

Welding Technology

Credentials

Welding Sculpture Skills Certificate	19cr.
Welding Sculpture Program AGS Degree	60 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 sculptures and aspiring welders gain knowledge and skills applicable in today's art world and welding industry.
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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.

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.

Not all courses are offered each semester. Students should work with an academic advisor to develop a schedule that will work for them. Students planning to transfer should check the transfer institution's requirements/guides or discuss their options with an academic advisor. Number of credits may vary depending on the course selection.

SAMPLE SCHEDULE OF COURSES

First Year - Spring Session

Course #	Course Title	Credits
WELD 110	Introduction to Welding Basics for Fabrication	3
WELD 112	Contemporary Metal Sculpture 1	3
	Total Credits: 6	

First Year - Fall Semester

Course #	Course Title	Credits
WELD 209	Contemporary Metal Sculpture 2	3
WELD 115	Gas Metal Arc Welding (G.M.A.W./M.I.G.)	3
	Total Credits: 6	

First Year - Winter Semester

Course #	Course Title	Credits
WELD 119	Gas Tungsten Inert Arc Welding (G.T.A.W./ T.I.G.)	3
WELD 208	Advanced Metal Sculpture	4
	Total Credits: 7	

PROGRAM TOTAL 19 CREDITS

Welding Sculpture Program AGS Degree

Schoolcraft program code #AGS.00042

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

Any student wishing to pursue an associate degree can apply all 19 credits from the Welding Sculpture Skills Certificate toward an Associate in General Studies (AGS) degree. Depending on the desired career path, discuss other options for an associate degree with an academic advisor.

All program required courses must have been completed with a grade of 2.0 or better.

Not all courses are offered each semester. Students should work with an academic advisor to develop a schedule that will work for them. Students planning to transfer should check the transfer institution's requirements/guides or discuss their options with an academic advisor. Number of credits may vary depending on the course selection.

SAMPLE SCHEDULE OF COURSES

First Year - Spring Session

Course #	Course Title	Credits
WELD 110	Introduction to Welding Basics for Fabrication	3
WELD 112	Contemporary Metal Sculpture 1	3
	Total Credits: 6	

First Year - Fall Semester

Course #	Course Title	Credits
WELD 209	Contemporary Metal Sculpture 2	3
WELD 115	Gas Metal Arc Welding (G.M.A.W./M.I.G.)	3
English Communication	Select first within a set of General Education English Communication courses*	3
Humanities	Select General Education Humanities course*	3
Mathematics	Select General Education Mathematics course*	3
	Total Credits: 15	

Welding Sculpture Program AGS Degree (continued)

First Year - Winter Semester

Course #	Course Title	Credits
WELD 119	Gas Tungsten Inert Arc Welding (G.T.A.W./ T.I.G.)	3
WELD 208	Advanced Metal Sculpture	4
English Communication	Select second within a set of General Education English Communication courses*	3
Science	Select General Education Science course*	4
	Total Credits: 14	

Second Year - Fall Semester

Course #	Course Title	Credits
Social Science	Select General Education Social Science course*	3
Humanities	Select General Education Humanities course*	1
Science	Select General Education Science course*	3
Electives	Select courses supportive of occupational and academic goals	7
	Total Credits: 14	

Second Year - Winter Semester

Course #	Course Title	Credits
Social Science	Select General Education Social Science course*	3
Electives	Select courses supportive of occupational and academic goals	8
	Total Credits: 11	

PROGRAM TOTAL 60 CREDITS

*Please check Schoolcraft General Education requirements to determine course options.

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.

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

Not all courses are offered each semester. Students should work with an academic advisor to develop a schedule that will work for them. Students planning to transfer should check the transfer institution's requirements/guides or discuss their options with an academic advisor. Number of credits may vary depending on the course selection.

SAMPLE SCHEDULE OF COURSES

First Year - Fall Semester

Course #	Course Title	Credits
WELD 110	Introduction to Welding Basics for Fabrication	3
WELD 113	Shielded Metal Arc Welding (S.M.A.W.)	3
WELD 115	Gas Metal Arc Welding (G.M.A.W./M.I.G.)	3
WELD 119	Gas Tungsten Inert Arc Welding (G.T.A.W./ T.I.G.)	3
	Total Credits: 12	

First Year - Winter Semester

Course #	Course Title	Credits
Mathematics	Select General Education Mathematics course	3-4
Recommended	MATH 102 - Technical Mathematics	
WELD 120	Advanced Processes - Stick Electrode and M.I.G. Welding	3
WELD 130	Advanced Processes - Gas Tungsten	3
MET 103	Introduction to Materials Science	3
WELD 205	Welder's Print Reading	2
	Total Credits: 14-15	

First Year - Spring Session

Course #	Course Title	Credits
WELD 206	Welding Inspection and Qualification	2
WELD 223	Fabrication	4
Exam Preparation	Select from list	3
	Total Credits: 9	

Exam Preparation (Select one)

Course #	Course Title	Credits
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

PROGRAM TOTAL 35-36 CREDITS

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.

