

Welding Technology

Curriculum Guide for Academic Year 2019-2020

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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 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:			
<u>Associate in Science</u>			
	Units	In Progress	Completed Grade
Required Major Coursework:			
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		
TOTAL UNITS	30		

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

- 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
- 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.
- 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.
- 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.
- 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> .

- 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.**

Associate Degree requirements continued from previous 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:**

- 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.
- 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.
- 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	Intro 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		
TOTAL UNITS		10		

<u>And 6 (6) additional units from:</u>		UNITS	In Progress	Completed Grade
WELD 221 OR	Arc Welding Structural Certification OR	3 OR		
WELD 260 OR	Blueprint Reading for Metal Fabrication OR	3 OR		
WELD 270	Metallurgy	3		
SUBTOTAL Units		6		
TOTAL UNITS		16		

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

- 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.
- 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)

REQUIRED COURSES		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		
TOTAL UNITS		16		

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, Robotic Welding Automation

REQUIRED COURSES		UNITS	In Progress	Completed Grade
MTFAB 280	Introduction to Robotic Welding	2.5		
MTFAB 281	Intermediate Robotic Welding	2.5		
WELD 50	Introduction to Welding	4		
MTFAB 50	Introduction to Metalworking	4		
MTFAB 260	Blueprint Reading for Metalworking	3		
MTFAB 270	Metallurgy	3		
TOTAL UNITS		19		

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 9.5 units** of the required 19 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	Welding	2		
WELD 413	SMAW Flat/Horz Groove Welds with Backing	2		
WELD 414	SMAW Vert and OV/HD GRV Welds w/Backing	2		
TOTAL UNITS		16		

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 9.5 units** of the required 19 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:
Certificate of Accomplishment

Certificate: Shielded Metal Arc Welding 4991

<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		
SUBTOTAL UNITS		10		

Choose FOUR (4) Additional Units from:

<u>REQUIRED COURSES</u>		UNITS	In Progress	Completed Grade
WELD 410	Welding (ARC)	2		
WELD 413	SMAW Flat/Horz Groove Welds with Backing	2		
WELD 414	SMAW Vert and OV/HD Grv Welds w/Backing	2		
Subtotal Units		4		
TOTAL UNITS		14		

Certificate: Advanced Arc Welding (SMAW and FCAW) 4986

<u>REQUIRED COURSES</u>		UNITS	In Progress	Completed Grade
WELD 213	Introduction to 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		
SUBTOTAL UNITS		10		

And 6 (6) additional units from:		UNITS	In Progress	Completed Grade
WELD 221	Arc Welding Structural Certification	3		
WELD 260	Blueprint Reading for Metal Fabrication	3		
WELD 270	Metallurgy	3		
SUBTOTAL Units		6		
TOTAL UNITS		16		

Certificate: Gas Tungsten Arc Welding (GTAW) 4989

REQUIRED COURSES		UNITS	In Progress	Completed Grade
WELD 214	Introduction to Gas Tungsten Arc Welding	4		
WELD 480	Welding (Inert Gas)	2		
WELD 482	Gas Tungsten ARC Welding Basic Joints	2		
MTFAB 260	Blueprint Reading for Metal Fabrication	3		
TOTAL UNITS		11		

For graduation with a **Certificate of Accomplishment:**

1. Complete the above required courses with a minimum grade of "C", or "P" if course is graded on a P/NP basis.
2. Fifty percent (50%) or more of the required units must be completed in residence at LBCC.

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>

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.

Program Student Outcome Advanced Arc Welding (SMAW) and FCAW) Certificate of Accomplishments):

- Demonstrate advanced level skills to produce quality welds in the flat, horizontal, vertical, and overhead positions using various arc welding processes.

Program Student Outcome Gas Tungsten Arc Welding (GTAW) Certificate of Accomplishments):

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

Program Student Outcome Shielded Metal Arc Welding (SMAW)Certificate of Accomplishments):

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