

Advance Optics and Biophysics Applications

Optical Science and Engineering (OPSE 410) Spring 2018
Professor Benjamin Thomas, Department of Physics

Email: bthomas@njit.edu

Office: 423E Tiernan Hall

Office hours: Tuesday and Thursday, 2pm to 3pm and by arrangement.

Synopsis of this course: A quantitative view of life in terms of selected optical concepts of biophysics. The course will give you a chance to measure and analyze real materials related to life. Extinction, optical absorption spectroscopy, differential optical absorption spectroscopy and other optical methodologies will be used to probe material related to biology.

Text: "Physics in Biology and Medicine," Paul Davidovits (3rd Edition, paperback and e-book, ISBN-13: **978-0123694119**). Optional, but helpful.

Assessment Plan:

Final grade on the basis of the following assignments and weighting:

Average of 5 (max) reports	75 %
1 oral presentation	10 %
Final exam	15 %

Translate % values into letter grades with the standard physics department scale as follows: F: <40; D: 40-50; C: 50-60; C+: 62-69; B: 69-75; B+: 75-82; A: >82

Outcomes plan: Students will be able to

1. Formulate and test hypotheses and predictions about optical biophysics.
2. Present in verbal and written form a mathematical and statistical analysis of these measurements.

Academic integrity and honesty are important to both students and professors. The NJIT Student Council and the faculty strongly support fairness for all students. To help ensure this equity the NJIT Administration requires that every professor bring cheating to the attention of the Dean of Students.

The instructors will follow the following grading policies:

1. Reduce the max score for late reports by 4 points per day
2. Require all reports from each student for passing grade.
3. Grade each student on his/her own report. Require that you identify in your report students that work on the project with you.
4. Give credit to you when you use books, articles or the web for motivation and theoretical information. Failure to cite a source is plagiarism.

Date	Topic	Assignments
Week 1: Jan 16 – Jan 19	Introduction, basics, reports, safety	
Week 2: Jan 22 – Jan 26	Experiment 1	
Week 3: Jan 29 – Feb 2		
Week 4: Feb 5 – Feb 9	Experiment 2	Report Exp 1 due
Week 5: Feb 12 – Feb 16		
Week 6: Feb 19 – Feb 23	Experiment 3	Report Exp 2 due
Week 7: Feb 26 – March 2		
Week 8: Mar 5 – Mar 9	Experiment 4	Report Exp 3 due
Spring Recess		
Week 9: Mar 19 – Mar 23		
Week 10: Mar 26 – Mar 30	Experiment 5	Report Exp 4 due
Week 11: Apr 2 – Apr 6		
Week 12: Apr 9 – Apr 13	Oral Presentation	Report Exp 5 due
Week 13: Apr 16 – Apr 20	Oral Presentation	
Week 14: Apr 23 – Apr 27	Prep. Final	
Final		