

# WELDING TECHNOLOGY (WLDTC)

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## Courses

### **WLDTC-115 BASIC WELDING PROCEDURES 7 Credits**

This class designed to introduce the beginning student to the welding industry with emphasis on safe working procedures and basic skills development. Students will receive instruction in SMAW (Shielded Metal Arc Welding, commonly called "stick welding"), as well as MIG (Metal Inert Gas, commonly called "wire-feed" welding). Students will also receive instruction in Oxygen/ Acetylene cutting of ferrous metals.

### **WLDTC-116 ADVANCED WELDING PROCEDURES 7 Credits**

This class provides instruction and exercises to build students' skills in MIG welding. Students will receive instruction in MIG welding (Metal Inert Gas, commonly called "wire-feed welding") in all positions.

### **WLDTC-120 INTRODUCTION TO WELDING 1-3 Credits**

This course helps the student develop confidence and skills in the fundamentals of basic welding concepts. This involves welding with the SMAW and GMAW processes, gas welding, brazing, and flame cutting.

### **WLDTC-150 WELDING POWER SOURCES 2 Credits**

Introduces various basic power sources used in welding industry. Students learn construction of power sources, how to obtain optimum performance from a power source, and how to troubleshoot a power source. Cross-listed with IMMTI-150.

### **WLDTC-151 WELDING CODES FOR CERTIFICATIONS 1-2 Credits**

Teaches working knowledge of various welding codes and welder certifications in common use in industry today. Students work from the AWS D1.1 to write a welding procedure qualification record, a prequalified welding procedure, a welding procedure specification, and a welder qualification record form. This will also assist student to take the Associate Certified Welding Inspector Exam.

### **WLDTC-152 QUALITY CONTROL FOR WELDING INSPECTION 1-2 Credits**

Introduces students to quality control and inspection techniques common in industry. Quality assurance and quality control are covered from employer and employee points of view. Weld inspection is approached through destructive and non-destructive methods as prescribed in AWS D1.1, Unit 6.

### **WLDTC-153 BASIC ACETYLENE WELDING LAB 4 Credits**

Shop practice in basic oxygen acetylene welding.

### **WLDTC-155 BASIC WELDING PROCESSES LAB 7 Credits**

To develop employable skills for combination welder (DOT 812.844). This involves welding with the SMAW and GMAW process in all positions, single and multi-pass. Includes gas welding, brazing and flame cutting. Cross-listed with IMMTI-155.

### **WLDTC-155A SMAW PRACTICAL 4 Credits**

SMA welding to include fillet and groove welds in all positions to the AWS standards. Successfully completing this course may lead to certification.

### **WLDTC-155B BASIC OXYACETYLENE AND GMAW 3 Credits**

To develop employable skills for combination welder (DOT 812.844). Lab practice in basic oxyacetylene welding and cutting and basic gas metal arc welding. Application of SMAW learned in WLDTC-155A SMAW Practical. Pre-requisite: WLDTC-155A.

### **WLDTC-156 BASIC SMAW LAB 4-8 Credits**

Weld with the SMAW process in all positions on mild steel using AC and DC equipment.

### **WLDTC-157 BASIC GMAW LAB 4-8 Credits**

Weld with the GMAW and FCAW processes in all positions, single and multi pass.

### **WLDTC-158 ADVANCED SMAW LAB 4-8 Credits**

Weld with the SMAW process in all positions using DC welding equipment. Obtain certifiable skills on a plate of unlimited thickness.

### **WLDTC-159 BASIC GTAW LAB 4-8 Credits**

Weld with the GTAW process on thin gauge mild steel, stainless steel, and aluminum using both DC and AC equipment.

### **WLDTC-160 MATHEMATICS I 1-2 Credits**

Working knowledge of basic mathematics as applied in the welding industry.

### **WLDTC-161 WELDING PROCESSES AND APPLICATIONS 1-2 Credits**

Explores various welding and cutting processes commonly used in industry and provides students with a basic understanding of the principles involved.

### **WLDTC-162 METALLURGY 1-2 Credits**

Introduces basic metallurgy and gives working knowledge of problems that occur as a result of heating and cooling metal when using the various welding processes.

### **WLDTC-165 ADVANCED WELDING PROCESSES 7 Credits**

To further develop employable skills for arc welder (DOT810.884) and combination line welder (DOT 812.844). This involves welding with the SMAW process in all positions, single and multi-pass, using DC equipment and covered electrodes. Covers welding with the GTAW process on thin gauge mild steel, stainless steel, and aluminum in all positions using both direct and alternating current. Pre-requisite: IMMTI-155. Cross-listed with IMMTI-165.

**WLDTC-190 DS:WELDING TECHNOLOGY 1-8 Credits**

Individual instruction and self-study established to meet specific training objectives. May be repeated. Credits earned may not be directly applicable to degree or certificate.

**WLDTC-192 SPECIAL TOPICS IN WELDING TECHNOLOGY 1-12 Credits****WLDTC-250 DRAFTING AND PIPEFITTING 1-2 Credits**

Basic fundamentals of drafting as used in welding trade. Pipefitting section enables students to do basic layout of pipe, figure offsets, runs, and travel distances, and give practical experience in fitting and welding branches or laterals, and blanking off pipe.

