

## Welding Technology and Training Program

### *Program Length:*

900 Total Hours  
83 Lecture Hours  
617 Shop Hours  
200 Externship Hours

### *Program Description:*

The program is designed to prepare students to work as welders, welder assistants, or fabricator. Students will gain experience and training that include: industrial and personal safety, safe welding operation and practices, welding machine setup and welding operation, blue print reading, interpretation of engineering plans and instructions, basic shop math and welding costs, weld-ability of materials, material strength and ductility, written and verbal communications, metal property and electricity, MIG, and Stick welding and extensive techniques and skill building, plasma cutting and use of torches, fabrication techniques and practices, resume writing, interviewing, budgeting personal finances, and job search and readiness strategies.

In-house Certification will be performed by PTI in accordance with American Welding Standards for D.1.1. The original certification test and any needed make-up test will be provided by PTI.

### **Welding Diploma Program**

Course/Number		<u>Clock</u>	<u>Hours</u>	
Lesson	Title	Lecture	Shop	Total Hours
WTT001	Welding Safety	2	26	28
WTT002	Introduction to Welding	2	33	35
WTT003	Shielded Metal Arc Welding (Stick)	4	45	49
WTT004	Plasma Cutting & Joint Prep	1	27	28
WTT005	Metal Inert Gas Arc (MIG)	24	200	224
WTT006	Shielded Metal Arc Welding (Stick)	10	95	105
WTT007	Introduction to Tungsten Inert Gas Welding	10	158	168
WTT008	Introduction to Blueprint Reading	16	33	49
WTT009	Interviewing, Teamwork & Mgmt.	14	0	14
WTT010	Externship	0	200	200
Total:		83	817	900

### *Program Subjects:*

1. Safety
2. Introduction to Welding
3. Shielded Metal Arc Welding (Stick) 1
4. Plasma Cutting and Joint Preparation
5. Metal inert Gas Arc (MIG)
6. Shielded Metal Arc Welding (Stick) 2
7. Intro Tungsten Inert Gas Welding
8. Introduction to Blueprint Reading
9. Interviewing Skills, Teamwork, and Management Communication
10. Externship

## *Certification:*

A diploma of completion will be given to each student upon completing the course. This diploma will be used to show a prospective employer evidence of program completion and the skills attained for successful work in the manufacturing and automation industry.

### **OSHA 30:**

Classes will be provided to students in this program at no cost. Certification will be granted and issued at completion of the program.

## **Course Descriptions – Welding Technology and Training**

### **WTT001 – Safety**

In this course students will learn the basics of welding safety, including proper use of equipment, and proper techniques so that the risk of injury will be minimized. The knowledge gained in this course will provide a solid foundation for the welder's success in the workplace. By learning the safety systems for protection, electrical safety and ventilation the PTTI student will be endowed with the safety skills valuable to an employer.

### **WTT002 - Introduction to Welding**

Students will learn the basic theory and application for the practice of welding. The course is designed for students to gain the knowledge of mathematics used in the shop, learn and understand key terminology, and perform basic knowledge experiments as they begin to formulate a foundation for welding. This course will also re-enforce the knowledge gained from the safety course prior to beginning shop applications and other important operations.

Prerequisite: WTT001

### **WTT003- Introduction to Shop Math & Blueprints**

Students will gain knowledge of mathematics used in welding. Learning and understanding decimals, fractions, addition, subtraction, multiplication, and division. They will apply this knowledge when fabricating and understanding blueprint reading. Students will learn how to accurately read and interpret a blueprint to achieve their assigned tasks. Students will apply shop math and assess drawing scales and dimensions. PTTI students will also learn live fabrication, special lines, views, and symbols that are important skills needed for becoming a proficient blueprint reader.

Prerequisite: WTT001

### **WTT004 - Gas Metal Arc Welding (MIG)**

The MIG process of welding is a welder's pride and joy, and PTTI students will become masters of this skill. Students will be able to perform many positions and weld types after completing this course. The students will learn and understand terminology in conjunction with the physical hands-on application of the subject matter presented in the text. With the hours spent in shop working, the students will be able to control amperage, densities, and wire feeds. The student will also have experience in metal prepping gun angles transfers and the equipment necessary to fulfill MIG duties.

Prerequisite: WTT001, WTT002, WTT003

### **WTT005 - FLUX-CORED ARC Welding (FCAW/ FLUX)**

Similar to GMAW, Flux-cored arc welding (FCAW or Flux) is a semi-automatic or automatic arc welding process. FCAW requires a continuously fed consumable tubular electrode containing a flux and

a constant-voltage or, less commonly, a constant-current welding power supply. PTTI students will be familiar to this skill and practice that in multiple positions.

Prerequisite: WTT001, WTT002, WTT003

### **WTT006 - Plasma Cutting & Joint prep**

This course builds welding and process versatility and teaches students to experiment and gain expertise in the process of Plasma Cutting and Beveling. Acquiring strengths in these skills will help students to succeed in their welding career. In this course students will become proficient in the tools necessary to perform and complete this process along with safety, compressions, input of heat and gas cables.

Prerequisite: WTT001, WTT002

### **WTT007 - Shielded Metal Arc Welding (Stick)**

In this course students will continue to demonstrate the safety practices established in course WTT001 in order to ensure applicable learning and safety in the process. In Stick Welding, students will gain knowledge of electrical measurement and SMAW. After learning the basics necessary to properly stick-weld, the students will advance to more technical hands-on work teaching them to fully grasp the application of this type of welding. They will learn several positions: (1F), (2F), (3F) to help students create lap joints and tee joints. In the positions (1G), (2G), (3G), (4G) students will create butt joints, and perform root pass.

Prerequisite: WTT001, WTT002, WTT003

### **WTT008 - Intro Tungsten Inert Gas (TIG) Welding**

Students will learn the basics of TIG welding and advance to in-shop applications of those skill sets to become proficient TIG welders in this course. They will apply theory and practice to ensure the TIG welds are professional and acceptable for the workplace. The students will be taught appropriate setup and operations, types of electrodes, GTA pre, current and post-flow, shielding gas, arc welding, and tungsten contamination.

Prerequisite: WTT001, WTT002, WTT003 WTT007

### **WTT009 - Interviewing, Teamwork & Management Communications**

Students will acquire a working knowledge of interviewing skills, teamwork, and management communications to help them secure employment in an entry level position as a welder technician. PTTI students will be prepared to work professionally and effectively communicate in their work environment upon completion of this course.

Prerequisite: WTT001, WTT002

### **WTT010 – Internship**

Students will acquire real-time, hands-on, on-the-job education-related experience and apply learned skills as a component of their education. Emphasis will be placed on applying skills learned, working well with other employees, teamwork, and helping companies become more productive. The 200-hour internship experience will provide students with the opportunity to provide employers high quality standards of work.

Prerequisite: WTT001, WTT002, WTT003, WTT004, WTT005, WTT006, WTT007, WT008, WT009