University of Victoria Engineering

Faculty of Engineering

COURSE OUTLINE

ELEC 529A – Selected Topics in Microwaves, Millimeter Waves and Optical Engineering: Advanced Bio Nano Photonics

Term – Spring 2018 (201801)

Instructor

Dr. Tao Lu
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Office Hours

Days: Monday
Time: 16:00-17:30
Location: EOW 321

Course Objectives

This course is intended for graduate students whose research area includes nano technologies, photonics and their applications to biological sensing and imaging.

Learning Outcomes

The students will learn necessary knowledge in the area of biophotonics with focus on biosensing and imaging. Through this course, they will also be familiar with the frontier researches in the relating fields.

Syllabus

Overview of electromagnetic waves, optical waveguide theory and modeling techniques, nonlinear optics and lasers. Principles of evanescent wave coupling, plasmonics, passive/active microresonators, microresonator noises, suppressing and measurement techniques, and their applications to biosensing.

A-Section(s): A01 / CRN 21138
Days: Monday/Thursday
Time: 14:30-15:50
Location:ECS 130

Required Text

No textbook is required, teaching material includes a series of papers/book chapters.

References:

Title: Nonlinear Fiber Optics (4th Edition)
Author: Govind P. Agrawal
Publisher: Academic Press
Year: 2007

Title: Optical Electronics in Modern Communications (5th Edition)
Author: Amnon Yariv
Publisher: Oxford University Press, Inc.
Year: 1997

Title: Electromagnetic Noise and Quantum Optical Measurements (3rd edition)
Author: Hermann A. Haus
Publisher: Springer
Year: 2000

Title: Principles of Nano-Optics
Author: Lukas Novotny and Bert Hecht
Publisher: Cambridge University Press
Year: 2007

Assessment:

Assignments:	20%	
Test 1:	15%	Date: Feb. 19
Interim report:	15%	Date: Mar. 1
Presentation:	10%	Date: Mar.29
Test 2:	15%	Date: Apr. 9
Final Report:	25%	Date: Apr. 24

Note:

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 Graduate Calendar. https://web.uvic.ca/calendar2018-01/grad/academic-regulations/grading.html

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 Assistant to set up an appointment.

Accommodation of Religious Observance:
https://web.uvic.ca/calendar2018-01/grad/registration/Registration.1.16.html

Policy on Inclusivity and Diversity:
https://web.uvic.ca/calendar2018-01/general/policies.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 Graduate Calendar for the UVic policy on academic integrity.
https://web.uvic.ca/calendar2018-01/grad/academic-regulations/academic-integrity.html

Equality: This course aims to provide equal opportunities and access for all students to enjoy the benefits and privileges of the class and its curriculum and to meet the syllabus requirements. Reasonable and appropriate accommodation will be made available to students with documented disabilities (physical, mental, learning) in order to give them the opportunity to successfully meet the essential requirements of the course. The accommodation will not alter academic standards or learning outcomes, although the student may be allowed to demonstrate knowledge and skills in a different way. It is not necessary for you to reveal your disability and/or confidential medical information to the course

instructor. If you believe that you may require accommodation, the course instructor can provide you with information about confidential resources on campus that can assist you in arranging for appropriate accommodation. Alternatively, you may want to contact the Resource Centre for Students with a Disability located in the Campus Services Building.
The University of Victoria is committed to promoting, providing, and protecting a positive, and supportive and safe learning and working environment for all its members.

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.