

WELDING TECHNOLOGY - ASSOCIATE IN SCIENCE

² Elective units from course(s) numbered 1-599, if needed, to reach 60 degree-applicable units.

Plan Code: 2988

The Associate in Science degree in Welding Technology is designed to prepare students for a variety of entry-level positions in today's construction and fabrication industries. Upon completion students will have a thorough knowledge of welding safety, theory and procedures, in accordance with the American Welding Society SENSE Entry Welder program, as well as the skill to perform a variety of welding processes. Successful completion of this degree will prepare students for the following career opportunities: welder, welding inspector, welding technician/fitter, pipe fitter/welder, and metal fabricator.

Program Student Learning Outcomes

- Demonstrate the ability to attain the Institutional Student Learning Outcomes (ISLOs).
- Demonstrate advanced level skills to produce quality welds in the flat, horizontal, vertical, and overhead positions using the SMAW (Shielded Metal Arc Welding) process.
- Demonstrate advanced level skills to produce quality welds in the flat, horizontal, and vertical positions using the GTAW (Gas Tungsten Arc Welding) process.

Program Requirements

This degree requires the completion of General Education coursework plus the following:

| Code Number | Course Title | Units |
|---|--|-------------|
| REQUIRED COURSES | | |
| MTFAB 50 | Introduction to Metalworking | 4 |
| MTFAB 204 | Power Metalworking Machine Operations | 4 |
| MTFAB 260 | Blueprint Reading for Metal Fabrication | 3 |
| MTFAB 270 | Metallurgy | 2.5 |
| WELD 50 | Introduction to Welding | 4 |
| WELD 212 | Introduction to Shielded Metal Arc Welding | 4 |
| WELD 213 | Introduction to Semi-Automatic Welding | 4 |
| WELD 214 | Introduction to Gas Tungsten Arc Welding | 4 |
| Required Subtotal | | 29.5 |
| Complete one of the following: ¹ | | 19-39 |
| LBCC General Education (Plan A) (https://lbcc-public.courseleaf.com/academic-requirements/general-education-transfer-degree-certificate-requirements/general-education-plans/plan-a/) | | |
| CSU GE Breadth (Plan B) (https://lbcc-public.courseleaf.com/academic-requirements/general-education-transfer-degree-certificate-requirements/general-education-plans/plan-b/) | | |
| IGETC Pattern (Plan C) (https://lbcc-public.courseleaf.com/academic-requirements/general-education-transfer-degree-certificate-requirements/general-education-plans/plan-c/) | | |
| Electives (as needed to reach 60 degree-applicable units) ² | | |
| Minimum Degree Total | | 60 |

¹ Units for the major may be double-counted for LBCC GE, CSU GE, or IGETC; see counselor for limitations.

WELDING TECHNOLOGY - CERTIFICATE OF ACHIEVEMENT

Plan Code: 3988

The Certificate of Achievement in Welding Technology is designed to prepare students for a variety of entry-level positions in today's construction and fabrication industries. Upon completion students will have a thorough knowledge of welding safety, theory and procedures, in accordance with the American Welding Society SENSE (Schools Excelling through National Skills Education) Entry Welder program, as well as the skill to perform a variety of welding processes. Successful completion of this degree will prepare students for the following career opportunities: welder, welding inspector, welding technician/fitter, pipe fitter/welder, and metal fabricator.

Program Student Learning Outcomes

- Demonstrate advanced level skills to produce quality welds in the flat, horizontal, vertical, and overhead positions using the SMAW (Shielded Metal Arc Welding) process.
- Demonstrate advanced level skills to produce quality welds in the flat, horizontal, and vertical positions using the GTAW (Gas Tungsten Arc Welding) process.

Program Requirements

| Code Number | Course Title | Units |
|-------------------------|--|-------------|
| REQUIRED COURSES | | |
| MTFAB 50 | Introduction to Metalworking | 4 |
| MTFAB 204 | Power Metalworking Machine Operations | 4 |
| MTFAB 260 | Blueprint Reading for Metal Fabrication | 3 |
| MTFAB 270 | Metallurgy | 2.5 |
| WELD 50 | Introduction to Welding | 4 |
| WELD 212 | Introduction to Shielded Metal Arc Welding | 4 |
| WELD 213 | Introduction to Semi-Automatic Welding | 4 |
| WELD 214 | Introduction to Gas Tungsten Arc Welding | 4 |
| Total Units | | 29.5 |

GAS TUNGSTEN ARC WELDING (GTAW) - CERTIFICATE OF ACHIEVEMENT

Plan Code: 3989

The Certificate of Achievement in Gas Tungsten Arc Welding (GTAW) is designed for those interested in entry level welding skills to required GTAW Aluminum, low carbon, and stainless steels. Course work includes a comprehensive study with an emphasis on application of fundamental welding techniques and safe industry practices.

