ELEC 340 – Applied Electromagnetics and Photonics
Term – Spring 2016 (201601)
CourseSpaces – http://coursespaces.uvic.ca/course/view.php?id=12689

Instructor
Dr. Poman So
Phone: 250-472-4224
E-mail: Poman.So@UVic.CA

Office Hours
Days: Tuesday and Wednesday
Time: 13:30 – 14:30
Location: EOW 417

Course Objectives
Study electromagnetic and photonic theory as well as their applications in engineering.

Learning Outcomes
a. Describe mathematically the electric and magnetic fields of TEM waves.
b. Describe the propagation parameters of a wave to the constitutive parameters of the medium.
c. Describe wave propagation in a rectangular waveguide.
d. State the resonant modes inside a rectangular cavity.
e. State the basic operation of photonic structures.
f. State the electric and magnetic fields of waves radiated by a dipole antenna.
g. State the Doppler frequency shift observed by a radar.
h. Identify the basic operation of satellite communication systems.
i. Evaluate the rate of power carried by an EM wave in both lossless and lossy media.
j. Design electromagnetic structures for polarization of electromagnetic waves.
k. Design electromagnetic structures to optimize transmission behavior of plane-waves incident upon plane boundaries, for both normal and oblique incidence.

Syllabus
Field concept, Maxwell’s equations, power, and energy. Plane wave propagation, polarization, and reflection and transmission at material interfaces. Introduction to waveguides, antennas, and photonic structures. Engineering electromagnetics design concepts and examples with emphasis on impedance transformers and shielding structures.

A-Sections: A01 (02) / CRN 21132 (21133)
Days: TWF
Time: 12:30 – 13:20
Location: ELL 167

B-Sections: B01 – B06, and B08
See the class schedule listing at the end of this course outline for details
Location: ELW A309

Required Text
Author: Fawwaz T. Ulaby and Umberto Ravaioi
Publisher: Pearson / Prentice Hall
Year: 2015
Assessment:
Assignments: 10%  Due Dates: See CourseSpaces for details
Labs 20%
Mid-term 10%  Date: Tuesday February 16, 2016.
Final Exam 60%

Note:
1. Failure to complete all laboratory requirements will result in a grade of N being awarded for the course.
2. Failure to pass the final exam will result in a failing grade (F) for the course.
3. 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)

The final grade obtained from the above marking scheme for the purpose of GPA calculation will be based on the percentage-to-grade point conversion table as listed in the current Undergraduate Calendar.

There will be no supplemental examination for this course.

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 Chair of the Department by email or the Chair's Secretary to set up an appointment.

Accommodation of Religious Observance
http://web.uvic.ca/calendar/GI/GUPo.html

Policy on Inclusivity and Diversity
http://web.uvic.ca/calendar/GI/GUPo.html

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

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

Course Lecture Notes
Unless otherwise noted, all course materials supplied to students in this course have been prepared by the instructor and are intended for use in this course only. These materials are NOT to be re-circulated digitally, whether by email or by uploading or copying to websites, or to others not enrolled in this course. Violation of this policy may in some cases constitute a breach of academic integrity as defined in the UVic Calendar.
Class Schedule Listing

Second Term: Jan - Apr 2016
Dec 10, 2015

Sections Found

APPLD: ELECTRMAGNTCS+PHOTONCS - 21132 - ELEC 340 - A01
Reserved for BME, CENG, and ELEC students.
Associated Term: Second Term: Jan - Apr 2016
Registration Dates: Jun 15, 2015 to Jan 20, 2016
Levels: Graduate, Law, Undergraduate
Main Campus
Lecture Schedule Type
Face to Face Instructional Method
1.500 Credits
View Catalog Entry

