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### ELEC/BME 434 – BIOPHOTONICS 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**

Develop skills on applying photonics technologies to biomedical related works.

**Learning Outcomes**

Understand photonics concepts as well as devices and basics of biology; Be familiar with biophotonics applications such as bioimaging and optical biosensors.

**Syllabus**

Fundamentals of light and matter, basics of biology, fundamentals of light-matter interactions, principles of lasers, current laser technology and nonlinear optics, photobiology, bioimaging and optical biosensors, microarray technology for genomics and proteomics, flow cytometry, light-activated therapy, tissue engineering with light, laser tweezers and laser scissors, nanotechnology for biophotonics, biomaterials for photonics.

**A-Section(s):** A01 / CRN 20406/21121

Days: Monday/Thursday

Time: 11:30-12:50

Location: DSB C108

**Required Text**

Title: Introduction to Biophotonics

Author: Paras N. Prasad

Publisher: Wiley-Interscience

Year: 2003

**References:**

Title: Biophotonics: Concepts to Applications

Author: Gerd Keiser

Publisher: Springer

Year: 2016

Title: An Engineering Introduction to Biotechnology

Author: J. Patrick Fitch

Publisher: SPIE Press

Year: 2002

Title: Introduction to Biomedical Imaging  
Author: Andrew Webb  
Publisher: John Wiley & Sons, Inc.  
Year: 2003

**Assessment:**

Assignments:	15%	Due Dates: Two weeks after each assignment is handed out
Email of Intention:	5%	Date: Jan. 15
Test 1:	15%	Date: Feb. 19
Interim report:	15%	Date: Mar. 1
Project presentation:	10%	Date: Mar. 26, Mar. 29
Test 2:	15%	Date: Apr. 9
Final report:	25%	Due Dates: Apr. 23

**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 Undergraduate Calendar.

<https://web.uvic.ca/calendar2018-01/undergrad/info/regulations/grading.html>

**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 Assistant to set up an appointment.

**Accommodation of Religious Observance:**

<https://web.uvic.ca/calendar2018-01/undergrad/info/regulations/religious-observanc.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.

<https://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.

<https://web.uvic.ca/calendar2018-01/undergrad/info/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.