LAKESHORE COLLEGE

INTRO TO INDUSTRIAL WELDING

Program Number 61-442-2
Certificate • 10 credits

ABOUT THE PROGRAM

This certificate provides a basic understanding to Weld Safety, Math, Metallurgy, Tools, and Print Reading. It also introduces the learner to two different weld processes, Shielded Metal Arc (SMAW) and Gas Metal Arc (GMAW). This is an entry level, pathway certificate to the 27 credit Welding Industrial Technical Diploma.

PROGRAM OUTCOMES

- Apply safety practices.
- Interpret blueprints and AWS Welding symbols.
- Apply basic math to the field of welding.
- Perform SMAW and GMAW welding processes in various positions.

ADMISSIONS AND FIRST SEMESTER ENROLLMENT STEPS

- Submit online application.
- Complete the online Student Success Questionnaire.
- Complete Get Started at Lakeshore appointment:
    - Application Check-in
    - College Orientation Overview
    - 1st Time Program Registration

**Submit high school transcripts, college transcripts, and test scores (optional, highly recommended). Official transcripts will be needed for transferring college credit(s) and for financial aid purposes.*

ACADEMIC PREPAREDNESS/FUTURE SEMESTER ENROLLMENT STEPS

If applicable, complete program-specific academic preparedness requirements and enrollment steps prior to enrolling in occupational or core courses. Students will be notified if there is a program waitlist. View the college's program webpage for details: https://lakeshore.edu/academics/certificates/introduction-industrial-welding.

APPROXIMATE COSTS

$152.85 per credit tuition (WI resident) plus $9.17 per credit student activity fee. Material fee varies depending on course. Other fees vary by program. Visit lakeshore.edu/financial-aid/tuition-and-fees for details.

SPECIAL NOTE

- Learn when you want. Progress at your own pace. Receive personalized coaching and support. The full CBE definition may be found at lakeshore.edu/cbe.
- This certificate offers flexible start dates throughout the year. All classes meet the American Welding Society requirements.

CAREER AND EDUCATION ADVANCEMENT OPPORTUNITIES

Credits transfer to Lakeshore's Welding–Industrial and Fabrication Technician programs.

CONTACT

Lakeshore College Recruiter
920.693.1366 • Recruitment@lakeshore.edu

COURSES

Catalog No.	Class Title	Credit(s)
10442100	Safety and Welding Fundamentals*	1
31442351	Precision Measurement and Layout*	1
31442350	Metal Manufacturing Processes*	1
31442310	SMAW-Flat Position (Stick)*	1
31420325	Manufacturing Math*	1
31442308	Weld Examination*	1
31442320	GMAW-Flat Position (Wire/Mig)*	1
31442322	GMAW-Horizontal Position (Wire/Mig)*	1
31442385	Weld Print 1 Print Fundamentals*	1
31442324	Flux Core Arc-Flat/Horizontal Position*	1

TOTAL 10

*CBE delivery only

Curriculum and program acceptance requirements are subject to change. Program start dates vary; check with your academic counselor for details. The tuition and fees are approximate based on 2025-2026 rates and are subject to change prior to the start of the academic year.

FLUX CORE ARC-FLAT/HORIZONTAL (WIRE/MIG)...will have learners demonstrate safe shop working practices while welding fillet welds in flat and horizontal positions using the FCAW welding process. Learners will perform single bevel groove welds and V-groove welds in flat and horizontal positions using the FCAW, and will perform groove welds with and without backing material. COREQUISITE: 31442322 GMAW-Horizontal Position (Wire/Mig)

GMAW-FLAT POSITION (WIRE/MIG)...prepares the learner to demonstrate safe shop work practices; learners will perform set up and shut down of GMAW and MCAW equipment; weld mild steel using the GMAW and MCAW welding processes, and weld in the flat position using the GMAW process. PREREQUISITE: 31442300 Welding Intro or COREQUISITE: 10442100 Safety and Welding Fundamentals or 31442346 Industrial Maint Welding Intro or 31442345 Auto Servicing Welding

GMAW-HORIZONTAL POSITION (WIRE/MIG)...will use safe shop work practices while producing 3/4" fillet welds using the GMAW and MCAW welding processes and 1/4" fillet welds while welding tube to plate in the horizontal position. Learners will produce groove weldments in flat and horizontal positions, using .035 hard wire, .052 Metal Core and Metal electrode wires. COREQUISITE: 31442320 GMAW-Flat Position (Wire/Mig)

MANUFACTURING MATH…prepares the learner to use scientific calculators for the applications of common fraction and mixed number problems, decimal problems, inch and metric conversion problems, basic percentage problems, powers and roots, and pre-algebra problems.

METAL MANUFACTURING PROCESSES…prepares the learner to communicate using proper terminology that is used in industry as it pertains to the use of hand/power tools and measurement. The learner will demonstrate good safety practices while in a workplace environment, demonstrate the proper use of hand and power tools. The learner will complete steel fabrications using hand/power tools and classify and install industrial fasteners. The learner will be introduced to material handling operations by using the overhead crane and forklift.

PRECISION MEASUREMENT AND LAYOUT…prepares the learner to communicate proper measurement terminology that is used in industry; will develop safety practices for the workplace while using measuring equipment; proper use of measuring equipment and obtain measurement readings from Measuring equipment; layout steel fabrication using hand measuring devices and layout equipment. The learner will inspect and analyze a variety of steel fabrications while using measuring equipment.

SAFETY AND WELDING FUNDAMENTALS...introduces the learner to the world of welding, weld shop safety practices, welding terminology, and welding machine setup to industry standards. Learners will be introduced to the three major welding processes: SMAW, GMAW, and GTAW and will build skills welding with each process in the flat and horizontal positions while using the common welding joints found in industry. The learner will process material using the two major handheld cutting processes - Oxyfuel and PAC.

SMAW-FLAT POSITION (STICK)...prepares the learner to demonstrate safe shop work practices; make bead on plate welds on mild steel; make padding plate welds on mild steel; make fillet welds in 3/8" mild steel plate in the flat position; and make groove welds in mild steel plate. PREREQUISITE: 31442300 Welding Intro or COREQUISITE:10442100 Safety and Welding Fundamentals or 31442346 Industrial Maint Welding Intro or 31442345 Auto Servicing Welding

WELD EXAMINATION…is a study of the basic principles of weld quality. Emphasis will be on identifying and testing ferrous and non-ferrous materials. Learners will be introduced to hardening of ferrous material using the Oxyfuel process. The learner will be introduced to the inspection process of welds through NDT (non-destructive testing) and DT (destructive testing).

WELD PRINT 1 PRINT FUNDAMENTALS...prepares the learner to interpret manufacturing drawing by applying orthographic projection principles, by recognizing types of lines used in print reading, and how manufacturing prints are dimensioned. Develop print reading strategies by locating the bill of materials, title blocks, and revision blocks. Learners will be introduced to the AWS welding symbols and how they relate to manufacturing drawing.