

BOSTON UNIVERSITY
Department of Electrical & Computer Engineering

ENG EC591

Photonics Laboratory I

Fall 2009

Catalog Description: Introduction to optical measurements. Laser safety issues. Laboratory experiments: introduction to laser light and basic optical components; interference; Fabry-Perot resonators; beam optics; diffraction and Fourier optics; optical spectroscopy; polarization components; fiber optics. Optical simulation software tools.

Prerequisites: Modern Physics (PY313 or equivalent)

Corequisite: Introduction to Photonics (EC560)

Credits: 2

Lecture:	W 10-11 (Section A1)	SED 212
	W 11-12 (Section A2)	SED 212

Labs:	MW 12-2 (Section A1)	PHO 701
	TR 4-6 (Section A2)	PHO 701

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Lab Assistant:	TBD	Office:	TBD
		Phone:	TBD
		e-mail:	TBD

Reference textbook: B. E. A. Saleh & M. C. Teich, "Fundamentals of Photonics" (Wiley, NY, 2007)

Web Page: http://courseinfo.bu.edu/courses/09fallengec591_a1 (Course Info)

Requirements:	Homework (lab reports and simulation projects)	90%
	Lab participation	10%

NOTE: Lab experiments will be carried out in groups, but individual reports will be expected.

Course Calendar (tentative)

Wk	Date	Lectures	Labs
1	W-9/2	Course Introduction	
2	W-9/9	Laser Safety	
3	W-9/16	Lab 1: Introduction to Laser Light and Basic Optical Components	W-9/16, M-9/21 (section A1) R-9/17, T-9/22 (section A2)
4	W-9/23	Lab 2: Optical Interference	W-9/23, M-9/28 (section A1) R-9/24, T-9/29 (section A2)
5	W-9/30	Lab 3: Fabry-Perot Resonators	W-9/30, M-10/5 (section A1) R-10/1, T-10/6 (section A2)
6	W-10/7	Lab 4: Beam Optics	W-10/7, T-10/13 (section A1) R-10/8, TBD (section A2)
7	W-10/14	Lab 5: Diffraction and Fourier Optics	W-10/14, M-10/19 (section A1) R-10/15, T-10/20 (section A2)
8	W-10/21	Lab 6: Optical Spectroscopy I: Absorption and Reflectance	W-10/21, M-10/26 (section A1) R-10/22, T-10/27 (section A2)
9	W-10/28	Lab 7: Optical Spectroscopy II: Scattering	W-10/28, M-11/2 (section A1) R-10/29, T-11/3 (section A2)
10	W-11/4	Lab 8: Polarization Components	W-11/4, M-11/9 (section A1) R-11/5, TBD (section A2)
11	W-11/11	No class	TBD, M-11/16 (section A1) R-11/12, T-11/17 (section A2)
12	W-11/18	Waveguide Design (Beam Propagation Method)	W-11/18, M-11/23 (section A1) R-11/19, T-11/24 (section A2)
13	W-11/25	No class (fall recess)	
14	W-12/2	Lab 9: Fiber Optics	W-12/2, M-12/7 (section A1) R-12/3, T-12/8 (section A2)
15	W-12/9	Finite-Difference-Time-Domain Simulations	W-12/9 (section A1) R-12/10 (section A2)

Course Objectives

The objective of this course is to provide the students with hands-on experience with modern optical components and experimental techniques. Laser safety issues and computer-aided optical design will also be emphasized.