



COURSE OUTLINE

ELEC 216 – Electricity and Magnetism

Summer 2014

Instructor:

Dr. Jens Bornemann
Phone: 250-721-8666
E-mail:

Office Hours:

Days: Tuesdays, Wednesdays
Time: 1:30-2:30 pm
Location: EOW 309

Lectures:

A-Section(s): A01 / CRN 30260
A-Section(s): A02 / CRN 30261
Days: Tuesdays, Wednesdays, Fridays
Time: 12:30 – 1:20 pm
Location: ELL 060

Labs:

B-Section(s)

	Days	Time
B01	Thursdays	2:30-5:30 pm
B02	Thursdays	5:30-8:30 pm

Location: ELL 129

Tutorials: TBA

Required Text:

Title: Fundamentals of Applied
Electromagnetics, 6th ed
Authors: Ulaby, Michielssen, Ravaioli
Publisher: Pearson / Prentice Hall
Year: 2010

Optional Text:

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

References:

Course Website: TBA

Assessment:

Assignments:	10 %
Labs	20 %
Mid-term	20 %
Final	50 %

Date: TBA

Notes:

1. Failure to complete all laboratory requirements will result in a grade of N being awarded for the course.
2. Students failing the mid-term test (less than 10 out of 20) will be evaluated by a scheme that adds the percentage of the test to that of the final exam.
* This procedure will also be adopted for assignments and individually, if it results in a higher percentage for the student.
3. Students earning less than 45% (less than 22.5 out of 50) in the final exam will fail the course.

Due dates for assignments: TBA

Lab Requirements:

- Lab begins on Thursday, 08 May 2014 (intro session and lab schedule).
- See GENERAL LABORATORY REGULATIONS FOR STUDENTS in the lab manual for details about report requirements.

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

Passing Grades	Grade Point Value	Percentage for Instructor Use Only	
A+	9	90 – 100	
A	8	85 – 89	
A-	7	80 – 84	
B+	6	77 – 79	
B	5	73 – 76	
B-	4	70 – 72	
C+	3	65 – 69	
C	2	60 – 64	
D	1	50 – 59	
Failing Grades	Grade Point Value	Percentage for Instructor Use Only	Description
E	0	35 - 49	Fail, conditional supplemental exam. (For undergraduate courses only)
F	0	0 – 49	Fail, no supplemental.
N	0	0 – 49	Did not write examination, Lab or otherwise complete course requirements by the end of 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)	February 28 in the following term	First week of following May
Second term of Winter Session (Jan – Apr)	June 30 in the following term	First week of following September
Summer Session (May – Aug)	October 31 in the following term	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 the fundamentals of electromagnetics with emphasis on engineering applications.

2. Learning Outcomes

Upon completion of this course students should be able to:

- Describe the basic properties of electric and magnetic forces.
- Calculate the gradient of a scalar function and the divergence and curl of a vector function in any of the three primary coordinate systems.

- c. Apply Coulomb's Law, Biot-Savart Law, Gauss' Law, Faraday's Law, Lenz's Law, Lorentz Force, Ampère's Law, and Maxwell's Equations to solve electromagnetic problems.
- d. Calculate the resistance, capacitance, and inductance of electromagnetic structures.
- e. Apply the phasor-domain technique to analyze steady-state electromagnetic problems.
- f. Apply electromagnetic field modeling software to solve electromagnetic problems.

3. Syllabus

Electric charge, Coulomb's Law, electrostatic forces, electric field, Gauss's Law, electric potential, stored energy. Electric current, conduction in a vacuum and in material media, displacement current, magnetic field of a current, force on a current carrying wire, magnetic induction, electromotive force, energy stored in a magnetic field. Time varying fields. Capacitance, resistance, inductance, and their characterization.

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/calendar2014/GI/GUPo.html>

Policy on Inclusivity and Diversity

See <http://web.uvic.ca/calendar2014/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/current/undergrad/index.php#section0-25> 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/calendar2014/FACS/UnIn/UARe/PoAcI.html> for the UVic policy on academic integrity.

<p>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.</p>
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