Department of Electrical and Computer Engineering
1. 520.326 Introduction to Optical Instruments
Fall 2009

2009- 2011 Catalog: This course is intended to serve as an introduction to optics and optical instruments that are used in engineering, physical, and life sciences. The course covers first basics of ray optics with the laws of refraction and reflection and goes on to description of lenses, microscopes, telescopes, and imaging devices. Following that basics of wave optics are covered, including Maxwell equations, diffraction and interference. Operational principles and performance of various spectrometric and interferometric devices are covered including both basics (monochromatic, Fabry-Perot and Michelson interferometers), and advanced techniques of near field imaging, laser spectroscopy, Fourier domain spectroscopy, laser Radars and others (3 credit hours/Required or Elective)

Prerequisite(s): None

Textbook: Pedrotti, Introduction to Optics

Notes: Yes

Course Objectives: To familiarize students with basics of optics and familiarize them with optics applications in engineering and life sciences.

Labs:

Class Schedule: 2 x 1.5 hours - lectures/ week

Contribution of Course to Meeting the Professional Component (credit hours):

Engineering Science	**Engineering Science and Design**

Relationship of Course to Program Educational Outcomes (√ those that apply):

X	Apply mathematics, probability and statistics, basic science, and computer science
	Design and conduct experiments, analyze and interpret data
X	Identify, formulate and solve electrical engineering problems
X	Use technical skills and modern engineering tools to design to meet needs
	Communicate effectively and work on multidisciplinary teams
	Contemporary issues, ethical responsibilities, environmental, health, safety issues
X	Engage in life-long learning

Prepared July 1, 2009 by: *Jacob Khurgin*