

SPRINGFIELD TECHNICAL COMMUNITY COLLEGE

ACADEMIC AFFAIRS

Course Number: LEO-110

Department: Laser Electro-Optics Technology

Course Title: Intro to Optics and Photonics

Semester: Fall

Year: 2017

Objectives/Competencies

Course Objective	Competencies
1. Demonstrate an understanding of the basic principles of geometric and wave optics	<ul style="list-style-type: none">• Describe the principles of reflection and refraction• Identify the various types of lenses and mirrors commonly used in optical systems• Explain how lenses and mirrors are used to form simple images• Explain the operation of a simple microscope and telescope• Describe the various segments of the electromagnetic spectrum (UV, visible and infrared)• Explain the principle of diffraction and how it is used in spectrometry• Describe the principle of polarization and the generation of polarized light• Create a simple reflection hologram
2. Demonstrate an understanding of the basic principles and applications of lasers	<ul style="list-style-type: none">• Describe the basic operation of a laser• Explain the differences between gas, solid state, semiconductor and other types of lasers• Describe how lasers are used in industry, consumer products, medicine, environmental sensing, aerospace, telecommunications, materials processing and other applications• Determine the laser safety requirements for different lasers systems• Describe the relevant output characteristics of continuous and pulsed lasers
3. Demonstrate an understanding and awareness of the various career opportunities available in the field of optics and photonics	<ul style="list-style-type: none">• Identify and become familiar with the various industries and companies in the optics and photonics field both locally and in the northeast region• Explore personal career choices within the field• Develop a basic resume and cover letter template to be used in future job searches• Identify, develop and refine the soft skills required to be successful in the optics and photonics field