

# PRIDE. CHALLENGE. ACHIEVEMENT.

CREENTIAL YEAR 2017-18

## WELDING TECHNOLOGY

### Credentials

Welding Sculpture skills certificate	19 cr.
Fabrication certificate	35-36 cr.
Pre-Apprenticeship certificate	27 cr.
Fabrication Technology AAS degree	61-67 cr.

### Major Description

Schoolcraft's welding program provides students with both hands-on welding skills and knowledge of metallurgy and other materials. The program offers three welding certificates in addition to an associate degree in applied science. Class sizes are limited so instructors can work closely with students to provide hands-on training and relay knowledge of analytical skills required by modern industrial technology.

- The welding fabrication certificate prepares students for jobs involving metal inert gas and tungsten inert gas welding, as well as providing knowledge of plasma, arc and oxy-gas cutting technologies.
- Schoolcraft's welding joining technology associate in applied science degree prepares students for a job in industrial, prototype and machine tool building, heavy equipment, construction and emerging green and sustainable technologies.
- The welding pre-apprenticeship certificate, through a partnership with local trade unions, will help ensure that students have the skills, knowledge and training necessary to be safe on the jobsite, competitive in the workplace and satisfied in their careers.
- The welding sculpture skills certificate helps professional sculptors and aspiring welders gain knowledge and skills applicable in today's art world and welding industry.

### National Media Salaries for Welding Technology-related positions (source: US BLS)

Positions Average Annual Salary: \$36,300

### Welding Sculpture Skills Certificate

Schoolcraft program code # CRT.00327

The focus of both the welding industry and sculpture is fabrication. Because sculpture requires artists to use materials, tools and skills, it is natural for artists and the welding industry to merge. This welding sculpture skills certificate helps the professional sculptor or the aspiring welder gain the knowledge and skills needed in today's art world and welding industry.

Students learn basic and advanced skills in welding with the MIG and TIG welding processes as well as many fabrication techniques used in today's industry. They learn how to think and work creatively with these processes and how to conceptually and objectively discuss their work. New fabrication processes are explored to give the student an understanding of how alternative methods of fabrication satisfy different needs. This certificate creates an artistic option for entry into the welding fabrication certificate and the welding joining technology associate degree.

Students are required to purchase protective clothing, protective (safety) shoes and eye protection equipment.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete the program requirements qualify for a certificate of program completion. All program required courses must have been completed with a grade of 2.0 or better.

### SAMPLE SCHEDULE OF COURSES

#### First Year—Spring Session

WELD 110	Introduction to Welding Basics for Fabrication	3
WELD 112	Contemporary Metal Sculpture 1	3
	<b>Total Credits</b>	<b>6</b>

#### First Year—Fall Semester

WELD 209	Contemporary Metal Sculpture 2	3
WELD 115	Gas Metal Arc Welding (G.M.A.W./M.I.G.)	3
	<b>Total Credits</b>	<b>6</b>

#### First Year—Winter Semester

WELD 119	Gas Tungsten Inert Arc Welding (G.T.A.W./T.I.G.)	3
WELD 208	Advanced Metal Sculpture	4
	<b>Total Credits</b>	<b>7</b>

**PROGRAM TOTAL 19 CREDITS**



It is the policy of Schoolcraft College that no person shall, on the basis of race, religion, color, gender, age, marital status, disability, sexual orientation, and/or national origin, be subjected to discrimination during or be excluded from participating in or be denied the benefits of any program or activity or in employment.



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## Welding: Fabrication Certificate

Schoolcraft program code # 1YC.00127

The welding fabrication program prepares students for employment under classifications such as welders and/or industrial fabrications. The program includes joining materials, using weldments, special techniques, equipment and other recognized fastening methods. Students acquire skills in the broad categories of welding and fabrication with added emphasis upon support technical subjects.

Students are required to purchase protective clothing, protective (safety) shoes and eye protection equipment.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them.

Students who satisfactorily complete the program requirements qualify for a certificate of program completion.

### SAMPLE SCHEDULE OF COURSES

#### First Year—Fall Semester

#### First Year—Winter Semester

WELD 110	Introduction to Welding Basics for Fabrication	3	Mathematics*	<i>Select any General Education Mathematics Course</i>	3-4
WELD 113	Shielded Metal Arc Welding (S.M.A.W.)	3	MATH 102	Technical Mathematics (recommended)	
WELD 115	Gas Metal Arc Welding (G.M.A.W./M.I.G.)	3	WELD 120	Advanced Processes-Stick Electrode and M.I.G. Welding	3
WELD 119	Gas Tungsten Inert Arc Welding (G.T.A.W./T.I.G.)	3	WELD 130	Advanced Processes—Gas Tungsten	4
	<b>Total Credits</b>	<b>12</b>	MET 103	Introduction to Materials Science	3
				<b>Total Credits</b>	<b>12-13</b>

#### First Year—Spring Session

#### First Year—Summer Session

WELD 205	Welder's Print Reading	2	WELD 206	Welding Inspection and Qualification	2
Exam Preparation**	<i>Select from list</i>	3	WELD 223	Fabrication	4
	<b>Total Credits</b>	<b>5</b>		<b>Total Credits</b>	<b>6</b>

### PROGRAM TOTAL 35-36 CREDITS

#### \*\*Exam Preparation: (Select one)

WELD 210	Preparation for Welder Certification in Shielded Metal Arc Welding (S.M.A.W.)	3
WELD 211	Preparation for Welder Certification in Gas Metal Arc Welding (G.M.A.W./M.I.G.)	3
WELD 212	Preparation for Welder Certification in G.T.A.W./T.I.G.	3
WELD 214	Preparation for Welder Certification in Pipe Welding	3
WELD 225	Pre-Apprenticeship Welder Certification	3

## Welding: Pre-Apprenticeship Certificate

Schoolcraft program code # 1YC.00129

The road to becoming a welding Journeyman starts with apprenticeship training. Schoolcraft College accomplishes that mission by providing training, leadership, and partnership with local trade unions in order to uphold union values and the principles of service and professionalism. Coursework will prepare students for union apprenticeship by providing instruction in fundamental welding equipment and techniques, project planning, layout, fabrication, safety and technical math. Students completing the coursework successfully will also earn American Welding Society certification in at least one welding procedure. The pre-apprenticeship certificate will help ensure that students have the skills, knowledge, and training necessary to be safe on the jobsite, competitive in the workplace and satisfied in their careers. This certificate creates an option for entry into the welding fabrication certificate and the welding joining technology associate degree.

