

EECE5654— Design and Prototyping of Optical Systems... — Spring 2024

Syllabus

INSTRUCTOR:	Charles A. DiMarzio, Associate Professor Electrical and Computer Engineering Lab: 334 Egan Mail: 409 Dana Office: 302 Stearns Northeastern University Boston, Massachusetts 02115 Phone: 617-373-2034 Electronic Mail: dimarzio@ece.neu.edu Course Website: http://www.ece.neu.edu/courses/eece5654/dimarzio/ Faculty Website: http://www.ece.neu.edu/faculty/dimarzio/ Research Lab Website: http://www.ece.neu.edu/groups/osl
COURSE HOURS:	Tue, Fri 9:30-11:30 AM Wed, 009HA
OFFICE HOURS:	TBD Feel free to email questions as well.
TEXT:	Supplementary: DiMarzio, Charles A., <i>Optics for Engineers</i> , CRC Press. 2011. (http://www.crcpress.com/product/isbn/9781439807255)

COURSE DESCRIPTION:	The goal of this course is to learn how to design optics experiments or instrument prototypes on the benchtop, fabricate them and test them. Typical application areas include biomedical imaging, astronomy, Lidar, remote sensing, environmental monitoring, semiconductor fabrication, optical communication, optical computing, military imaging, tracking, and guidance, solar energy, and imaging systems for robotics, security, and transportation. The course may be of interest to students beginning or contemplating work in a research lab or employment in any of these areas. The emphasis is on designing and building working experimental setups and prototype instruments. The fundamentals of optics will be discussed in the context of how they influence the implementation and fabrication of an experiment, but minimal prior classroom knowledge or experience is expected. For example we will give simple equations for diffraction, and the student need not have learned the theoretical development of these equations to use them effectively in the design and implementation of the experiments. We will do about 5 planned experiments and one of your own design, that can be related to your own research or a subject of interest.
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GRADING:	30 % on Prelabs 20 % on lab work 20 % on lab reports 10 % on your project 10 % on Quizzes 10 % on Class Participation
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Tentative Schedule

0	9 Jan	ADMINISTRIVIA. INTRODUCTION;
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1	12,16,19,23	Imaging System
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2	26,30 Jan, 2,6 Feb	Telescope
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3	9,13,16,20 Feb	Spectrometry
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4	23,27 Feb, Mar 1	Polarization Continued after break.
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*4 Mar to 8 Mar — Spring Break

4	Mar 12,15	Polarization Continued
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5	19,22,26,29 Mar	Interferometer
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6	2,5,9,12,16 Apr	Your Idea
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Monday 18 Apr — Patriots' Day Holiday: No class