

# Education



Since its inception in 2007, the National Center for Welding Education and Training (Weld-Ed) has reshaped the way instructors teach and students learn in the welding and metals joining industry. Through new, innovative education strategies being implemented by partners across the country, Weld-Ed answers the demands of a changing industry and focuses on preparing the next generation of welding and material joining technicians to answer the call of 21st century employers.

Headquartered in the Nord Advanced Technologies Center on the campus of Lorain County Community College in Elyria, Ohio, Weld-Ed's mission is to improve the quality of education and training services to address the hiring and professional development needs of the welding industry.

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## Continuing Education: Welding Courses for Educators

These courses are designated for Professional Development of Welding Educators teaching secondary and post-secondary welding programs. The description of the training modules are listed as below:

### Module # 1. Welding Metallurgy

"Welding Metallurgy and Weldability of Commercial Alloys" course covers the concepts and fundamentals , and the best education practice methods to teach atomic structure, grain structure, heat flow, phase transformations, welding metallurgy, and the weldability of ferrous and non-ferrous commercial alloys. Laboratory work consists of welding metallurgy investigation on the welded samples and weldability testing for specific applications.

### Module # 2 Joining and Cutting Processes

"Joining and Cutting Processes" course covers the basics and principles of major joining and cutting processes. Advantages, disadvantages, equipment, consumables, techniques and variables for each process are discussed. Applications, criteria for consumable selection and how to establish process parameters are emphasized. Laboratory work involves equipment set up and operating of the welding and cutting equipment for specific applications.

## **Module # 3 Design/ Assembly/ Robotic Welding**

"Design for Welding, Fabrication, Assembly and Robotic Welding" course covers the concepts and fundamentals of the design for welding, fabrication, assembly and robotic welding. Laboratory work consists of case studies using standard design equations to determine the behavior of welded materials, part processing and optimization of fabrication, design considerations for work holding and manipulating equipment, and the programming and operating robots for GMAW welding.

## **Module # 4 Weld Quality and Inspection, Welding Codes, Specifications and Safety**

"Weld Quality and Inspection, Welding Codes, Specifications and Safety" course covers the of concepts and fundamentals,of the weld quality and inspection methods, welding codes, specifications and safety. Laboratory work consists of setting up and operating the instruments and equipment for identification and characterization of weld discontinuities and defects. \*Blended class – free online lecture is a prerequisite for on-location lab. See dates/locations for details.

## **Module # 5 Laser Welding**

"Laser Welding" course covers the concepts and fundamentals of laser welding technology. Covers basic optics, laser welding systems and welding process optimization, and metallurgy of laser welds. Laboratory work consists of case studies that will involve optimization of laser welding equipment and identification and characterization of weld discontinuities and defects.

## **Module # 6 Instructional Design & Teaching Strategies for Welding Instruction**

"Instructional Design & Teaching Strategies for Welding Instruction" course covers development of a welding program from needs assessment through curriculum development, and teach strategies to development and evaluation of student achievement. The module content includes welding program development, writing program and course objectives, use of advisory committees, curriculum development, learning theory, teaching methods, learning styles, laboratory teaching, organization, assignment development, and evaluation methods.

## **Module #7 Non-Destructive Testing**

"Non-Destructive Testing" (NDT) is testing and evaluation that does not destroy the test object. NDT is vital for constructing and maintaining all types of components and structures. Non-Destructive tests are done to detect internal or external imperfections, to determine structure, composition, or properties, or to measure geometric characteristics without affecting the form, fit, or function of the test object or material. To detect different types of indications such as inclusions, cracks and corrosion, there are many methods of testing available, such as radiography, ultrasonic, magnetic particle, liquid penetrant, eddy current, and visual. The module provides an overview of each of the major testing methods and laboratory practice to assure understanding of NDT theory.

## **Module #8 Advanced Joining Processes**

"Additional Welding and Allied Processes" course covers the basics and principles of less major joining, cutting, and allied processes. These processes are used in special applications where more traditional processes cannot be used due to material properties and specifications of the product. Advantages, limitations, equipment, consumables, techniques and variables for each process are discussed. Applications, criteria for consumable selection and how to establish process parameters are emphasized. Laboratory work involves equipment set up and operating for many of the processes.

## **Course: Weld Quality and Inspection, Welding Codes, Specifications and Safety**

The qualification and certification standards for entry level welders and welding technicians as established by The American Welding Society will be covered in all modules

# Incredible Training Opportunity for Welding Instructors

Participants will receive a complete set of training material for use in class room. Lunch each day will be covered by Weld-Ed.

Maximum 20 Participants per location.

Registration will be canceled with full refund of fee in case a class cancels due to enrollment with less than ten applicants. Notice of cancellation will be given one month prior to the start of class.

Secondary and post-secondary teachers are eligible to apply for Weld-Ed subsidized training. These courses will be awarded a Certificate of Attendance by the National Center for Welding Education and Training.

The Welding Educators Training Program will be offered in summer 2016 at seven different trainings throughout the country. Please check the link below for the training locations:

[Click here for class dates and locations](#)

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