ENGINEERING OPTICS

PH301 (3-0-0-6)

Lens systems	: Basics and concepts of lens design, some lens systems.
Optical components	: Reflective, refractive and diffractive systems; Mirrors, prisms, gratings, filters, polarizing components.
Interferometric systems	: Two beams, multiple beams, shearing, scatter fringe and polarization interferometers.
Vision Optics	: Eye and vision, colorimetry basics.
Optical sources	: Incandescent, fluorescent, discharge lamps, Light emitting diode.
Optical detectors	: Photographic emulsion, thermal detectors, photodiodes, photomultiplier tubes, detector arrays, Charge-coupled device (CCD), Complimentary metal-oxide semiconductor (CMOS).
Optical Systems	: Telescopes, microscopes (bright field, dark field, confocal, phase contrast, digital holographic), projection systems, interferometers, spectrometers.
Display devices	: Cathode ray tube, Liquid crystal display, Liquid crystals on silicon, Digital light processing, Digital micro-mirror device, Gas plasma, Light emitting diode (LED) display, Organic led displays (OLED).
Consumer devices	: Optical disc drives: Compact disc (CD), Digital versatile disc (DVD); laser printer, photocopier, image intensifiers.

References:

1. R. S. Longhurst, *Geometrical and Physical Optics*, 3rd ed., Orient Longman, 1988.
2. R. E. Fischer,B. Tadic-Galeb, and P. R. Yoder, *Optical System Design*, 2nd ed., SPIE Press, 2008.
3. W. J. Smith, *Modern Optical Engineering*, 3rd ed., McGraw Hill, 2000.
4. K. Iizuka, *Engineering Optics*, Springer, 2008.
5. B. H. Walker, *Optical Engineering Fundamentals*, SPIE Press, 1995.