Electrical Engineering: Optical Devices, Materials & Systems

EEOP 6309 Fourier Optics (3 semester credit hours) Theory of coherent optics using a linear systems approach. Application of the concepts of impulse response and transfer function to free-space wave propagation, diffraction, and image formation. Prerequisites: EE 3302 and EE 4301 or equivalent. (3-0) T

EEOP 6310 Optical Communication Systems (3 semester credit hours) Operating principles of optical communications systems and fiber optic communication technology. Characteristics of optical fibers, laser diodes, and laser modulation, laser and fiber amplifiers, detection, demodulation, dispersion compensation, and network topologies. System topology, star network, bus networks, layered architectures, all-optical networks. Prerequisite: EE 3300 or equivalent. (3-0) T

EEOP 6311 Photonic Devices and Integration (3 semester credit hours) This course will discuss the design and operation of passive and active semiconductor optical devices such as waveguides, lasers and modulators, the materials used and their advantages and disadvantages, the compromises needed for integration of devices, the processes used in integration, the subsystems and systems that can be achieved through integration. (3-0) Y

EEOP 6313 (MSEN 6313) Semiconductor Opto-Electronic Devices (3 semester credit hours) Physical principles of semiconductor optoelectronic devices: optical properties of semiconductors, optical gain and absorption, wave guiding, laser oscillation in semiconductors, LEDs, physics of detectors, applications. Prerequisite: EE 3310 or equivalent. (3-0) R

EEOP 6314 Principles of Fiber and Integrated Optics (3 semester credit hours) Theory of dielectric waveguides, modes of planar waveguides, strip waveguides, optical fibers, coupled-mode formalism, directional couplers, diffraction elements, switches, wavelength-tunable filters, polarization properties of devices and fibers, step and graded-index fibers, devices for fiber measurements, fiber splices, polarization properties, and fiber systems. Prerequisites: ENGR 3300 and EE 4301 or equivalent. (3-0) T


EEOP 7V83 Special Topics in Optics and Fields (1-6 semester credit hours) May be repeated for credit as topics vary (9 semester credit hours maximum). ([1-6]-0) R