OPTI 696B- Practical Optics Seminar

Course Description:

In this course, the basics of some commonly used optical components/devices and the working principles of typical optical systems will be covered. Emphasis is given to the practical consideration on how to specify/design/choose an optical component/device and the understanding of challenges to make an optical system work as desired.

Grading Policy:

- Final report: 40%
- 1-page summary for each lecture: 60%

Schedule:

One 50-minute lecture session per week, 15 week semester

Objectives:

The goal of this course is to prepare students for real world engineering jobs.

This course is intended to inform students to the practical considerations it takes to design and build an optical instrument that works within specification.

Students will be armed with the knowledge necessary for a successful optical engineering career.

Topics:

Optical Components and Devices:

- Optics: lens grinding and polishing, molded glass and plastic optics, diamond turned optics, diffractive optical elements, polarization optics, filters, coatings, etc.
- Sources: laser, laser diode, LED, etc.
- Detectors: photodiode, CCD, CMOS, etc.
- Modulators: EO, AO, Photo-elastic Modulator (PEM), etc.

Optical Systems:

- Confocal microscope
- LCD and DLP projector
- CD/DVD pickup head
- Spectrometer
- Laser printer
- Laser tracker
- Laser gyroscope
- Laser barcode scanner