BMEn 5920 Introduction to Biomedical Optics
University of Minnesota
Spring Semester 2008

Instructor: Taner Akkin, Ph.D.
Assistant Professor
Department of Biomedical Engineering, University of Minnesota
E-mail: akkin@umn.edu
Phone: (612) 625-8783
Office: Shepherd Lab. #375
Office Hours: 2:30 - 3:15 PM Monday; 1:30 - 2:15 PM Thursday

Lecture Time & Place: 11:15 AM - 12:30 PM Tu, Th (LindH 305)

Prerequisite: IT Upper Division senior or graduate students

Text Books Required: None. Material for the course will be drawn from various books and articles.
Web Page: WebVista (webct.umn.edu) will be used for assignments, announcements, and for posting supplementary files.

Course Description: The objective of this course is to develop knowledge in the area of biomedical optical imaging and sensing. Topics include basic optical principles, laser-tissue interaction, detector design and noise analysis, interferometry, spectroscopy, and optical imaging. Methods will range from the simple Beer's Law to the Monte Carlo modeling of light transport in scattering tissue, and from the basic Michelson interferometer to the state-of-the art noninvasive optical coherence tomography of tissues. Flow measurement, dye imaging, fluorescence, birefringence and non-linear microscopy will be introduced. Students will get an opportunity to visit various laboratories on campus to see optical instruments being developed for biomedical imaging and sensing applications.

Important dates and information:
Exam-1: March 6, 2008 (Thursday), closed book and closed notes.
Exam-2: April 15, 2008 (Tuesday), take-home exam.
Final Project: One-page project description is due on March 27, 2008 (Thursday). If the proposed project is not acceptable, a new project will be assigned by the instructor.
The project reports/papers are due on May 1, 2008 (Thursday). In-class presentations of the projects will be scheduled on May 6, and May 8, 2008.

Guest lectures and lab tours: Each guest lecture will be followed by a lab tour. The dates will be announced on WebVista.

Grading Policy: Homework (25%)
Exam-I (25%),
Exam-II (25%),
Final Project (25%)

Letter grades may be assigned as follows:
90-100: A   86.7-89.9: A-
83.4-86.6: B+   80-83.3: B   76.7-79.9: B-
73.4-76.9: C+   70-73.3: C   67.7-69.9: C-
63.4-67.6: D+   60-63.3: D   <60: F

Academic integrity is essential to a positive teaching and learning environment. All students enrolled in University courses are expected to complete coursework responsibilities with fairness and honesty. Failure to do so by seeking unfair advantage over others or misrepresenting someone else's work as your own, can result in disciplinary action. The University Student Conduct Code defines scholastic dishonesty as follows:

Scholastic Dishonesty: Scholastic dishonesty means plagiarizing; cheating on assignments or examinations; engaging in unauthorized collaboration on academic work; taking, acquiring, or using test materials without faculty permission; submitting false or incomplete records of academic achievement; acting alone or in cooperation with another to falsify records or to obtain dishonestly grades, honors, awards, or professional endorsement; altering forging , or misusing a University academic record; or fabricating or falsifying data, research procedures, or data analysis.

Within this course, a student responsible for scholastic dishonesty can be assigned a penalty up to and including an "F" or "N" for the course. If you have any questions regarding the expectations for a specific assignment or exam, ask.

Students with disabilities

The instructor will make all reasonable accommodations necessary for students with disabilities.