

# Welding (WLDG)

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## Courses

### WLDG 100 Intro to Welding Fundamentals

Credits: 3

Term: (F, S, Su based on sufficient demand)

Basic welding processes of shielded metal arc welding (SMAW), flux core arc welding (FCAW) and gas metal arc (GMAW) welding are covered in the flat, horizontal, and vertical positions in a variety of joint configurations. The instruction is focused on students in trades courses, agriculture and for exploration of welding in general. Instruction in the oxyfuel cutting processes and plasma cutting processes are also provided. Safe operation of equipment is covered and work is evaluated to industrial standards.

### WLDG 110 Welding Theory I

Credits: 2

Term: (F)

Corequisite: WLDG 111 or consent of instructor.

In Welding I, students will learn Welding Safety, Construction Site Safety, Intro to hand tools, Oxy-Fuel cutting (OFC), Base Metal Preparation, Gas Metal Arc Welding (GMAW), Flux Cored Arc Welding (FCAW), Joint-Fit Up and Alignment, Welding Position, Power Source Selection, and Terminology & Use of Measuring Devices. Students will also be introduced to and reinforce their knowledge of different materials and how they react to the high heat of the welding process. Student competency will be based upon module tests and skills demonstrated.

### WLDG 111 Welding Theory I Practical

Credits: 4

Term: (F)

Corequisite: WLDG 110 or consent of instructor.

In Welding Practical I, students will apply Welding Safety, use Plasma Arc Cutting (PAC), Carbon Arc Cutting (CAC-A) processes to demonstrate proper joint fit up and alignment. The Gas Metal Arc Welding (GMAW) and Flux core Arc Welding (FCAW) will be used to make welds in all positions. Proper power source selection and set up will also be demonstrated.

### WLDG 117 Blueprint Reading and Welding Symbols

Credits: 2

Term: (F)

Corequisite: WLDG 110

Drawings are used in industry as a means of communication between the designer and fabricators. Blueprints are a graphic or picture of the complex structure or product. Students will learn this complex language of symbols and lines as they pertain to the welding industry and be able to apply them.

### WLDG 120 Welding Theory II

Credits: 2

Term: (S)

Prerequisite: Successful completion of the first semester of the welding program.

Prerequisite OR Corequisite: WLDG 121

In Welding Theory II student will build on knowledge gained in previous courses and be introduced Shielded metal arc welding (SMAW), and Gas Tungsten Arc Welding (GTAW) on plate.

### WLDG 121 Welding Theory II Practical

Credits: 3

Term: (S)

Prerequisite: Successful completion of the first semester of the welding program.

Prerequisite OR Corequisite: WLDG 120

In Welding Theory II Practical students will apply Welding Safety, Use Oxy-Fuel cutting (OFC), Plasma Arc Cutting (PAC), Carbon Arc Cutting (CAC-A) processes use Shielded Metal Arc Welding (SMAW), and Gas Tungsten Arc Welding (GTAW) on plate, Joint-Fit Up and Alignment to make welds in all positions, and identify proper power source selection and set up.

### WLDG 130 Introduction to Structural Welding

Credits: 2

Term: (S)

Prerequisite: Successful completion of the first semester of the welding program.

Corequisite: WLDG 121

Students will learn the different types of structural steel and their applications. Students will apply print reading knowledge to design and draw a print for the part to be fabricated. Students will use fabrication and layout methods to fabricate the parts as designed.

### WLDG 145 Fabrication Basics

Credits: 2

Term: (F)

Prerequisite OR Corequisite: WLDG 117

Students will learn basic fabrication methods and tools. This knowledge will be applied to fabricate an object to given tolerances in accordance to a print supplied by the instructor.

### WLDG 185 Welding Qualification Test Preparation

Credits: 1

Term: (S)

Prerequisite: Successful completion of the first semester of the welding program.

Corequisite: WLDG 130

Students will gain further in depth knowledge of the welding codes and what is required for welder qualification tests. Students will practice and build skills to complete a limited thickness qualification test to an AWS welding code on plate.

