UVic Department of Electrical and Computer Engineering

COURSE OUTLINE
ELEC 340 – Electromagnetic Field Theory
Spring 2014

Instructor

Dr. Poman So
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Office Hours

Days: Tuesday & Wednesday
Time: 2:00 PM to 3:00 PM
Location: EOW 417

Lectures

A-Section(s): A01 / CRN 21088
A02 / CRN 21089
Days: Tue, Wed & Fri
Time: 12:30 PM – 1:20 PM
Location: ELL 167

Labs **Location: ELW A309**

B-Section(s)	Days	Time
B01: 21090	Mon	12:00–14:50
B02: 21091	Mon	12:00–14:50
B03: 21092	Tue	13:30–16:20
B04: 20093	Tue	13:30–16:20
B05: 21094	Wed	16:30–19:20
B06: 21095	Wed	16:30–19:20
B08: 21097	Fri	13:30–16:20

Required Text

Title: Fundamentals of Applied Electromagnetics, 6ed, ISBN: 978-0-13-213931-1
Author: Fawwaz T. Ulaby, Eric Michielssen, Umberto Ravaioli
Publisher: Pearson / Prentice Hall
Year: 2010

References

Title: Engineering Electromagnetics, 7ed
Author: W.H. Hayt, J.A. Buck
Publisher: McGraw-Hill
Year: 2006

Assessment

Quizzes:	10%		
Labs*[1]	20%		
Mid-term*[2]	10%	Closed book, no calculator	Date: Feb 21, 2014
Final*[2&3]	60%	Closed book, no calculator	

***Note**

1. Failure to complete all laboratory requirements will result in a grade of N being awarded for the course.
2. Must attend all labs and at least 80% of the lectures in order to qualify to write the midterm and final examinations (http://web.uvic.ca/calendar2013/FACS/UnIn/UARe/Atte.html)
3. Failure to pass the final examination will result in a grade of E or lower being awarded for the course.
4. Plagiarism detection software may be used to aid the instructor and/or TA's in the review and grading of some or all of the work you submit (http://library.uvic.ca/instruction/cite/plagiarism.html).

Due Dates for Assignments and Lab Reports

- Assignments: One week after each assignment is handed out. Late assignments are not accepted.
- Lab Reports: One week after each lab is performed. One report per group (of two persons, max); late reports are subjected to 25% penalty per day.

Final Grade

The final grade obtained from the above marking scheme will be based on the following percentage-to-grade point conversion:

	Grades	Grade Point Value	Percentage for Instructor Use Only	Note
Passing	A+ A A–	9 8 7	90 – 100 85 – 89 80 – 84	
	B+ B B–	6 5 4	77 – 79 73 – 76 70 – 72	
	C+ C	3 2	65 – 69 60 – 64	
	D	1	50 – 59	
Failing	E	0	35 – 49	Fail, conditional supplemental exam. (For undergraduate courses only)
	F	0	0 – 34	Fail, no supplemental exam.
	N	0	0 – 49	Did not write examination, lab or otherwise completed course requirements by the end of the term or session; no supplemental exam.

The rules for supplemental examinations are found on page 80 of the current 2013/14 Undergraduate Calendar.

Term in which E Grade was obtained:	Application Deadline for Supplemental Exam	Supplemental Exam Date
First term of Winter Session (Sept – Dec)	Following February 28	First week of following May
Second term of Winter Session (Jan – Apr)	Following June 30	First week of following September
Summer Session (May – Aug)	Following October 31	First week of following January

Deferred exams will normally be written at the start of the student's next academic term; i.e., approximately 4 months following the deferral of the exam.

Course Description

1. **Course Objectives:** Study electromagnetic field theory and its applications in engineering electromagnetics.
2. **Learning Outcomes:** Upon completion of this course students should be able to:
   a. Describe mathematically the electric and magnetic fields of EM waves.
   b. Characterize wave propagation and relate the propagation parameters of a wave to the constitutive parameters of the medium.
   c. Calculate the rate of power carried by an EM wave in both lossless and lossy media.
   d. Determine the behaviour of resonant modes inside a rectangular cavity.
   e. Design electromagnetic structures for polarization of electromagnetic waves.
   f. Design electromagnetic structures to optimize transmission behavior of plane-waves incident upon plane boundaries, for both normal and oblique incidence.
3. **Syllabus:** Field concept, Maxwell's equations. Boundary conditions. Power and energy. Constitutive parameters. Polarization. Plane waves in free space and materials. Plane wave reflection and transmission at material interfaces. Engineering design, general concepts and examples. Design of quarter wave and half wave transformers. Shielding design.

Note to Students

Students who have issues with the conduct of the course should discuss them with the instructor first. If these discussions do not resolve the issue, then students should feel free to contact the ECE Chair by email or the ECE Chair's secretary to set up an appointment.

Accommodation of Religious Observance

See http://web.uvic.ca/calendar2013/GI/GUPo.html

Policy on Inclusivity and Diversity

See http://web.uvic.ca/calendar2013/GI/GUPo.html

Standards of Professional Behaviour

You are advised to read the Faculty of Engineering document Standards for Professional Behaviour at http://www.uvic.ca/engineering/assets/docs/professional-behaviour.pdf which contains important information regarding conduct in courses, labs, and in the general use of facilities.

Cheating, plagiarism and other forms of academic fraud are taken very seriously by both the University and the Department. You should consult http://web.uvic.ca/calendar2013/FACS/UnIn/UARe/PoAcI.html for the UVic policy on academic integrity.

Plagiarism detection software may be used to aid the instructor and/or TA's in the review and grading of some or all of the work you submit. (http://library.uvic.ca/instruction/cite/plagiarism.html)