



## Welding

### **Degree**

Industrial Technology, Welding Option, Associate of Science

### **Certificates**

Welding, Certificate of Achievement

Blueprint Reading and Layout for Welders, Job Skills Certificate  
Gas Metal Arc/Gas Tungsten Arc Welding/ Flux Core Arc Welding,  
Job Skills Certificate  
Shielded Metal Arc Welding, Job Skills Certificate  
Welding Certification, Job Skills Certificate

## Industrial Technology, Welding Option Associate of Science Degree

Students must comply with the requirements as shown in the catalog under graduation requirements. Students should seek the advice of a welding instructor, counselor or advisor for assistance in planning for an associate degree. Career opportunities include jobs requiring skills in welding and layout.

To Achieve the Associate in Science

Upon completion of the following courses with at least a 'C' grade in each course, the student will be awarded an Industrial Technology, Welding Option Associate in Science degree.

### Program Learning Outcomes

Upon successful completion, the student will:

- demonstrate proficiency in technical skills and safety principles required for employment in the welding industry.
- demonstrate problem solving skills used in product design and development in the welding industry.

### Total Units: 39-40

#### Required Courses

Course #	Name	Units
WELD B1A	Introduction to Oxygen Acetylene Welding and Cutting	2.0
WELD B1B	Introduction to the Welding Processes	2.0
WELD B53AB	Shielded Metal Arc Welding	4.0
WELD B55A	Structural Plate Certification I	2.0
WELD B55B	Structural Plate Certification II	2.0
WELD B55CD	ASME Pipe Certification	4.0
WELD B74A	Introduction to GMAW (Gas Metal Arc Welding) and FCAW (Flux Core Arc Welding)	2.0
WELD B74B	Introduction to Gas Tungsten Arc Welding	2.0
WELD B54A	Blueprint Reading for Welders & Machinists	3.0
WELD B54B	Template Development and Layout for the Welder	3.0
WELD B65AB	Welded Steel Structures	3.0
MFGT B1AB	Machine Tool Processes	3.0
INDR B12	Introduction to Drafting and CAD	2.0
INDT B271	Special Problems in Welding	2-3.0
INDT B10	Occupational Readiness or equivalent	3.0

## Welding Certificate of Achievement

Students must comply with the requirements as shown in the catalog under certificate requirements. Students should seek the advice of a welding instructor, counselor or advisor for assistance in planning for a welding Certificate of Achievement. Career opportunities include jobs requiring the ability to weld in multiple processes, to interpret and create blueprints, to perform layout operations, and to perform basic machining tasks.

To Achieve the Certificate of Achievement

Upon completion of the following courses with at least a 'C' grade in each course, the student will be awarded a Welding Certificate of Achievement.

### Program Learning Outcomes

Upon successful completion, the student will:

- demonstrate proficiency in technical skills and safety principles required for industrial employment.
- demonstrate problem solving skills used in industrial design and product development.
- demonstrate a deep understanding of the core material required for transfer to a four year university degree program or for certification in the department programs.

### Career Opportunities:

Welder, Structural Fabricator

### Total Units: 32

#### Required Courses

Course #	Name	Units
WELD B1A	Introduction to Oxygen Acetylene Welding and Cutting	2.0
WELD B1B	Introduction to the Welding Processes	2.0
WELD B53A	Shielded Metal Arc Welding	2.0
WELD B53B	Shielded Metal Arc Welding	2.0
WELD B55A	Structural Plate Certification I	2.0
WELD B55B	Structural Plate Certification II	2.0
WELD B55C	ASME Pipe Certification	2.0
WELD B55D	ASME Pipe Certification	2.0
WELD B65AB	Welded Steel Structures	3.0
WELD B74A	Introduction to GMAW & FCAW	2.0
WELD B74B	Introduction to Gas Tungsten Arc Welding	2.0
MFGT B1AB	Machine Tool Processes	3.0
WELD B54A	Blueprint Reading for Welders & Machinists	3.0
INDT B10	Occupational Readiness or equivalent	3.0

## Blueprint Reading and Layout for Welders, Job Skills Certificate

This certificate covers the principles of blueprint reading as it applies to welders. Emphasis is placed on the ability to visualize and interpret working drawings. Welding symbols and basic shop math are included. Layout techniques including mathematical and pipe fitting technology are covered. Career opportunities include blueprint reading and layout in the welding industry.

