

# WELDING TECHNOLOGY

## Curriculum Guide for Academic Year 2021-2022

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Students planning to **transfer** to a four-year college or university should refer to the ASSIST web site at [www.assist.org](http://www.assist.org) and **consult a counselor** before beginning a program of study. Please call (562) 938-4561 (LAC) or (562) 938-3920 (PCC) to schedule a counseling appointment. Students may also wish to visit the Transfer Center on either campus.

### Program of study leading to: Associate in Science

Required Major Coursework:	Units	In Progress	Completed Grade
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		
MTFAB 50    Introduction to Metalworking	4		
MTFAB 220C   Power Metalworking Machine Operations	4		
MTFAB 260   Blueprint Reading for Metal Fabrication	3		
MTFAB 270   Metallurgy	3		
<b>TOTAL UNITS</b>	<b>30</b>		

#### For graduation with an **Associate in Science n Welding Technology**:

1. **Minimum Unit Requirements:** Any course that appears on a curriculum guide and the General Education Pattern (Plan A) may fulfill both major and general education requirements (Approved by College Curriculum Committee Spring 2012). For this degree, complete a minimum of 60 units in courses numbered 1-599. Please note that additional elective units may be required to meet this minimum based upon courses selected to fulfill General Education for the Associate Degree
 

Welding Technology	30 Units
General Education §	19 Units
2. **Scholarship:** Maintain an **overall grade point average (GPA) of 2.0** ("C" average) based on all accredited college work applied to the degree, no matter where completed. For this **field of concentration, complete each course above** with a **grade of "C" or better**, or "P" if course is graded on a P/NP basis.
3. **Residence for the Degree:** Complete at least 12 semester units of the required 60 semester units in residence at Long Beach City College in order for the college to grant an Associate of Arts and/or an Associate of Science Degree.
4. **Residence for the Field of Concentration:** Complete fifty percent (50%) or more of the unit requirements for this field of concentration in residence; this means at **least 15 units** of the required 30 units. Credit earned by exam, where applicable, may be included.
5. **General Education and Proficiency Requirements:** Complete the required A.A./A.S. General Education and Proficiency requirements\*, otherwise known as "Plan A". For Plan A requirements, refer to the general catalog or view it online at <http://osca.lbcc.edu> .
6. Complete and submit the degree application form to the Admissions and Records office during your final semester of course work. These forms are available in the Admissions and Records office, or online at

<http://admissions.lbcc.edu/> . Refer to the Schedule of Classes (<http://schedule.lbcc.edu>) and click the "Important Dates" link to view the actual deadline for each semester. **page.**

\*The requirements for general education/proficiency and the field of concentration (major) need to be from the same catalog year. This catalog year may be any year between the year of initial enrollment to the present, provided continuous enrollment is maintained throughout. See the catalog for definition of "continuous enrollment".

Program of study leading to:  
**Certificate of Achievement in Welding Technology**

**REQUIRED COURSES**—Complete the 30 units of required courses as listed in the Associate Degree requirements box on the first page.

<u>REQUIRED COURSES</u>	TOTAL UNITS	30	In Progress	Completed

For graduation with a **Welding Technology Certificate of Achievement**:

1. Complete each of the **REQUIRED COURSES** listed above with a **minimum grade of "C"**, or better, or "P" if course is graded on a P/NP basis.
2. Complete fifty percent (50%) or more of the unit requirements for this field of concentration in residence; this means at **least 15 units** of the required **30** must be **completed at Long Beach City College**. Credit earned by exam, where applicable, may be included.
3. Complete and submit the certificate application form to the Admissions and Records office during your final semester of course work. These forms are available in the Admissions and Records office, or online at <http://admissions.lbcc.edu/> . Refer to the Schedule of Classes (<http://schedule.lbcc.edu>) and click the "Important Dates" link to view the actual deadline for each semester.

Program of study leading to:  
**Certificates of Achievement, Advanced Arc Welding (SMAW and FCAW)**

<u>REQUIRED COURSES</u>	UNITS	In Progress	Completed Grade
WELD 213            Introduction to Semi-Automatic Welding	4		
WELD 483            Gas Metal Arc/Flux Core Arc Welding	2		
WELD 415            SMAW Flat/Horz Open Root Groove Welds	2		
WELD 416            SMAW Vert & O/H Open Root Groove Welds	2		
<b>TOTAL UNITS</b>	<b>10</b>		
<b>And SIX (6) additional units from:</b>			
	<b>UNITS</b>	<b>In Progress</b>	<b>Completed Grade</b>
MTFAB 260            Blueprint Reading for Metal Fabrication	3		
MTFAB 270            Metallurgy	3		
MTFAB 221            Arc Welding Structural Certification	3		
<b>SUBTOTAL Units</b>	<b>6</b>		
<b>TOTAL UNITS</b>	<b>16</b>		

For graduation with a **Advanced Arc Welding (SMAW and FCAW) Certificate of Achievement**:

1. Complete each of the **REQUIRED COURSES** listed above with a **minimum grade of "C"**, or better, or "P" if course is graded on a P/NP basis.
2. Complete fifty percent (50%) or more of the unit requirements for this field of concentration in residence; this means: For the Certificate, complete at **least 8 units** of the required 16 at **Long Beach City College**. Credit earned by exam, where applicable, may be included.