Students are required to purchase protective clothing, protective (safety) shoes and eye protection equipment.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them.

Students who satisfactorily complete the program requirements qualify for a certificate of program completion.

### SAMPLE SCHEDULE OF COURSES

#### First Year—Fall Semester

#### First Year—Winter Semester

WELD 110	Introduction to Welding Basics for Fabrication	3	MATH 102	Technical Mathematics	4
WELD 113	Shielded Metal Arc Welding (S.M.A.W.)	3	WELD 205	Welder's Print Reading	2
WELD 115	Gas Metal Arc Welding (G.M.A.W./M.I.G.)	3	WELD 223	Fabrication	4
WELD 120	Advanced Processes-Stick Electrode and M.I.G. Welding	3	WELD 225	Pre-Apprenticeship Welder Certification	3
	<b>Total Credits</b>	<b>12</b>	OSH	<i>Select one</i>	2
			OSH 111	Occupational Safety and Health for General Industry	
			OSH 112	Occupational Safety and Health for Construction (recommended)	
				<b>Total Credits</b>	<b>15</b>

### PROGRAM TOTAL 27 CREDITS

*Exams for above certificate will also be provided on an individual basis.*

## Welding: Fabrication Technology AAS Degree

Schoolcraft program code # AAS.00082

There is an ever increasing need for persons today that possess skills, both in welding and metallurgy. Materials of industry and new technology require highly skilled persons that understand material sciences, metallurgy, and the joining processes used to produce optimum quality fabrications. The quality conscience industry of today demands certified people that can perform tasks from the simplest, to more complex technical applications. The courses selected in this program will give the student the required skills needed to perform, both hands on and analytical tasks required by modern industrial technology.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete all college and program requirements qualify for an associate in applied science degree.

Students seeking transfer to a baccalaureate program should request transfer guides provided by the department.

### SAMPLE SCHEDULE OF COURSES

#### First Year—Fall Semester

#### First Year—Winter Semester

ENG 100	Communication Skills	3	ENG 116	Technical Writing	3
MET 103	Introduction to Materials Science	3	Mathematics	<i>Select any General Education Mathematics Course</i>	3-4
WELD 110	Introduction to Welding Basics for Fabrication	3		MATH 102 Technical Mathematics (recommended)	
WELD 113	Shielded Metal Arc Welding (S.M.A.W.)	3	WELD 119	Gas Tungsten Inert Arc Welding (G.T.A.W./T.I.G.)	3
WELD 115	Gas Metal Arc Welding (G.M.A.W./M.I.G.)	3	WELD 120	Advanced Processes-Stick Electrode and M.I.G Welding	3
	<b>Total Credits</b>	<b>15</b>		<b>Total Credits</b>	<b>12-13</b>

#### First Year—Spring Session

#### First Year—Summer Session

WELD 205	Welder's Print Reading	2	WELD 206	Welding Inspection and Qualification	2
Social Science	Select General Education Social Science course(s)	3-4		<b>Total Credits</b>	<b>2</b>
PSYCH 153	Human Relations (recommended)				
	<b>Total Credits</b>	<b>5-6</b>			

#### Second Year—Fall Semester

#### Second Year—Winter Semester

MFG 102	Basic Machining Processes	3	Elective*	Select from list	3-4
WELD 130	Advanced Processes—Gas Tungsten	3	WELD 223	Fabrication	4
OSH	<i>Select one</i>	2	WELD 262	Welding Metallurgy	4
OSH 111	Occupational Safety and Health for General Industry		Science	<i>Select General Education Science course(s)</i>	3-5
OSH 112	Occupational Safety and Health for Construction (recommended)			<b>Total Credits</b>	<b>13-16</b>
Humanities	<i>Select General Education Humanities course(s)</i>	3-4			
COMA 103	Fundamentals of Speech (recommended)				
	<b>Total Credits</b>	<b>11-12</b>			

#### Second Year—Spring Session

Exam Preparation**	<i>Select from list</i>	3
	<b>Total Credits</b>	<b>3</b>

### PROGRAM TOTAL 61-67 CREDITS

#### \*Electives

WELD 290	Welding Internship	3
WELD 118	Adhesive Joining Technology	4
WELD 240	Computer Numerical Control (CNC) Shape Cutting and Automation	4

#### \*\*Exam Preparation: (Select one)

WELD 210	Preparation for Welder Certification in Shielded Metal Arc Welding (S.M.A.W.)	3
WELD 211	Preparation for Welder Certification in Gas Metal Arc Welding (G.M.A.W./M.I.G.)	3
WELD 212	Preparation for Welder Certification in G.T.A.W./T.I.G	3
WELD 214	Preparation for Welder Certification in Pipe Welding	3
WELD 225	Pre-Apprenticeship Welder Certification	3

Exams will also be provided on an individual basis.

Students planning to transfer should check the transfer institution's requirements/guides or discuss their options with a counselor or advisor. Number of credits may vary depending on the course selection.