### Program Learning Outcomes

Upon successful completion, the student will:

- demonstrate proficiency in technical skills and safety principles required for industrial employment.
- demonstrate problem solving skills used in industrial design and product development.
- demonstrate a deep understanding of the core material required for transfer to a four year university degree program or for certification in the department programs.

### Career Opportunities:

Welder, Structural Fabricator

### Total Units: 6

#### Required Courses

Course #	Name	Units
WELD B54A	Blueprint Reading for Welders and Machinists	3.0
WELD B54B	Template Development and Layout for the Welder	3.0

## Gas Metal Arc/Gas Tungsten Arc/Flux Core Arc Welding, Job Skills Certificate

This certificate emphasizes welding processes of gas metal arc welding (GMAW), gas tungsten arc welding (GTAW) and flux core arc welding (FCAW). Theory and application as well as safety of these applications while welding on mild steel, aluminum and stainless steel are emphasized.

### Program Learning Outcomes

Upon successful completion, the student will:

- demonstrate proficiency in technical skills and safety principles required for industrial employment.
- demonstrate problem solving skills used in industrial design and product development.
- demonstrate a deep understanding of the core material required for transfer to a four year university degree program or certification in the department programs.

### Career Opportunities:

Welder, Structural Fabricator

### Total Units: 8

#### Required Courses

Course #	Name	Units
WELD B1A	Introduction to Oxygen Acetylene Welding and Cutting	2.0
WELD B1B	Introduction to the Welding Processes	2.0
WELD B74A	Introduction to GMAW & FCAW	2.0
WELD B74B	Introduction to Gas Tungsten Arc Welding	2.0

## Shielded Metal Arc Welding

### Job Skills Certificate

This certificate emphasizes welding processes from oxy-acetylene cutting and brazing through shielded metal arc welding using many different welding electrodes and all positions. Blueprint reading and pattern layouts for welding are highlighted. Career opportunities include entry level welding jobs requiring the use of the SMAW process, blueprint reading, and layout.

#### Program Learning Outcomes

Upon successful completion, the student will:

- demonstrate proficiency in technical skills and safety principles required for industrial employment.
- demonstrate problem solving skills used in industrial design and product development.
- demonstrate a deep understanding of the core material required for transfer to a four year university degree program or for certification in the department programs.

#### Total Units: 12

##### Required Courses

Course #	Name	Units
WELD B1A	Introduction to Oxygen Acetylene Welding and Cutting	2.0
WELD B1B	Introduction to the Welding Processes	2.0
WELD B53AB	Shielded Metal Arc Welding	4.0
WELD B54A	Blueprint Reading for Welders and Machinists	3.0
WELD B54B	Template Development and Layout for the Welder	3.0

## Welding Certification

### Job Skills Certificate

This certificate emphasizes welding processes of SMAW, GMAW, FCAW, Oxy/Acetylene cutting, and Blueprint Reading. Theory and application as well as safety of these processes while welding on mild steel are emphasized. This program prepares students for careers in Welding Entry Level Welding Job.

To Achieve the Job Skills Certificate

Upon completion of the following courses with at least a 'B' grade in each course, the students will be awarded a Welding Certification Job Skills Certificate.

#### Program Learning Outcomes

Upon successful completion, the student will:

- demonstrate proficiency in technical skills and safety principles required for employment in the welding industry.
- Students will demonstrate problem solving skills used in product design and development in the welding industry.
- Students will demonstrate an understanding of the core material required for A.W.S. certification in the welding program.

#### Total Units: 13

##### Required Courses

Course #	Name	Units
WELD B81	Introduction to Welding and Cutting	2.0
WELD B54A	Blueprint Reading for Welders and Machinists	3.0
WELD B53A	Shielded Metal Arc Welding	2.0
WELD B74A	Introduction to GMAW & FCAW	2.0
WELD B55A	Structural Plate Certification I	2.0
WELD B55B	Structural Plate Certification II	2.0