

# ETRO 161 : Introduction to Optics and Photonics

**Credits:** 3

**Class Hours:** 6 lecture/lab

**Prerequisites:** Qualified for ENG 100 and MATH 103.

**Description:** This introductory photonics course covers the physics of light, laser safety, geometric optics, lenses, mirrors, polarizing lenses, interference/ diffraction waves, laser physics, optical imaging, and bio-photonics. Lab experiments and projects are embedded to reinforce the theory and provide practical experience for those interested in pursuing a career in this field.

**Semester Offered:** Spring

**Course Student Learning Outcomes (CSLOs):**

1. Design, analyze, and use optical systems comprised of geometric optics, lenses, mirrors, polarizers, and other optical instruments.
2. Set up and use laser and optics equipment and instruments in conformance to industry laser safety regulations.
3. Describe the types of lasers available, how laser beams are generated, and how they are used.
4. Function effectively as a member of a team to solve problems, produce documentation, and present information, demonstrating appropriate personal, professional, and social ethics and responsibility.
5. Explain the concepts underlying the electromagnetic spectrum and the nature of photons, waves, refraction, interference, and diffraction.