses, send requests for appointments to your discipline's tutor email hotline: econtutor@up.edu, otmtutor@up.edu, financetutor@up.edu, accountingtutor@up.edu, or bizlaw@up.edu.

Learning Assistance Counselor: Learning assistance counseling is also available in BC 163. The counselor teaches learning strategies and skills that enable students to become more successful in their studies and future professions. The counselor provides strategies to assist students with reading and comprehension, note-taking and study, time management, test-taking, and learning and remembering. Appointments can be made in the on-line scheduler available to all students in Moodle or during posted drop-in hours.

Access University of Portland's Lab Statement: Shop access is only allowed with appropriate training from shop technicians and with instructor permission. If students require card access to a laboratory, they must receive training from a technician. No food or beverages (including water bottles) are allowed in the computer classrooms, shop, or labs.

Just for fun: Thursday, January 17, 2019 marks Benjamin Franklin's 313th birthday.