



GENERAL INFORMATION

The welding program at EvCC is designed to meet the expanding needs of the many occupations that utilize welding. The welding department provides a balanced course of study, including hands-on learning experiences, technical information and general education courses. Emphasis is on welding, torch burning techniques, and fabrication techniques, with opportunities for attaining these skills in a lab setting.

The welding program is competency based and is divided into separate skill blocks. Each skill block is based on a 100 hour period of laboratory time. An average student should be able to complete a skill block within that time. As a student completes a skill block and demonstrates mastery of those skills by passing an exit test for that skill block, he/she can receive credit for it and move to the next level of training. This permits students to move through the program at their own rate. All welding courses are available as either day or evening classes. Specialty courses of study may be arranged through a welding instructor. Welding labs are limited to twenty (20) participants.

CAREER OPPORTUNITIES

Today, welders use automated as well as manual methods of joining metal parts through a process of heating the metal pieces and then melting and fusing them together to form a permanent bond. Frequently, they plan their work based upon drawings and speculation figures. Knowledge of blueprint reading is important, along with knowledge of the properties of different materials, knowledge of applied techniques and expected results of heating and melding of various types of metals. These skills and competencies are well addressed by EvCC's welding program.

Good eyesight, hand-eye coordination, manual dexterity and the ability to concentrate on detail work for long periods and work in awkward positions, at times, are important traits for a person considering this career.

Welders may find employment in places such as: manufacturing and repair shops, shipbuilding yards, the aerospace industry, construction of buildings, bridges and other structures; also joining pipes for pipelines, power plants, refineries and the high tech sector using CNC controlled equipment. Welders can advance to more skilled jobs with additional training and experience. Opportunities exist to become supervisors, inspectors and instructors.

PROGRAM OUTCOMES

1. Build skills toward industry standards
2. Build skills toward State and National welding certifications.

OPTIONS

Technical Certification – Welding – Designed for those wishing to enter the workforce as quickly as possible with certification in specific skills. Students acquire specific skills through experience and/or classes. Practice sessions are available in 24-hour blocks of time through EvCC's **Welding 225** course for 2 credits. Individuals having the welding skills necessary to weld to the standards required by the Washington Association of Building Officials (WABO) may participate in EvCC's certification testing service. WABO certification is available in the following skills:

- ◆ SMAW Stick electrode – unlimited plate
- ◆ FCAW Flux cored arc welding – unlimited plate
- ◆ FCAW Shop
- ◆ GMAW (Hard wire MIG) Field and Shop
- ◆ SMAW (Light gauge)
- ◆ GMAW (Light gauge)
- ◆ GTAW (TIG) - unlimited
- ◆ FCAW (Light gauge)
- ◆ GTAW (Light gauge)
- ◆ SMAW (Pipe)
- ◆ FCAW (Pipe)

To make an appointment for certification testing, please call 425-388-9096.

Associate in Technical Arts (ATA) Degree in Welding

The ATA is a non-transferable technical degree that includes emphasis in developing professional welding and fabrication skills as well as providing a grounding (13 credits) in general studies. This program is approximately two years in length for full-time involvement. It is a total of 90 credits.

Program Certificate

This Certificate includes many of the same Welding and Fabrication classes as the ATA Degree. Completion of this Certificate totals 43 credits of Welding classes. Completion time is approximately 4 quarters with a full-time course load.

Job Improvement or Personal Interest Courses in Welding

Special welding courses for those people with a personal interest in welding or who are already involved in welding and need specific skill upgrading for job improvement.

Advanced Manufacturing Technology (AMT)

The AMT degree includes classes that focus on specific engineering technology skills used in the manufacturing sector. See the separate curriculum guide for *AMT: Welding and Fabrication*.

COSTS

Besides tuition, there are some additional costs:

- **Book/lab fees**

Cost is dependent on the courses taken. Textbooks are usually under \$100 for the entire program. Lab fees are approximately \$350 for the complete program. For courses taken outside of the formal program, costs may differ.

