The Institute of Optics

Undergraduate Program

Undergraduate Courses in Optics

Courses currently being offered:

Fall > (fall.php)

Spring > (spring.php)

Check the course schedules/descriptions (https://cdcs.ur.rochester.edu/) available via the Registrar's Office (http://www.rochester.edu/registrar/) for the official schedules for the widest range of terms for which such information is available.

Below you will find a list of all undergraduate courses that have been offered. In addition to these courses, undergraduates may register for the graduate course OPT 492, THZ PHENOMENA & TECHNOLOGY (https://cdcs.ur.rochester.edu/Query.aspx?id=DARS&dept=OPT&cn=492&term=20171).

NOTE: Not all of these courses are offered in any given year.

OPT 000 OPTICS SEMINAR

OPT 101 INTRODUCTION TO OPTICS

OPT 144 INNOVATION & ENGINEER DESIGN

OPT 145 CNC GRIND FOR PRECISION MFG

OPT 146 CNC FINISH & PRECISION MFG

OPT 147 LAB-MAGNET FINISHING

OPT 197 GEOMETRICAL OPTICS LAB

OPT 198 PHYSICAL OPTICS LAB

OPT 199 INSTRUMENTATION LAB

OPT 201 GEOMETRICAL OPTICS LAB

OPT 202 PHYSICAL OPTICS LAB

OPT 203 INSTRUMENTATION LAB LECTURE

OPT 204 SOURCES/DETECTORS LAB LECT

OPT 211 MATLAB FOR OPTICS MAJORS I

OPT 212 MATLAB FOR OPT MAJORS II LEC

OPT 214 INTRODUCTION TO OPTICAL SYSTEM LAYOUT AND ANALYSIS

This course gives engineering undergraduates early exposure to the tools (e.g. Zemax/CODE V) needed for most summer internships while introducing a systems approach to the design/analysis of an optical problem. This is not a lens design class as the focus of the class is on layout and evaluation, not optimization. Students will be taught how to read optical prints and use catalog components to layout and evaluate a variety of laboratory/benchtop optical systems in software.

Prerequisites: Pre-req: OPT241

Last Offered: Spring 2018

OPT 220 INTRODUCTION TO ILLUMINATION

OPT 222 COLOR TECHNOLOGY

OPT 223 QUANTUM THEORY

OPT 224 FUNDAMENTALS OF LASERS

OPT 225 SOURCES AND DETECTORS

OPT 226 OPTOELECTRONICS I:DEVICES

OPT 232 OPTO-MECHANICS

OPT 240 INTRODUCTION TO ILLUMINATION

OPT 241 GEOMETRICAL OPTICS

OPT 242 ABERRATIONS, INTERFEROMETERS, AND OPTICAL TESTING

OPT 243 OPTICAL FABRICATION & TESTING

OPT 244 LENS DESIGN

OPT 245 PRECISION INSTRUMENT DESIGN

OPT 246 OPTICAL COATING TECHNOLOGY

OPT 247 OPT COATING DESIGN

OPT 248 VISION AND THE EYE

OPT 249 INTRODUCTION TO ILLUMINATION

OPT 253 QUANTUM & NANO OPT LAB

OPT 254 NANOMETROLOGY LABORATORY

OPT 256 OPTICS LABORATORY

OPT 257 OPTICS LABORATORY II

OPT 261 INTERFERENCE AND DIFFRACTION

OPT 262 ELECTROMAGNETIC THEORY

Electromagnetic Theory: Maxwell's equations in differential form, dipole radiation, Rayleigh scattering, polarization,energy flow (Poynting vector), plane waves, wave propagation in air/glass/metals, reflection and refraction, birefringence, polarization-sensitive optical elements (wave plates and polarizers),applications to nonlinear and quantum optics.

Prerequisites: MTH 165 (may be taken concurrently with permission of instructor), MTH 164, PHY 122 or 142
Last Offered: Fall 2019

OPT 263 QUANTUM OPTICS LABORATORY

No description

OPT 270 BIOMEDICAL MICROSCOPY

This course covers the principles and practice of light microscopy as applied to biological and medical questions. Topics include basic light microscopy, DIC, phase epifluorescence, confocal and multiphoton laser-scanning microscopy, and selected methods such as CARS, FRET, FRAP, FCS, etc. This course is jointly listed as 470 for graduate students. Some homework problems are "470 only".

Last Offered: Fall 2013

OPT 276 BIOMEDICAL OPTICS

Biomedical spectroscopy (absorption, fluorescence, Raman, elastic scattering); propagation of photons in highly scattering media (such as tissue); techniques for high-resolution imaging in biological media: confocal imaging, multiphoton imaging and optical coherence tomography.

Last Offered: Spring 2019

OPT 287 MATHEMATICAL METHODS FOR OPTICS & PHYSICS

Techniques used in mathematical study of optical phenomena. Emphasis on gaining insight and experience in the use of these powerful and elegant tools for describing, solving and resolving optical systems and schema.

Prerequisites: MTH 164
Last Offered: Spring 2019

OPT 300 CURRENT OPT & OPTICAL TECH

No description

Last Offered: Spring 2010

OPT 307 SEM PRACTICUM

Overview of techniques for using the SEM (Scanning Electron Microscope) and Scanning Probe (AFM, STM) and analyzing data. Students perform independent lab projects by semester's end.

Last Offered: Spring 2019

OPT 310 SENIOR DESIGN I

Specifications, project development, and project planning will include design alternatives and subsystem segmentation discussions.

Prerequisites: Open only to Optics Seniors
Last Offered: Fall 2019

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