Scheduled Meeting Times

<table>
<thead>
<tr>
<th>Type</th>
<th>Time</th>
<th>Days</th>
<th>Where</th>
<th>Date Range</th>
<th>Schedule Type</th>
<th>Instructors</th>
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<tr>
<td>Every Week</td>
<td>12:30 pm -</td>
<td>TWF</td>
<td>Elliott Building 167</td>
<td>Jan 04, 2016 - Apr 04, 2016</td>
<td>Lecture</td>
<td>Poman Pok Man So (P)</td>
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APPLD: ELECTRMAGNTCS+PHOTONCS - 21133 - ELEC 340 - A02
Not open to BME, CENG, and ELEC students.
Associated Term: Second Term: Jan - Apr 2016
Registration Dates: Jun 15, 2015 to Jan 20, 2016
Levels: Graduate, Law, Undergraduate
Main Campus
Lecture Schedule Type
Face to Face Instructional Method
1.500 Credits
View Catalog Entry

Scheduled Meeting Times

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APPLD: ELECTRMAGNTCS+PHOTONCS - 21134 - ELEC 340 - B01
ELEC340 labs meet on alternate weeks.
Associated Term: Second Term: Jan - Apr 2016
Registration Dates: Jun 15, 2015 to Jan 20, 2016
Levels: Graduate, Law, Undergraduate
Main Campus
Lab Schedule Type
Class Schedule Listing

Face to Face Instructional Method
0.000 Credits
View Catalog Entry

### Scheduled Meeting Times

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<th>Type</th>
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APPLD: ELECTRMAGNTCS+PHOTONCS - 21135 - ELEC 340 - B02

ELEC340 labs meet on alternate weeks.
Associated Term: Second Term: Jan - Apr 2016
Registration Dates: Jun 15, 2015 to Jan 20, 2016
Levels: Graduate, Law, Undergraduate

Main Campus
Lab Schedule Type
Face to Face Instructional Method
0.000 Credits
View Catalog Entry

### Scheduled Meeting Times

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APPLD: ELECTRMAGNTCS+PHOTONCS - 21136 - ELEC 340 - B03

ELEC340 labs meet on alternate weeks.
Associated Term: Second Term: Jan - Apr 2016
Registration Dates: Jun 15, 2015 to Jan 20, 2016
Levels: Graduate, Law, Undergraduate

Main Campus
Lab Schedule Type
Face to Face Instructional Method
0.000 Credits
View Catalog Entry

### Scheduled Meeting Times

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### APPLD: ELECTRMAGNTCS+PHOTONCS - 21137 - ELEC 340 - B04

ELEC340 labs meet on alternate weeks.
Associated Term: Second Term: Jan - Apr 2016
Registration Dates: Jun 15, 2015 to Jan 20, 2016
Levels: Graduate, Law, Undergraduate

Main Campus
Lab Schedule Type
Face to Face Instructional Method
0.000 Credits
View Catalog Entry

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### APPLD: ELECTRMAGNTCS+PHOTONCS - 21138 - ELEC 340 - B05

ELEC340 labs meet on alternate weeks.
Associated Term: Second Term: Jan - Apr 2016
Registration Dates: Jun 15, 2015 to Jan 20, 2016
Levels: Graduate, Law, Undergraduate

Main Campus
Lab Schedule Type
Face to Face Instructional Method
0.000 Credits
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# ELEC 340 - B06

ELEC340 labs meet on alternate weeks.

**Associated Term:** Second Term: Jan - Apr 2016  
**Registration Dates:** Jun 15, 2015 to Jan 20, 2016  
**Levels:** Graduate, Law, Undergraduate

**Main Campus**

**Lab Schedule Type**

Face to Face Instructional Method  
0.000 Credits

**View Catalog Entry**

## Scheduled Meeting Times

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<tr>
<th>Type</th>
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# ELEC 340 - B08

ELEC340 labs meet on alternate weeks.

**Associated Term:** Second Term: Jan - Apr 2016  
**Registration Dates:** Jun 15, 2015 to Jan 20, 2016  
**Levels:** Graduate, Law, Undergraduate

**Main Campus**

**Lab Schedule Type**

Face to Face Instructional Method  
0.000 Credits

**View Catalog Entry**

## Scheduled Meeting Times

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