



Industrial Laser Safety Training - Online[®]

Course Objectives: Sections 1-3

(Approx. 2 hours of Training)

Section 1: Basic Concepts & Laser Physics

- Recognize Units of Measurements
- Define Laser Terms
- Understand Interaction of Light & Matter (Reflection, Refraction, Absorption)
- Recognize Radiometric Terms & Units
- Identify Characteristics of Laser Light
- Understand How Laser Light is Generated

Section 2: Characterizing the Laser Output

- Recognize characteristics of Gaussian or TEM₀₀ Beam Shape
- Identify Common Pulse Modes
- Identify Differences Between CO₂ and Nd:YAG Beam Delivery
- Identify the Differences Between Short and Long Focal Lengths

Section 3: Types of Industrial Lasers

- Identify Types of Lasers (Gas, Solid-State, Semiconductor/Diode)
- Recognize Typical Industrial Laser Types (CO₂, Nd:YAG, Diode, HeNe, XeCl)
- Recognize Common Laser Components
- Summarize Types of Industrial Applications



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Course Objectives: Sections 4 - 5

Section 4: Laser Safety in Industrial Settings

- Identify Common Laser Hazards
- Identify Relevant Structures of the eye
- Identify Laser Effects on the Eye & Skin
- Define Acronyms: MPE, NHZ, and AEL
- Identify Standards for Laser Users
- Define: Laser Safety Officer
- Recognize Hazard Classifications
- Recognize Non-Beam Hazards
- List Types of Engineering & Administrative Control Measures from ANSI Z136.1
- Identify Standards for Manufacturers

Section 5: Basics of Laser Materials Process

- Summarize Laser Fabrication Applications
- Summarize Advantages & Disadvantages of Lasers in Industrial Applications
- Identify Some Uses of Laser Heat Treating
- Identify Components of a Laser Welding System
- Identify Types of Laser Welding
- Summarize Application of Laser Cutting & Drilling
- Define: Laser Cladding, Alloying, Scribing, Marking, and Rapid Prototyping