Introduction to Biophotonics (3)

BENG 5840 / 6840 Introduction to Biophotonics, TTh 9-10:15am ENGR 206

Instructor: Dr. Elizabeth Vargis
(ENGR 402M, 797-0618, vargis@usu.edu or through Canvas)
Office hours: Tuesday 10:15-11:15am; Wednesday 2-3pm; by appointment

Textbook: (none) Reading material available through Canvas

Prerequisites: PHYS 2210 & MATH 2250.
Admission to Professional Engineering Program

Applications of light and tissues' optical properties for detecting protein, cell and tissues properties and diagnosing pathologies. Scientific and engineering principles for developing techniques and devices that use light to probe cells and tissues. Optical and thermal aspects of the interactions between laser light and biological samples needed for microscopy, disease detection and surgical guidance. Overview of current topics and research.

Who should take this course: Senior and graduate biological engineering students wanting to gain deeper knowledge of one area of biomedical research and engineering, understand concepts in biomedical optics and participate in research in BE.

IDEA Learning Objectives
2. Learning Fundamental Principles, Generalizations or Theories
8. Developing Skill in Expressing Myself Orally or in Writing

Grading
- Presentations (2) (40%)
- Attendance and participation (15%)
  - Arriving on time, contributing to class discussion, being a good class citizen
- Final Paper (20%)
- Quizzes and Final Take-Home Exam (25%)

Grading (generally fit the following pattern) **A** 100-93%, **A-** to 90%, **B+** to 87%, **B** to 83%, **B-** to 80%, **C+** to 75%, **C** to 70%, **C-** to 65%, **D** to 50%, **F** below 50%

Course policies: Laptops may be used to take notes, read course material, search for topics, etc. pertaining to class (no emailing, chatting, disrupting the class, etc.). Treat the instructor / invited speakers / student presenters as you would want to be treated if you were lecturing.

Ethical conduct / Cheating policy: Students are expected to abide by the rules of conduct expected of university students. Failure to properly cite sources is plagiarism. Be certain to cite primary literature (refereed journal articles) for materials such as graphs, pictures, tables, videos used for presentations or papers. Do not cut and paste material from the Internet.

All forms of cheating are absolutely prohibited. Anyone caught cheating will receive negative points equal in magnitude to the possible points on the assignment or test. Repeat offenses will result in an automatic F for the class.

Add policy: The last day to add this class is September 15, 2014. Attending this class beyond that date without being officially registered will not be approved by the Dean's Office. Students must be officially registered for this course. No assignments or tests of any kind will be graded for students whose names do not appear on the class list

Drop policy: September 15, 2014 is the last day to drop without notation on transcript. October 27, 2014 is the last day to withdraw with W on transcript.

Disabilities: If a student has a disability that will likely require some accommodation by the instructor, the student must contact the instructor and document the disability through the Disability Resource Center, preferably during the first week of the course. Any requests for special considerations relating to attendance, pedagogy, taking of examinations, etc. must be discussed with and approved by the instructor. In cooperation with the Disability Resource Center, course materials can be provided in alternative formats, e.g. large print, audio, diskette, or Braille.

Tentative Course Schedule (subject to change—check Canvas Calendar)

Date	Lecture
8/26	What is Biophotonics?
8/28	Biophotonics Principles & Applications
9/2	
9/4	
9/9	Raman Spectroscopy
9/11	
9/16	Group 1
9/18	
9/23	Group 2
9/25	
9/30	Group 3
10/2	
10/7	Group 4
10/9	
10/14	Group 5

Date	Lecture
10/16	*No Class – Friday schedule*
10/21	Group 5
10/23	Guest Lecture
10/28	Group 6
10/30	
11/4	Group 7
11/6	
11/11	Group 8
11/13	
11/18	Group 9
11/20	
11/25	*No Class – Paper writing*
12/2	*No Class*
12/4	Wrap up
12/12	Final Exam Due