



EWI offers “Fundamentals of Welding Engineering,” a three-day course that provide engineers and technicians an overview of various aspects of welding engineering technology. This course is a combination of hands-on labs and in person classes. Participants will learn about different aspects of welding, including: welding processes, welding metallurgy and weldability, welding design and testing including NDE, and welding codes and qualifications. Participants will be awarded professional development hours and a certificate upon completion. To learn more about the Fundamentals of Welding Engineering course, contact Susan Witt at switt@ewi.org or **716.710.5538**.



Course Outline

DAY 1 -

WELDING METALLURGY

- Basics of Metallurgy Principles
- Basics of Welding Metallurgy
- Material Types

DEFECTS AND WELDABILITY

- Introduction to Weldability
- Weld Defect Types

ARC WELDING PROCESSES

- Introduction to Arc Welding
- Gas Tungsten Arc Welding
- Shielded Metal Arc Welding
- Gas Metal and Flux Cored Arc Welding
- Other Arc Welding Processes

ROBOTICS 101

- Introduction to Robotics
- Collaborative vs. Non-collaborative
- Welding Robotics Applications

DAY 2 -

WELDING CODES AND QUALIFICATION

- Welding Codes Overview
- Qualification Requirements

WELDING DESIGN AND TESTING

- Joint Design
- Welding Symbols
- Residual Stress and Distortion
- Mechanical Testing

NON-ARC WELDING PROCESSES

- Resistance Welding
- Solid-state Welding

HANDS-ON LABS

- Hands-on Welding Lab
- Hands-on Additive Manufacturing Lab

DAY 3 -

HIGH ENERGY DENSITY WELDING PROCESSES

- Laser Welding
- Electron Beam Welding

NONDESTRUCTIVE EVALUATION

- Introduction to Nondestructive Evaluation
- Types of Nondestructive Tests

HANDS-ON LABS

- Hands-on Welding Lab
- Hands-on Additive Manufacturing Lab