Complete and submit the certificate application form to the Admissions and Records office during your final semester of course work. These forms are available in the Admissions and Records office, or online at <http://admissions.lbcc.edu/> . Refer to the Schedule of Classes (<http://schedule.lbcc.edu>) and click the "Important Dates" link to view the actual deadline for each semester.

Program of study leading to:  
**Certificates of Achievement, Gas Tungsten Arc Welding (GTAW)**

<u>REQUIRED COURSES</u>		UNITS	In Progress	Completed Grade
WELD 50	Introduction to Welding	4		
WELD 214	Introduction to Gas Tungsten Arc Welding	4		
WELD 480	Welding (Inert Gas)	2		
WELD 482	Gas Tungsten ARC Welding Basic Joints	2		
WELD 481	Welding (Inert Gas)	1		
MTFAB 260	Blueprint Reading for Metal Fabrication	3		
<b>TOTAL UNITS</b>		<b>16</b>		

For graduation with a **Gas Tungsten Arc Welding (GTAW) Certificate of Achievement:**

1. Complete each of the **REQUIRED COURSES** listed above with a **minimum grade of "C"**, or better, or "P" if course is graded on a P/NP basis.
2. Complete fifty percent (50%) or more of the unit requirements for this field of concentration in residence; this means: For the Certificate, complete at **least 8 units** of the required 16 at **Long Beach City College**. Credit earned by exam, where applicable, may be included.

Complete and submit the certificate application form to the Admissions and Records office during your final semester of course work. These forms are available in the Admissions and Records office, or online at <http://admissions.lbcc.edu/> . Refer to the Schedule of Classes (<http://schedule.lbcc.edu>) and click the "Important Dates" link to view the actual deadline for each semester.

Program of study leading to:  
**Certificates of Achievement, Shielded Metal Arc Welding (SMAW)**

<u>REQUIRED COURSES</u>		UNITS	In Progress	Completed Grade
WELD 212	Introduction to Shielded Metal Arc Welding	4		
WELD 221	Arc Welding Structural Certification	3		
MTFAB 260	Blueprint Reading for Metal Fabrication	3		
WELD 410	Arc Welding	2		
WELD 413	SMAW Flat/Horz Groove Welds with Backing	2		
WELD 414	SMAW Vert and OV/HD GRV Welds w/Backing	2		
<b>TOTAL UNITS</b>		<b>16</b>		

For graduation with a **Robotic Welding Automation Certificate of Achievement:**

1. Complete each of the **REQUIRED COURSES** listed above with a **minimum grade of "C"**, or better, or "P" if course is graded on a P/NP basis.
2. Complete fifty percent (50%) or more of the unit requirements for this field of concentration in residence; this means: For the Certificate, complete at **least 8 units** of the required 16 at **Long Beach City College**. Credit earned by exam, where applicable, may be included.

Complete and submit the certificate application form to the Admissions and Records office during your final semester of course work. These forms are available in the Admissions and Records office, or online at <http://admissions.lbcc.edu/> . Refer to the Schedule of Classes (<http://schedule.lbcc.edu>) and click the "Important Dates" link to view the actual deadline for each semester.

## Program of study leading to: Certificates of Completions

### **Certificate: Basic Arc Welding 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 (Personal Protection Guide) required to safely perform SMAW welds in the lab.

<u>REQUIRED COURSES</u>		HOURS	In Progress	Completed Grade
WELD 600	Welding (General)	72		
WELD 611	Welding (Arc)	54		
<b>TOTAL HOURS</b>		<b>126</b>		

### **Certificate: Basic Gas Tungsten Arc Welding 4984**

The Certificate of Completion in Basic Gas Tungsten Arc Welding is designed for those interested in learning basic GTAW Welding. Coursework 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 protection gear) required to safely perform GTAW welds in the lab.

<u>REQUIRED COURSES</u>		HOURS	In Progress	Completed Grade
WELD 600	Welding (General)	72		
WELD 681	Welding (Inert Gas)	54		
<b>TOTAL HOURS</b>		<b>126</b>		

### **Certificate: Basic Oxy-Acetylene Welding 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.

<u>REQUIRED COURSES</u>		HOURS	In Progress	Completed Grade
WELD 600	Welding (General)	72		
WELD 661	Oxygen Acetylene Welding	54		
<b>TOTAL HOURS</b>		<b>126</b>		

## Career Opportunities

This **Associate Degree or Certificate of Achievement** is a two-year program leading to the Associate in Science (A.S.) degree. This degree will help students succeed after transferring to a CSU or UC School Computer Science major program. Students wishing a bachelor's degree (transfer program) should meet with a counselor to discuss transferability of courses.

## Program Mission and Outcomes

### **Program Student Outcome (Associate in Science and Certificate of Achievement):**

- 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.

#### Certificate of Completion, Basic Arc Welding

##### 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.

#### Certificate of Completion, Basic Gas Tungsten Arc Welding

##### 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.

#### Certificate of Completion, Basic Oxy-Acetylene Welding

##### Program Student Learning Outcomes:

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

### Legend

† This course has a prerequisite. Prerequisite courses must be complete with at least a “C” or “P” grade. Refer to the General Catalog (<http://www.lbcc.edu/cat/index.html>), the Schedule of Classes (<http://schedule.lbcc.edu/>), or the online Credit Course Outline (<http://wdb-asir.lbcc.edu/coursecurriculum/coursedetails/>) for specific prerequisite information.