**Applied Optics and Photonics (PHO)**

MS Written Comprehensive Exam graduate question based on ECE240A/B/C

The graduate level section on Photonics will consist of two multiple-part question: one covering physical optics, and one covering optoelectronics.

The material covered can be found in two graduate-level text books:


Students may also find an undergraduate text useful for background:


The topics covered may include:

**Physical Optics**
- Geometrical optics,
- Polarization
- Interferometry
- Optical resonators
- Fiber and planar waveguides
- Fresnel and Fraunhofer diffraction
- Gaussian beam propagation
- Wave propagation in anisotropic media
- Coherent and incoherent image processing

**Optoelectronics**
- Optical amplification
- Laser oscillation
- Q-switching and mode locking of lasers
- Specific laser systems (semiconductor, solid state, and gas)
- Amplitude and phase modulation
- Switching
- Electro-optics
- Acousto-optics
- Optical detection and noise

Questions related to preparation should be directed to:
Prof. Joseph Ford ([jeford@ucsd.edu](mailto:jeford@ucsd.edu)), 858-534-7891