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

Exams for certificate will be provided on an individual basis.

Not all courses are offered each semester. Students should work with an academic advisor to develop a schedule that will work for them. Students planning to transfer should check the transfer institution's requirements/guides or discuss their options with an academic advisor. Number of credits may vary depending on the course selection.

SAMPLE SCHEDULE OF COURSES

First Year - Fall Semester

Course #	Course Title	Credits
WELD 110	Introduction to Welding Basics for Fabrication	3
WELD 113	Shielded Metal Arc Welding (S.M.A.W.)	3
WELD 115	Gas Metal Arc Welding (G.M.A.W./M.I.G.)	3
MATH 102	Technical Mathematics	4
	Total Credits: 13	

First Year - Winter Semester

Course #	Course Title	Credits
WELD 120	Advanced Processes - Stick Electrode and M.I.G. Welding	3
WELD 205	Welder's Print Reading	2
WELD 225	Pre-Apprenticeship Welder Certification	3
OSH	Select one:	2
OSH 111	Occupational Safety and Health for General Industry	
OSH 112	Occupational Safety & Health for Construction (recommended)	
	Total Credits: 10	

Welding: Pre-Apprenticeship Certificate (continued)

First Year - Spring Session

Course #	Course Title	Credits
WELD 223	Fabrication	4
	Total Credits: 4	

PROGRAM TOTAL 27 CREDITS

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.

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.

Exams will also be provided on an individual basis. Not all courses are offered each semester. Students should work with an academic advisor to develop a schedule that will work for them. Students planning to transfer should check the transfer institution's requirements/guides or discuss their options with an academic advisor. Number of credits may vary depending on the course selection.

SAMPLE SCHEDULE OF COURSES

First Year - Fall Semester

Course #	Course Title	Credits
ENG 100	Communication Skills	3
MET 103	Introduction to Materials Science	3
WELD 110	Introduction to Welding Basics for Fabrication	3
WELD 113	Shielded Metal Arc Welding (S.M.A.W.)	3
WELD 115	Gas Metal Arc Welding (G.M.A.W./M.I.G.)	3
	Total Credits: 15	

First Year - Winter Semester

Course #	Course Title	Credits
ENG 116	Technical Writing	3
Mathematics	Select General Education Mathematics course	3-4
MATH 102	Technical Mathematics (recommended)	
WELD 119	Gas Tungsten Inert Arc Welding (G.T.A.W./ T.I.G.)	3
WELD 120	Advanced Processes - Stick Electrode and M.I.G. Welding	3
WELD 205	Welder's Print Reading	2
	Total Credits: 14-15	

First Year - Spring Session

Course #	Course Title	Credits
WELD 206	Welding Inspection and Qualification	2
Social Science	Select General Education Social Science course	3-4
PSYCH 153	Human Relations (recommended)	
	Total Credits: 5-6	

Second Year - Fall Semester

Course #	Course Title	Credits
MFG 102	Basic Machining Processes	3
WELD 130	Advanced Processes - Gas Tungsten	3
OSH	Select one:	2
OSH 111	Occupational Safety and Health for General Industry	
OSH 112	Occupational Safety & Health for Construction (recommended)	
Humanities	Select General Education Humanities course	3-4
COMA 103	Fundamentals of Speech (recommended)	
	Total Credits: 11-12	

Second Year - Winter Semester

Course #	Course Title	Credits
Elective	Select one	3-4
WELD 291	Welding Internship	
WELD 240	Computer Numerical Control (CNC) Shape Cutting and Automation	
WELD 223	Fabrication	4
WELD 262	Welding Metallurgy	3
Science	Select General Education Science course	3-5
	Total Credits: 13-16	

Second Year - Spring Session

Course #	Course Title	Credits
Exam Preparation*	Select from list	3
	Total Credits: 3	

Welding: Fabrication Technology AAS Degree (continued)

*EXAM PREPARATION: (SELECT ONE)

Course #	Course Title	Credits
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 Gas Tungsten Arc Welding 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

PROGRAM TOTAL 61-67 CREDITS