Optical Engineering (OPE)

OPE 451 - OPTOELECTRONICS
Semester Hours: 3

Basic concepts for understanding electro-optic devices and systems. Blackbody radiation; light sources; quantum and thermal detector, noise in detectors; optical heterodyning; acoustooptic, magneto-optic, and electro-optic modulation. (Same as EE 451) Prerequisites: EE 307 and EE 315.

OPE 453 - LASER SYSTEMS
Semester Hours: 3

Spontaneous and stimulated emission, population inversion, optical resonators, three- and four-level systems, Q-switching and mode-locking, semiconductor lasers, integrated optic waveguides and couplers, scanning systems, high-power industrial application. Prerequisites: EE 307.

OPE 454 - OPTICAL FIBER COMMUNICATIONS
Semester Hours: 3

Introduction to optical fibers and their transmission characteristics, optical fiber measurements, sources and detectors, noise considerations for digital and analog communications, optical fiber systems. (Same as EE 454) Prerequisites: (EE 307 or PH 432) and (EE 382 or CPE 381).

OPE 456 - PHOTONICS LABORATORY
Semester Hours: 3

Photonic devices, wave nature of light, diffraction, spectral measurements, refractive index, single mode and multimode optical fibers, simple optical communication systems, fiber optic sensors, cast study. Prerequisites: OPE 451.

OPE 459 - OPTICAL ENGINEERING DESIGN I
Semester Hours: 3

Identification, documentation, and presentation of proposed senior design project, followed by initial project design, analysis, and development, including the consideration of legal economic, and ethical issues. Prerequisites: ISE 321 and OPE 456.

OPE 460 - OPTICAL ENGINEERING DESIGN II
Semester Hours: 3

Continuation of design project begun in OPE 459 to include prototype testing of the design optical or opto-electronic system. Prerequisites: OPE 459.