

Course Objectives/Course Outline
Spokane Community College

Course Title: Photonics I Lab

Prefix and Course Number: ELECT 236

Course Learning Outcomes:

By the end of this course, a student should be able to:

- Demonstrate proper safety procedures while operating lasers and photonic devices
- Demonstrate the properties of light
- Demonstrate proper handling of optical elements
- Demonstrate the properties of basic types of optics
- Demonstrate how light is polarized
- Demonstrate the use of tools used to measure basic properties of generated waveforms

Course Outline

I. Laser and Photonics Safety

- A. Non-beam hazards
- B. Human eye hazards and protection
- C. Laser classifications
- D. Maximum permissible exposure
- E. Laser hazard controls and warning signs
- F. Safety precautions

II. Properties of Light

- A. Demonstrate the various properties of light
- B. Visible Spectrum
- C. Light sources
- D. Polarization
- E. Scattering, absorption, and transmission

III. Optical Handling and Positioning

- A. Optical Components and their properties
- B. Anti-reflective coatings and filters
- C. Mountings
- D. Inspection, cleaning, and storage

IV. Basic Optical Principles and Devices

- A. Principles of light and lenses
- B. Mirrors
- C. Diffraction grating
- D. Prisms

V. Principles of Lasers

- A. Coherent light generation
- B. Beam Characteristics
- C. Beam Divergence
- D. Survey types of lasers and their applications

Material Covered:

- Laser and Photonics Safety
- Properties of Light
- Optical Handling and Positioning
- Basic Optical Principles and Devices
- Principles of Lasers