



Program Plan

Knox Technical Center Welding Certification

Knox Technical Center
Mount Vernon, OH 43050
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School Office Hours: Mon-Thurs 7:30am – 7:00pm
Fri 7:30am – 4:00pm

I. GENERAL INFORMATION

- A. Mission Statement: The mission of Knox Technical Center is to provide cutting-edge programs that prepare adults with career and lifelong learning skills.
- B. Adult Education Director:
Kim Williams
740.393.2933, ext. 1106
kwilliams@knoxcc.org
- C. Disability Accommodations. Any learner needing special accommodation on the basis of any disability must advise the instructor at the beginning of class. All necessary accommodations will be made upon presentation of relevant certification, presented in a timely manner. Learners are also responsible for making contact with the Program Coordinator prior to the start of class. For detailed KCCC Bylaws & Policies pertaining to Reasonable Accommodation, see Section 2260.01-Section 504 – ADA Prohibition Against Discrimination Based on Disability located on the website at www.knoxcc.org.
- D. Equal Opportunity. It is the policy of the Knox County Career Center School District that employment, educational programs, and activities are provided without regard to race, color, national origin, sex or disability. Any learner with a disability should contact the program coordinator. The Board designates the Director as the Title VI, Title IX and Section 504 Coordinator.
- E. Title IV Eligibility. This program has been approved for Title IV funding. Adult learners requesting information about financial assistance should contact Financial Aid Coordinator Amy Thompson.

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II. RATIONALE FOR PROGRAM

- According to the Bureau of Labor Statistics (BLS) Job Outlook; welders will be needed for the nation's aging infrastructure and which will require the expertise of welders, cutters, solderers, and brazers to help rebuild bridges, highways, and buildings. These workers also will be needed in manufacturing plants, such as those that produce metal products and machinery.
<https://www.bls.gov/ooh/production/welders-cutters-solderers-and-brazers.htm#tab-6> (BLS, 7-2024)
- Although some employers hire inexperienced entry-level workers and train them on the job, many prefer to hire workers who have completed training or credentialing programs. Entry-level workers with formal technical training still receive several months of on-the-job training. (BLS, 7-2024)
<https://www.bls.gov/ooh/production/welders-cutters-solderers-and-brazers.htm#tab-4>
- Employment of welders nationally, cutters, solderers, and brazers show little are no change from 2022 to 2032. Despite limited employment growth, about 42,600 openings for welders, cutters, solderers, and brazers are projected each year, on average, over the decade. Most of those openings are expected to result from the need to replace workers who transfer to different occupations or exit the labor force, such as to retire. (BLS, 7-2024) <https://www.bls.gov/ooh/production/welders-cutters-solderers-and-brazers.htm>
- In Ohio, a growth of 8% in welding careers from 2020 to 2030 is projected. (O*NET, 2024)
<https://www.onetonline.org/link/localtrends/51-4121.00?st=OH>
- Employment growth reflects the need for welders in manufacturing because of the importance and versatility of welding as a manufacturing process. The basic skills of welding are similar across industries, so welders can easily shift from one industry to another, depending on where they are needed most.
- 2023 – 100% certification rate (10 out of 10); 80% are working in the field.
- 2024 – 100% certification rate (6 out of 6); 83% are working the field

III. PROGRAM DESCRIPTION

The Welding Certification program will prepare learners for careers requiring welding certification. The 685-hour program is a performance-based program with no prerequisite courses or certifications required. Learners will work with steel, stainless steel, cast iron, bronze, nickel, and other metals and alloys as they consult blueprints to plan, layout, cut, shape, weld, and finish various projects, including preparing estimates. Learners will become familiar and practice with professional tools and equipment, as well as principles and techniques they will use on the job.

The curriculum includes instruction in shop math, layout procedures, cutting tools, and process planning; SMAW, GMAW, and GTAW welding processes; oxyacetylene cutting, plasma arc cutting, electrode identification, and metal characteristics.

The program concludes with the opportunity for learners to earn American Welding Society D.1.1 structural steel certification.

IV. PROGRAM GOALS

- Provide sound fundamental skills required to pass American Welding Society (AWS) structural certification test.

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- Provide entry level knowledge and skills sets and advance to AWS certification.
- Provide employment opportunities in a variety of manufacturing fields
- Stay current with changing technologies by utilizing Advisory Committee from local industry
- Offer quality career-oriented instruction utilizing modern teaching techniques and applications.
- Provide the necessary skills to acquire employment or advance career opportunities in the manufacturing environment.
- Provide a bridge for career pathways.
- Explore technology of the future.

