Welding Technician

Credential Awarded	**Diploma**
Contact Hours	**960**
Program Quarter Credits	**64**
Instructional Weeks	**48**
Total Clock Hours	**including Out-of-Class Work Hours: 960**
Mode of Delivery	**Residential**

Objective

Welding technology is widely used in a variety of modern industries, including but not limited to infrastructure construction, high-rise building construction, shipbuilding, and energy and transportation. The objective of the Welding Technology program is to prepare students to seek entry-level employment or advance their careers in welding and industrial repairs.

Description

Welding encompasses study in electrical, metallurgy, chemistry, physics, design, and mechanical engineering. Welders may work on various structures, including but not limited to bridges, buildings, pressure vessels, and heat exchangers. This would include welding items such as nuclear systems, boilers, storage vessels, transmission and transportation vehicles for water, land, air, and space travel, and production and processing machines of all types. The curriculum provides students with a foundation in welding techniques, skills, welding mathematics, and career development. The successful graduate is trained to enter the welding profession as an entry-level welder.

Credentialing Opportunities

The Welding Technician program prepares students to take welding certification exams.

Career Opportunities

The graduate is prepared to seek entry-level employment in positions such as Aluminum Welder, Brazer, Fabrication Welder, Fabricator, Fitter/Welder, Maintenance Welder, Mig Welder, Solderer, Arc Operator, Welder, and Welder Fitter/Fabricator.

Graduation Requirements

To be eligible for graduation, students must have

1. Accumulated, with passing grades, the required number of credit hours within the student's program of study by the last day of the graduating term or within the timeframe prescribed in the incomplete grade policy.
2. Achieved a Cumulative Grade Point Average (CGPA) of at least 2.0
3. Completed the program within 1.5 times the program's length as published in the Standards of Satisfactory Academic Progress policy in this catalog
4. Verified satisfactory completion of all program criteria for graduation with the Dean of Education/Associate Campus Director, Registrar, Financial Aid, and Career Services
5. Return any school property, including books and equipment, when applicable
6. The student has made satisfactory arrangements with the Business Office to meet all financial obligations to the School.

Plan of Study

Course Code	Name	Clock Hours	Credits
SKW101	INTRODUCTION TO THE SKILLED PROFESSIONS	60	4
MAT110	APPLIED MATHEMATICS	60	4
WLD101	PRINCIPLES OF WELDING TECHNOLOGY	60	4
WLD105	WELDING SYMBOL INTERPRETATION AND INSPECTION	60	4
WLD110	CUTTING PROCESSES	60	4
WLD115	SHIELDED METAL ARC- WELDING	60	4
WLD120	SHIELDED METAL ARC-WELDING FIT AND ALIGNMENT	60	4
WLD125	GAS METAL ARC-WELDING	60	4
WLD130	GAS METAL ARC-WELDING FIT AND ALIGNMENT	60	4
WLD135	FLUX CORE ARC-WELDING	60	4
WLD140	FLUX CORE ARC-WELDING APPLICATIONS	60	4
WLD145	GAS TUNGSTEN ARC-WELDING	60	4
WLD150	GAS TUNGSTEN ARC-WELDING APPLICATIONS	60	4
WLD155	PIPE WELDING TECHNIQUES	60	4
WLD160	WELDING FABRICATION CONCEPTS	60	4
WLD165	WELDING CERTIFICATION AND CAREER DEVELOPMENT	60	4

Schedule

Morning: 8:00 A.M. – 1:00 P.M. Monday through Thursday
Afternoon: 2:00 P.M. – 7:00 P.M Monday through Thursday

Hours are subject to change. If class falls on a holiday or the school is closed due to inclement weather a make-up day will be held usually on the following Friday to ensure all contact hours are met within each course of the program

Course Descriptions

SKW101 : INTRODUCTION TO THE SKILLED PROFESSIONS

In this course students will receive an overview of the trades' professions, and learn the basics of safety, equipment use and a variety of construction prints. Students will learn directives and guidelines set forth by government agencies for the trade's career field. To help students transition successfully into the college environment, this course also explores learning strategies such as reading, critical thinking, test-taking and using computer technology for resources and class assignments.

Credits	**4**
Clock Hours	**60**
Lab Hours	**40**
Lecture Hours	**20**
Prerequisites	**None**

MAT110 : APPLIED MATHEMATICS

This course provides students with an introduction and review of basic mathematical concepts by associating math with events that occur in their lives and on the job site. The course is designed to develop and reinforce students' mathematical reasoning abilities. It also builds a knowledge basis for students, which they can apply in the classroom and workplace. Whole numbers, fractions, decimals, and percentages are introduced, reviewed, and applied to life and job site events. Measurement in English and metrics are introduced, and calculated. Pre-algebra and algebra concepts are explained, reviewed, and used to solve problems and equations. Practical plane geometry, solid figures, triangle trigonometry, and trigonometric ratio are introduced, discussed, and computed. Statistical analysis is introduced and calculated.

Credits	**4**
Clock Hours	**60**
Lab Hours	**40**
Lecture Hours	**20**
Prerequisites	**None**

WLD101 : PRINCIPLES OF WELDING TECHNOLOGY

This course provides an introduction to welding technology with an emphasis on developing welding safety habits for identifying health concerns and potential hazards; wearing of personal protection equipment, safety inspection of welding equipment, equipment repair and maintenance; and adhering to laboratory principles and rules. Additionally, students will be introduced to the welding certification requirements and practice oxy-fuel, plasma arc, and carbon arc- cutting processes.