**WLDTC-251 BLUEPRINT READING 2 Credits**

To give the student a basic working knowledge of blue print reading as it applies in today's welding/millwright industries. This includes welding symbols, nondestructive testing symbols, and methods of dimensioning drawings. Pre-requisite: MTHPT-137. Cross-listed with IMMTI-251.

**WLDTC-252 HEAT TREATMENT 1-2 Credits**

Acquaints students with various industrial heat treatment processes and their applications in industry. Teaches in-depth, the properties and strengths of metals in fabrication and technology.

**WLDTC-254 PIPE WELDING:SMAW LAB 1-7 Credits**

Develops skills for the welder portion of Pipe Fitter. Involves welding with the SMAW process on mild steel, multi-pass, using E6010 and E7018 electrodes. Welds are performed in the 2G, 5G, and 6G positions. Covers both uphill and downhill techniques.

**WLDTC-256 SMAW UPHILL PIPE LAB 4-8 Credits**

Weld pipe in all positions using SMAW process and uphill technique to conform to ASME Section IX.

**WLDTC-257 SMAW DOWNHILL PIPE LAB 4-8 Credits**

Weld pipe in all positions using SMAW process and downhill technique to conform to API standard 1104.

**WLDTC-258 BASIC ALUMINUM WELDING LAB 4-8 Credits**

Weld aluminum using GTAW and GMAW processes in all positions.

**WLDTC-260 MATHEMATICS II 1-2 Credits**

Gives students thorough working knowledge of basic algebra and geometry as applied in industry. Reviews and re-applies basic trigonometry as learned in previous semester course Drafting/Pipefitting.

**WLDTC-261 BENCHWORK FOR WELDERS 2 Credits**

Familiarizes student with basic hand and machine tools, measuring devices, and shop and tool safety. Cross-listed with IMMTI-261.

**WLDTC-262 DISTORTION CONTROL 2 Credits**

Trains students in the correct method of distortion control in welded fabrications. Gives basic guidance to assist student in overcoming and understanding some difficulties inherent when working metals where heat input is involved. Cross-listed with IMMTI-262.

**WLDTC-263 PIPE WELDING GMAW LAB 4 Credits**

Develops skills for the welder portion of Pipe Fitter I. Involves welding with the GMAW process on mild steel, multi-pass, using small diameter wire and short circuit transfer in the 2G, 5G, and 6G positions. Covers both uphill and downhill techniques.

**WLDTC-264 PIPE WELDING GTAW LAB 1-7 Credits**

Develops employable skills in the gas tungsten arc welding portion of Pipe Fitter I. Involves welding with GTAW process on small diameter thin wall pipe and tubing in all positions. High pressure pipe welding using GTAW on root pass with E7018 fill and cover passes is covered.

**WLDTC-266 PROJECT WELDING FROM DRAWING LAB 4 Credits**

Shop practice in project welding from drawings using all methods and materials.

**WLDTC-270 DIRECTED WELDING PROJECTS 1-8 Credits**

This course is designed for students who desire to specialize in one field of the welding industry. The student will learn how to safely operate and optimize the performance of various welding machines and how to operate welding shop equipment. They will also acquire additional knowledge of welding theory concerning specific processes or applications, and welding skills appropriate to the area of interest. Cross-listed with IMMTI-270.

**WLDTC-270A WELDING SAFETY 2 Credits**

The student will identify lab organization and safety procedures, demonstrate applied leadership skills and abilities, demonstrate and identify hand tools and their proper usage. The student will also demonstrate and identify power tools and equipment including their proper usage and maintenance.

**WLDTC-271 WELDING SAFETY 2 Credits**

The student will identify lab organization and safety procedures, demonstrate applied leadership skills and abilities, demonstrate and identify hand tools and their proper usage. The student will also demonstrate and identify power tools and equipment including their proper usage and maintenance.

**WLDTC-290 DIRECTED STUDY IN WELDING TECHNOLOGY 1-8 Credits****WLDTC-292 DIRECTED SPECIAL PROJECTS 1-8 Credits****WLDTC-294 INTERNSHIP IN WELDING TECHNOLOGY 1-8 Credits**

Advanced on-the-job training in welding.

**WLDTC-366 PROJECT WELDING FORM DRAWING LAB 4 Credits**

Shop practice in project welding from drawings using all methods and materials.

**WLDTC-370 DIRECTED WELDING PROJECTS 1-8 Credits**

This course is designed for students who desire to specialize in one field of the welding industry. The student will learn how to safely operate and optimize the performance of various welding machines and how to operate welding shop equipment. They will also acquire additional knowledge of welding theory concerning specific processes or applications, and welding skills appropriate to the area of interest.

**WLDTC-390 DIRECTED STUDY IN WELDING TECHNOLOGY 1-8 Credits****WLDTC-394 INTERNSHIP IN WELDING TECHNOLOGY 1-8 Credits**

Advanced on-the-job training is welding.

**WLDTC-494 INTERNSHIP IN WELDING TECHNOLOGY 12 Credits**

Advanced on-the-job training is welding.