Program Student Learning Outcomes

- Demonstrate advanced level skills to produce quality welds in the flat, horizontal, and vertical positions using the GTAW (Gas Tungsten Arc Welding) process.

Program Requirements

| Code Number | Course Title | Units |
|-------------------------|--|-----------|
| REQUIRED COURSES | | |
| MTFAB 260 | Blueprint Reading for Metal Fabrication | 3 |
| WELD 50 | Introduction to Welding | 4 |
| WELD 214 | Introduction to Gas Tungsten Arc Welding | 4 |
| WELD 480 | Welding (Inert Gas) | 2 |
| WELD 481 | Welding (Inert Gas) | 1 |
| WELD 482 | Gas Tungsten Arc Welding Basic Joints | 2 |
| Total Units | | 16 |

SEMI-AUTOMATIC WELDING - CERTIFICATE OF ACHIEVEMENT

Plan Code: 3979

The Certificate of Achievement in Semi-Automatic Welding will emphasize advanced welding skills in the GMAW (Gas Metal Arc Welding) and FCAW (Flux Core Arc Welding) processes. Course work includes a comprehensive study with an emphasis on application of fundamental welding techniques and safe industry practices. Potential careers that the program prepares students for include, but are not limited to, Pipe Fitters and Steamfitters, Sheet Metal Workers, as well as Structural Iron and Steel Workers.

Program Student Learning Outcomes

- Demonstrate advanced level skills to produce quality welds in the flat, horizontal, vertical, and overhead positions using semi-automatic welding processes: GMAW (Gas Metal Arc Welding) and FCAW (Flux Core Arc Welding).

Program Requirements

| Code Number | Course Title | Units |
|-------------------------|---|-------------|
| REQUIRED COURSES | | |
| MTFAB 260 | Blueprint Reading for Metal Fabrication | 3 |
| MTFAB 270 | Metallurgy | 2.5 |
| WELD 50 | Introduction to Welding | 4 |
| WELD 213 | Introduction to Semi-Automatic Welding | 4 |
| WELD 471 | Semi-Automatic Welding (GMAW and FCAW) | 1 |
| WELD 472 | Gas Metal Arc Welding | 2 |
| WELD 483 | Gas Metal Arc/Flux Core Arc Welding | 2 |
| Total Units | | 18.5 |

SHIELDED METAL ARC WELDING (SMAW) - CERTIFICATE OF ACHIEVEMENT

Plan Code: 3985

The Certificate of Achievement in Shielded Metal Arc Welding (SMAW) is designed for those interested in welding structural steel. Course work includes a comprehensive study with an emphasis on application of fundamental welding techniques and safe industry practices. Potential careers that the program prepares students for include, but are not limited to, Pipe Fitters and Steamfitters, Sheet Metal Workers, as well as Structural Iron and Steel Workers.

Program Student Learning Outcomes

- Demonstrate advanced level skills to produce quality welds in the flat, horizontal, vertical, and overhead positions using SMAW (Shielded Metal Arc Welding) process.

Program Requirements

| Code Number | Course Title | Units |
|-------------------------|--|-----------|
| REQUIRED COURSES | | |
| MTFAB 260 | Blueprint Reading for Metal Fabrication | 3 |
| WELD 212 | Introduction to Shielded Metal Arc Welding | 4 |
| WELD 221 | Arc Welding Structural Certification | 3 |
| WELD 410 | Welding (ARC) | 2 |
| WELD 413 | SMAW Flat/Horz Groove Welds with Backing | 2 |
| WELD 414 | SMAW Vert & OV/HD Grv Welds w/ Backing | 2 |
| Total Units | | 16 |

BASIC ARC WELDING - CERTIFICATE OF COMPLETION

Plan Code: 4983

The Certificate of Completion in Basic Arc Welding is designed for those interested in learning basic Arc Welding. Course work includes an entry level study with an emphasis on application of fundamental welding techniques and safe industry practices. This course prepares the student for an entry level position as a Shielded Metal Arc Welder. The student will be required to provide all PPE safety gear (personal protective gear) required to safely perform SMAW welds in the lab.

