



UVic Department of Electrical and Computer Engineering

**COURSE OUTLINE**  
**ELEC 434 – BIOPHOTONICS**  
**Spring 2014**

url: <http://www.ece.uvic.ca/~taolu/elec434/elec434.html>

**Instructor:**

Dr. Tao Lu  
Phone: 250-721-8617  
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**Office Hours:**

Days: Monday  
Time: 14:30-17:30  
Location: EOW 321

**Lectures:**

A-Section(s): A01 / CRN 21110  
A02 / CRN 21111  
Days: Monday/Thursday  
Time: 11:30-12:50  
Location: CLE A314

**Required Text:**

Title: Introduction to Biophotonics  
Author: Paras N. Prasad  
Publisher: Wiley-Interscience  
Year: 2003

**References:**

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:	20%	
Mid-term	20%	Date: Feb. 6, 2014
Project presentation:	15%	
Project report:	15%	
Final	30%	

Note: Failure to complete all laboratory requirements will result in a grade of N being awarded for the course.

**Due dates for assignments:**

Two weeks after each assignment is handed out.

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

<b>Passing Grades</b>	<b>Grade Point Value</b>	<b>Percentage for Instructor Use Only</b>	
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	
<b>Failing Grades</b>	<b>Grade Point Value</b>	<b>Percentage for Instructor Use Only</b>	<b>Description</b>
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.

<b>Term in which E Grade Was Obtained</b>	<b>Application Deadline for Supplemental Exam</b>	<b>Supplemental Exam Date</b>
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

Develop skills on applying photonics technologies to biomedical related works.

#### 2. Learning Outcomes

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

#### 3. 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.

**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/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/calendar2013/FACS/UnIn/UARe/PoAcI.html> for the UVic policy on academic integrity.

<p><b>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.</b></p>
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