- **Safety Equipment/Tools**

A welding student should expect to spend approximately \$200 during the course of the program on the required tools and safety equipment. A student in the Fabrication curriculum may have a larger requirement.

GETTING STARTED AT EVCC

Enrollment Services provides information about application, orientation and registration for new and continuing students. All prospective students are invited to contact the Educational Planning Center to speak one-on-one with an Educational Planner about getting started.

- Enrollment Services, Jackson Center 425-388-9219
- Educational Planning Center, Parks 3rd Fl, 425-388-9339

ADVISORS

Permission of the instructor is required before entering any welding courses. You may contact the advisor listed below.

- Dan Minzel, Monte Cristo 110, 425-388-9447, dminzel@everettcc.edu
- Owen Owens, Monte Cristo 110, 425-388-9449, oowens@everettcc.edu

For general Welding program information please call: 425-388-9096.

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CERTIFICATE IN WELDING

This checklist is targeted at students with an interest in Welding. It should be maintained by the student while at Everett Community College. The quarter before expected completion, this checklist should be submitted by the student, with a diploma/certificate application, to Enrollment Services .

Student Name: _____ Advisor Signature: _____ Date: _____

Course Number	Course Title	Credits	Quarter Completed	Grade
LECTURE CLASSES (Minimum 8 credits from approved list)				
WELD 150	Blueprint Reading	5	_____	_____
WELD 152 or WELD 154	Welding Base Materials: Processes & Procedures OR Industrial Safety for the Metal Trades	3 3	_____ _____	_____ _____
FABRICATION CLASSES (15 credits recommended from the following classes)				
WELD 111	Basic Layout	2	_____	_____
WELD 210	Heavy Plate Fabrication	5	_____	_____
WELD 211	Sheet Metal Fabrication	5	_____	_____
WELD 212	Pipefitting and Pipe Systems Fabrication	5	_____	_____
WELD 213	Practical Fabrication and Advanced Welding Techniques	5	_____	_____
WELD 214	Sub-Arc Welding	2	_____	_____
WELD 215	Press Brake Operation	3	_____	_____
WELD 216	Advanced Tig Welding	3	_____	_____
WELD 285	Computer Numeric Controlled (CNC) Plasma Cutting	5	_____	_____
WELD 295	Work Experience Internship	2-5	_____	_____
WELDING CLASSES (20 credits recommended from the following classes)				
WELD 190	Oxyacetylene	5	_____	_____
WELD 191	Basic Arc	5	_____	_____
WELD 192	Advanced Arc	5	_____	_____
WELD 193	Basic Pipe	5	_____	_____
WELD 194	Gas Tungsten Arc Welding	5	_____	_____
WELD 195	Gas Metal Arc/Flux Cored Arc Welding	5	_____	_____
WELD 196	Flux Core Arc Welding	5	_____	_____
WELD 225	Welding Skills Building	2	_____	_____

TOTAL 43 credits Minimum 2.0 GPA Required

NOTE: Actual classes may vary from the above described outline with Instructor's approval and permission. The total credits for the Program Certificate will always remain at 43.

ASSOCIATE IN TECHNICAL ARTS IN WELDING

This checklist is targeted at students with an interest in Welding. It should be maintained by the student while at Everett Community College. The quarter before expected completion, this checklist should be submitted by the student, with a diploma application, to the Enrollment Services Office. All degree requirements are listed in the Catalog, including the completion of at least 90 credits, with a minimum cumulative 2.0 GPA.