Program Student Learning Outcomes

- Demonstrate entry level skills to produce quality welds in the flat and horizontal positions using SMAW (Shielded Metal Arc Welding) process.

Program Requirements

| Code Number | Course Title | Hours |
|-------------------------|-------------------|------------|
| REQUIRED COURSES | | |
| WELD 600 | Welding (General) | 72 |
| WELD 611 | Welding (ARC) | 54 |
| Total Hours | | 126 |

BASIC GAS TUNGSTEN ARC WELDING - CERTIFICATE OF COMPLETION

Plan Code: 4984

The Certificate of Completion in Basic Gas Tungsten Arc Welding is designed for those interested in learning basic GTAW Welding. Course work includes an entry level study with an emphasis on application of fundamental welding techniques and safe industry practices. This course prepares the student for an entry level position as a GTAW Welder. The student will be required to provide all PPE safety gear (personal protective gear) required to safely perform GTAW welds in the lab.

Program Student Learning Outcomes

- Demonstrate entry level skills to produce quality welds in the flat, horizontal, and vertical positions using the GTAW (Gas Tungsten Arc Welding) process.

Program Requirements

| Code Number | Course Title | Hours |
|-------------------------|---------------------|------------|
| REQUIRED COURSES | | |
| WELD 600 | Welding (General) | 72 |
| WELD 681 | Welding (Inert Gas) | 54 |
| Total Hours | | 126 |

BASIC OXY-ACETYLENE WELDING - CERTIFICATE OF COMPLETION

Plan Code: 4985

The Certificate of Completion in Basic Oxy-Acetylene Welding is designed for those interested in learning basic Oxy-Acetylene Welding. Course work includes an entry level study with an emphasis on application of fundamental welding techniques and safe industry practices. This course prepares the student for an entry level position as a Oxy-Acetylene Welder. The student be required to provide all PPE safety gear (personal protective gear) required to safely perform Oxy-Acetylene welds in the lab.

Program Student Learning Outcomes

- Demonstrate entry level skills to produce quality welds in the flat and horizontal positions using the Oxy-Acetylene process.

Program Requirements

| Code Number | Course Title | Hours |
|-------------------------|--------------------------|------------|
| REQUIRED COURSES | | |
| WELD 600 | Welding (General) | 72 |
| WELD 661 | Oxygen Acetylene Welding | 54 |
| Total Hours | | 126 |

BASIC SEMI-AUTOMATIC WELDING - CERTIFICATE OF COMPLETION

Plan Code: 4982

The Certificate of Completion in Basic Semi-Automatic Welding is designed for those interested in learning basic Gas Metal Arc Welding and Flux-Core Arc Welding. Course work includes an entry-level study with an emphasis on application of fundamental welding techniques and safe industry practices. This course prepares the student for an entry-level position as a Semi-Automatic Welder. The student will also be required to provide all PPE safety gear (personal protective gear) required to safely perform welds in the lab.

Program Student Learning Outcomes

- Demonstrate basic level skills to produce quality welds in the flat, horizontal, vertical, and overhead positions using semi-automatic welding processes: GMAW (Gas Metal Arc Welding) and FCAW (Flux Core Arc Welding).

| Code Number | Course Title | Hours |
|--------------------|--|--------------|
| WELD 600 | Welding (General) | 72 |
| WELD 671 | Semi-Automatic Welding (GMAW and FCAW) | 54 |
| Total Hours | | 126 |

EXPLORING WELDING AND METAL FABRICATION - CERTIFICATE OF COMPLETION

Plan Code: 4993

The Certificate of Completion in Exploring Welding and Metal Fabrication is designed for those interested in exploring the welding and metal fabrication fields. Course work includes an entry-level study with an emphasis on the safe application of fundamental metal fabrication and welding techniques and practices. This program prepares the student for an entry-level position in the metal fabrication and/or welding industry.

Program Student Learning Outcomes

- Demonstrate the basic skills to safely model, fabricate and weld a metal part.

Program Requirements

| Code Number | Course Title | Hours |
|--------------------|-----------------------------|-----------|
| WELD 601 | Exploring Welding | 18 |
| MTFAB 601 | Exploring Metal Fabrication | 18 |
| Total Hours | | 36 |