### WLDG 191 Special Topics: Welding Skills

Credits: 1-3

Term: (F, S, Su based on sufficient demand)

Prerequisite: Consent of Instructor

Students have the opportunity to develop a higher level of welding skills outside of the regular classroom with the supervision and advice of a welding instructor. This course may be repeated as many as four times. Course will be offered as Pass/Fail.

### WLDG 192 Welding Skills Independent Study

Credits: 1-3

Term: (Based upon sufficient demand)

This course is a Welding independent study.

### **WLDG 205 Applied Metallurgy**

Credits: 1

Term: (S)

Prerequisite: Successful completion of the first semester of the welding program.

Prerequisite OR Corequisite: WLDG 185

Understanding what happens to metals during the welding process is essential to making sound welds. In this course the student will learn about the physical characteristics, mechanical properties, composition, and classification of common ferrous and non-ferrous metals. Various standard forms and structural shapes of metals are described as well as methods used to identify metals.

### **WLDG 209 Basic Pipe Welding**

Credits: 2

Term: (S)

Prerequisite: Successful completion of the first semester of the welding program.

Prerequisite OR Corequisite: WLDG 120

Student will learn the basics to fit and weld open root pipe joints with SMAW, GMAW, FCAW, & GTAW on carbon steels. Students will apply this knowledge to complete pipe welds in 1G and 2G positions.

### **WLDG 212 Pipe Welding and Layout (integrated lab)**

Credits: 4

Term: (F)

Prerequisite: Completion of Welding CAS or consent of instructor based on assessment.

The student will learn to fit and weld open root pipe joints with SMAW, GMAW, FCAW, & GTAW on carbon and stainless steels. Students will apply this knowledge to complete pipe welds in all positions.

### **WLDG 217 Advanced Blueprint**

Credits: 2

Term: (S)

Prerequisite: Successful completion of the third semester of the welding program.

Students will design and draw a set of working prints to use for fabrication of a major project identified by the student and instructor.

### **WLDG 237 Aluminum Welding Processes**

Credits: 4

Term: (S)

Prerequisite: Successful completion of the third semester of the welding program.

Students will gain knowledge of aluminum welding processes and procedures. Students will apply this knowledge to make welds on aluminum plate in a variety of positions to industry standard.

### **WLDG 245 Metal Fabrication Design and Construction**

Credits: 5

Term: (S)

Prerequisite: Successful completion of the third semester of the welding program.

As a Capstone course students will apply knowledge learned in previous semesters to design and fabricate a welding project with a minimum of 20 hours of welding. Students will be required to estimate and supply the materials for their project.

### **WLDG 260 Repair and Maintenance Welding**

Credits: 3

Term: (F)

Prerequisite: Successful completion of welding CAS or consent of instructor based on assessment.

Students will learn basic repair and maintenance techniques of various metals. Then apply those techniques to practical applications.

### **WLDG 280 Weld Testing Certification**

Credits: 3

Term: (F)

Prerequisite: Successful completion of welding CAS or consent of instructor based on assessment.

Students will gain further in depth knowledge of the welding codes and what is required for welder qualification tests. Students will practice and build skill to complete an unlimited thickness qualification test to a welding code.

### **WLDG 281 Weld Testing Certification Lab**

Credits: 2

Term: (S)

Prerequisite: Successful completion of the third semester of the welding program.

Students will gain further in depth knowledge of the welding codes and what is required for welding procedure qualification tests. Students will practice and build skill to complete and properly document an unlimited thickness qualification test to a welding code.

### **WLDG 298 Internship/Cooperative Education**

Credits: 3

Term: (F)

Prerequisite: Successful completion of welding CAS or consent of instructor based on assessment.

This is the final course that completes the student's curriculum for the Welding & Fabrication Tier 3 CTS. Students can seek employment or currently be working in the welding field. Students will pull together what they have learned in their previous classes and demonstrate their capabilities in preparation for the workforce. An internship application form must be completed and submitted to the faculty sponsor prior to registering for the semester in which the internship will occur.