Courses listed with an ampersand in the course number (e.g. ENGL&101) reflect the Common Course Numbering System.
For more information, go to www.everettcc.edu/ccn

Student Name: _____ Advisor Signature: _____ Date: _____

COMPLETION of Diversity Course

_____ Where completed/Course Title _____ Year Completed _____ Grade _____

Course Number	Course Title	Credits	Quarter Completed	Grade
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GENERAL EDUCATION COURSES (13 Credits Minimum)

MATH 075	Vocational Math	5	_____	_____
ENGL 098/098D or	Intro to College Writing or Interpersonal Communication	5	_____	_____
CMST& 210	Interpersonal Communication	5	_____	_____
H DEV 155 or BUS 110D	Human Relations in the Workplace OR Business Communications	3-5	_____	_____

TECHNICAL CORE CLASSES (77 credits Total)

TECHNICAL CORE REQUIREMENTS (22 Credits Total)

WELD 150	Blueprint Reading for Industry* (also required for Program Certificate)	5	_____	_____
WELD 151	Carbon Steel Metallurgy for the Trades	3	_____	_____
WELD 152	Welding Base Materials: Processes and Procedures	3	_____	_____
WELD 153	Non-Ferrous Metallurgy for the Trades	3	_____	_____
WELD 154	Industrial Safety for the Metal Trades	3	_____	_____
WELD 285	Computer Numeric Controlled (CNC) Plasma Cutting	5	_____	_____

WELDING CLASSES (Minimum of 22 Credits Recommended)

WELD 190	Oxyacetylene	5	_____	_____
WELD 191	Basic Arc	5	_____	_____
WELD 192	Advanced Arc	5-10	_____	_____
WELD 193	Basic Pipe	5	_____	_____
WELD 194	Gas Tungsten Arc Welding	5	_____	_____
WELD 195	Gas Metal Arc/Flux Cored Arc Welding	5-10	_____	_____
WELD 196	Flux Core Arc Welding	5	_____	_____

FABRICATION CLASSES (Minimum of 15 credits Recommended)

WELD 210	Heavy Plate Fabrication	5	_____	_____
WELD 211	Sheet Metal Fabrication	5	_____	_____
WELD 212	Pipefitting and Pipe Systems Fabrication	5	_____	_____
WELD 213	Structural Steel Fabrication and Field Welding	5	_____	_____
WELD 214	Sub-Arc Welding	2	_____	_____
WELD 215	Press Brake Operation	3	_____	_____
WELD 216	Advanced Tig Welding	3	_____	_____

ELECTIVES (Minimum of 5 credits from the following classes)

WELD 111	Basic Layout	2	_____	_____
WELD 225	Welding Skills Building	2	_____	_____
WELD 295	Work Experience Internship	2-10	_____	_____

TOTAL 90 Minimum 2.0 GPA required

NOTE: For the ATA in Welding, the minimum of 13 credits in General Education, including 5 credits of Diversity and the 22 credits of Required Technical Core Classes are all required. The remaining 55 credits may come from any combination of the Welding/Fabrication classes or any pre-approved Discipline, with Instructor/Advisor approval.

EvCC Welding Courses

WELD 111 – Basic Layout

Baseline radial cylindrical and triangulation layout techniques used to develop flat pattern, pipe intersections, and conical shapes. Flat pattern layout and basic lofting techniques covering use of base line, radial, cylindrical, and triangulation layout development for small units. May be repeated one time for credit.

WELD 150 – Blueprint Reading for Industry

Overview of engineering drawing symbols used on blueprints and techniques used in their interpretation. Course is heavily inclined toward machine and fabrication trades rather than construction. May be repeated one time for credit.

WELD 151 – Carbon Steel Metallurgy for the Trades

Metallurgical terms as applied to carbon steels, properties of metals, melting and solidification of metals including phase changes, weld bead metallurgy and heat-affected zones. Alloying elements and their effects on weld material. Distortion of materials and its control. May be repeated one time for credit.

WELD 152 – Welding Base Materials: Processes and Procedures

Base material classification systems, welding processes and procedures. May be repeated one time for credit.

WELD 153 – Non-Ferrous Metallurgy for the Trades

Basic metallurgy of stainless steel, cast iron, and aluminum. Heat treatment of non-ferrous materials, non-ferrous material designation systems, filler material designation systems, and welding procedures for aluminum and stainless steel. May be repeated one time for credit.

