Instructor: Mansoor Sheik-Bahae, Room 1109 (North Wing), Tel: 277-2080, e-mail: msb@unm.edu

Text: Optics, by M.V. Klein and T.E. Furtak, Wiley & Sons Inc.


Grading: Midterm 35%, Final: 35%, weekly homework: 30%

Office hours: Wednesdays, 2-3 pm. or by appointment

TA: Zhanliang (Jim) Sun jimsun@unm.edu Room 146 (P&A), Tel: 277-1868

Tentative Syllabus

1- Introduction

- electromagnetic theory, Maxwell’s equations
- modern developments (relativistic optics, quantum optics)

2- Optics of Planar Interfaces

- Maxwell’s equations in matter
- reflection and transmission (Fresnel’s Laws)
- prism optics
- dielectric waveguides

3- Geometrical Optics

- ray tracing
- imaging (spherical and aspherical surfaces, thin lenses, mirrors,...)
- paraxial optics
- matrix method
- thick lenses
- examples of optical systems (human eye, telescopes, microscopes, ...)
- aberration

5- Interference

- two-beam and multi-beam interference
- interferometers, applications

6- Polarization

- states of polarization
- polarizers, waveplates
- matrix techniques
- crystal optics, tensor properties

7- Diffraction (introductory)