V. PROGRAM OUTCOMES

After the completion of the Welding Certification Program, a learner will be able to:

- Demonstrate good team and interpersonal skills.
- Demonstrate process planning, set-up, and safe operation of various welding machines.
- Demonstrate the soft skills necessary to support the proper welding operations.
- Obtain and maintain employment as a certified structural welder.
- Demonstrate basic knowledge of computer applications in the manufacturing environment
- Utilize acquired knowledge and skill to obtain American Welding Society (AWS) D1.1 certification.
- Apply acquired knowledge and skill to advance to a higher level of education such as an Associate Degree with an articulated institution.

VI. CREDENTIALS

- American Welding Society (AWS) Structural D1.1 certification (SMAW, FCAW, GMAW)

VII. TARGET POPULATION

- Any person 18 years of age and older
- Any person interested in a welding career and/or career enhancement within a manufacturing/welding career

VIII. PROGRAM MODEL

- 685 hours of instruction – Mondays through Thursdays, 5:00pm – 9:30 pm
- 133 classroom theory hours, 552 hands-on labs for practical experience

IX. ASSESSMENT STRATEGIES

A. Pre-assessment Skills Review

- WorkKeys

B. Throughout Program

- Competency Practice
- Individual module testing
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C. Graduation

- American Welding Society (AWS) Structural D1.1 certification

X. EVALUATION PLAN TO DETERMINE PROGRAM EFFECTIVENESS

- Employment rate of graduates into manufacturing jobs within six months of graduation
- Learner evaluation of instructors halfway through program and at end of program
- Learner evaluation of course halfway through program and at end of program
- Meetings with Advisory Committee once a year
- Meetings with faculty on a monthly basis

XI. TRAINING PATHWAYS

- Before: The Certified Welding Program is an entry-level program designed for personnel with little to novice experience in Welding Technology and leads straight to more advanced programs offered by higher institutions of learning.

Program Plan



Curriculum Map

Knox Technical Center – District IRN#051144
Welding Certification Program

| Course Sequence | | Total Theory Hours | Total Laboratory Hours | Total Course Hours |
|-----------------|---|--------------------|------------------------|--------------------|
| Course # | Course Name | | | |
| WLD1-1 | <i>Introduction to Welding</i> <ul style="list-style-type: none"> • Orientation • Computer Applications • Safety in the Welding Shop • Shop Math • Rigging • Bench Tools • Non-Precision Measure • Fasteners • Precision Measurement • Material ID • Blue Print Reading • Layout Procedures | 19 | 58 | 77 |
| WLD1-2 | <i>Welding Fundamentals & Terminology</i> <ul style="list-style-type: none"> • Base Metal Preparation • Welding Joints, Positions, & Symbols • Fabrication Fundamental Techniques • Oxy/Acetylene Operations • Blue Print Reading | 9 | 14 | 23 |
| WLD1-3 | <i>Shielded Metal Arc Welding (SMAW): Electric Arc Operations</i> <ul style="list-style-type: none"> • Equipment & Supplies • Shielded Metal Arc Welding • Blue Print Reading • Term Employability | 18 | 71 | 89 |
| WLD2-1 | <i>Gas Metal Arc Welding (GMAW): MIG Welding Operations</i> <ul style="list-style-type: none"> • Blue Print Reading • Gas Metal & Flux Cored Arc Welding | 26 | 138 | 164 |
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Curriculum Map

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|--------|---|-----|-----|-----|
| WLD3-1 | <i>SMAW Pipe Welding Operations Introduction</i> <ul style="list-style-type: none"> • Introduction to pipe welding • Term Employability | 18 | 141 | 159 |
| WLD3-2 | <i>OHSA 10/Environmental</i> | 12 | | 12 |
| WLD4-1 | <i>Gas Tungsten Arc Welding (GTAW): TIG Welding</i> <ul style="list-style-type: none"> • Blueprint reading • TIG Procedures • Term Employability | 22 | 114 | 136 |
| WLD4-2 | <i>Plasma Arc / Air Carbon Arc Operations</i> <ul style="list-style-type: none"> • Blue Print Reading • Plasma Arc Cutting | 9 | 16 | 25 |
| Totals | | 133 | 552 | 685 |