WELD 154 – Industrial Safety for the Metal Trades

Basic set-up, safety and adjustment of tools and equipment common to the metal trades in accordance to the Occupational Safety and Health Act including personal protective equipment, Worker Right to Know Laws and National Institute of Safety & Health Standards.

WELD 190 – Oxyacetylene

Principles and techniques of oxyacetylene welding, brazing, and flame cutting to develop entry-level skills required by industry. May be repeated two times for credit.

WELD 191 – Basic Arc

Principles and techniques of basic manual shielded metal arc welding as required to demonstrate skills necessary to make fillet welds acceptable to industry standards in all positions. May be repeated two times for credit.

WELD 192 – Advanced Arc

Continuation of WELD 191. Development of welding skills to level required for code standards and certification. May be repeated two times for credit.

WELD 193 – Basic Pipe

Principles and techniques of pipe welding using manual and semi-automatic arc processes, materials, joint preparation, filler metal selection, and acceptable shop practices. May be repeated two times for credit.

WELD 194 – Gas Tungsten Arc Welding

Fundamentals and techniques used in gas tungsten arc welding process needed to weld steel, stainless steel, and aluminum materials in all positions. May be repeated two times for credit.

WELD 195 – Gas Metal Arc/Flux Core Arc Welding

Principles and techniques of gas metal arc and flux core arc welding processes on mild steel, stainless steel and aluminum. May be repeated one time for credit.

WELD 196 – Flux Core Arc Welding

Principles and techniques of Flux-cored Arc Welding (FCAW). Development of the skills required for American Welding Society (AWS) D1.1 and/or Washington Association of Building Officials (WAB) 27-13 S standard qualification tests.

WELD 210 – Heavy Plate Fabrication

Introduces the development of complex structures, fitting processes and procedures of heavy plate fabrication. Uses standard layout techniques and set-up and operation of press brake. May be repeated one time for credit.

WELD 211 – Sheet Metal Fabrication

Sequences and methods of light gauge metal fabrication. Students plan and produce parts using forming machinery, joining and forming processes. May be repeated one time for credit.

WELD 212 – Pipefitting and Pipe Systems Fabrication

Presents basic pipefitting. Students will fabricate various pipe systems and manifolds working from blueprints. May be repeated one time for credit.

WELD 213 – Structural Steel Fabrication and Field Welding

Sequences and methods of structural steel fabrication and assembly. Students plan, fabricate and join various structural shapes and formed parts into a completed project. Students learn and apply the techniques of out-of-position welding where vision and accessibility are limited. May be repeated one time for credit.

WELD 214 – Sub-Arc Welding

Basic safety, set up and operation of the sub arc welding process on plate and pre-fabricated pipe sections.

WELD 215 – Press Brake Operation

This course covers the basic safety, set up and operation of our 120 ton hydraulic press brake including bending sequences, bump rolling of pipe sections and basic maintenance of the equipment.

WELD 216 – Advanced TIG Welding

Advanced TIG welding techniques used in specialized manufacturing such as Aero Space and the Nuclear Industry. Course will include use of water cooled torches, purge systems and gas lenses. The focus will be stainless steel plate and pipe and Certification through the Washington Association of Building Officials (W.A.B.O.)

WELD 225 – Welding Skills Building

Designed for the student who is seeking practice time prior to taking a state welding certification test or for the student seeking to improve current welding skills through additional lab time. May be repeated two times for credit. Prerequisites: Instructor's permission.

WELD 285 – Computerized Torch Cutting

Programming and use of computerized cutting system using AutoCAD. May be repeated one time for credit.

WELD 295 – Work Experience Internship

Provides students with a safe, supervised work environment to apply their welding and fabrication skills, fostering professional growth and self-confidence in the welding industry. May be repeated two times for credit. Prerequisites: Instructor's permission.