Credits	**4**
Clock Hours	**60**
Lab Hours	**40**
Lecture Hours	**20**
Prerequisites	**None**

WLD105 : WELDING SYMBOL INTERPRETATION AND INSPECTION

This course introduces basic elements of weld sketches, drawings, and welding symbols found in shop drawings, welding prints, and basic welding forms. Emphasis is placed on interpreting sketch and symbol information to fabricate a well- meant. Destructive and non- destructive testing methods will be developed through practicing examination, exploring their functionality and usability in the industry, and visually inspecting and measuring welds to identify discontinuities and defects. At the conclusion of this course, students will be able to utilize print reading, inspection, and testing procedures for weldments according to drawings and standards used in the industry.

Credits	**4**
Clock Hours	**60**
Lab Hours	**40**
Lecture Hours	**20**

Prerequisites	**None**

WLD110 : CUTTING PROCESSES

In this course, the student is introduced to basic air carbon arc, oxy- fuel, and plasma arc cutting processes. Development of thermal cutting processes including identification of safety hazards (ANSI Z49.1 Safety in Welding, Cutting and Allied Processes), and wearing of protective equipment; proper assembly, maintenance, testing, and use of equipment; and the production of quality cuts. Students will practice a variety of cutting techniques through the practical experience of the laboratory. At the end of this course, students will be able to make basic cuts using a variety of cutting processes.

Credits	**4**
Clock Hours	**60**
Lab Hours	**40**
Lecture Hours	**20**
Prerequisites	**WLD101**

WLD115 : SHIELDED METAL ARC- WELDING

This course introduces the fundamental concepts and techniques involved with the shielded metal arc-welding process, safety hazards and proper procedures, equipment set up, electrical theory and machine selection, maintenance and repair, qualification testing, electrode selection, and the production of quality groove and fillet welds in the 1G, 2G, 1F, and 2F positions. Students will develop a theoretical understanding of the SMAW process, and then build upon that foundation through practical experience in the laboratory where a variety of welding techniques will be taught through practical exercises and reinforced through self and peer inspection. After this course the student will be able to perform basic SMAW welding processes.

Credits	**4**
Clock Hours	**60**
Lab Hours	**40**
Lecture Hours	**20**
Prerequisites	**WLD101**

WLD120 : SHIELDED METAL ARC-WELDING FIT AND ALIGNMENT

This course develops the concepts and techniques involved with the shielded metal arc-welding process, safety hazards and proper procedures, equipment set up, electrical theory and machine selection, maintenance and repair, qualification testing, and electrode selection. Students will develop the production of quality groove and fillet welds in the 1G, 2G, 3G, and 4G, 1F, 2F, 3F and 4F positions. Students will build practical experience in the laboratory where a variety of welding techniques will be practiced and reinforced through self and peer inspection. At the conclusion of this course students will be prepared to perform quality groove and fillet welds using SMAW processes.

Credits	**4**
Clock Hours	**60**
Lab Hours	**40**

Lecture Hours	**20**
Prerequisites	**WLD101**

WLD125 : GAS METAL ARC-WELDING

This course introduces the student to gas metal arc welding processes. Included in GMAW processes is continued development of identification of safety hazards and wearing of proper protective equipment. Assembly, maintenance, repair, and testing of GMAW equipment is introduced; the production of quality groove and fillet welds in the 1G, 2G, 3G, 1F, 2F, and 3F positions are practiced in the labs and reinforced through self and peer inspection. At the conclusion of this course students will be able to perform basic GMAW processes.

Credits	**4**
Clock Hours	**60**
Lab Hours	**40**
Lecture Hours	**20**
Prerequisites	**WLD101**

WLD130 : GAS METAL ARC-WELDING FIT AND ALIGNMENT

This course develops the concepts and techniques involved with the gas metal arc-welding process, safety hazards and proper procedures, equipment set up, electrical theory and machine selection, maintenance and repair, and qualification testing. Students will develop the production of quality groove and fillet welds in the 1G, 2G, and 3G; 1F, 2F, and 3F positions and students will build practical experience in the laboratory where a variety of welding techniques will be practiced and reinforced through self and peer inspection. Additionally, students will be introduced to production of groove and fillet welds in the 4G and 4F positions and welds utilizing the GMAW spray transfer in a variety of positions.

Credits	**4**
Clock Hours	**60**
Lab Hours	**40**
Lecture Hours	**20**
Prerequisites	**WLD101**

WLD135 : FLUX CORE ARC-WELDING

This course introduces the fundamental concepts and techniques involved with the flux core arc welding process, safety hazards and proper procedures, equipment assembly, electrical theory and machine selection, maintenance and repair, safety testing, and the production of quality groove and fillet welds in the 1G, 2G, 3G, 1F, 2F, and 3F positions. Students will develop a theoretical understanding of the FCAW process, and then build upon that foundation through practical experience in the laboratory where a variety of welding techniques will be taught through practical exercises and reinforced through self and peer inspection.

Credits	**4**
Clock Hours	**60**

Lab Hours	**40**
Lecture Hours	**20**
Prerequisites	**WLD101**

WLD140 : FLUX CORE ARC-WELDING APPLICATIONS

This course covers advanced concepts and techniques involved with the flux core arc welding process, as well as content such as safety hazards and proper procedures, equipment assembly, electrical theory and machine selection, maintenance and repair, and safety testing. Additionally, students will produce of quality fillet and groove welds in the, 1F, 2F, 3F, and 4F and 1G, 2G, 3G, and 4G positions. Students will develop the FCAW-S process, and then build upon that foundation through practical experience in the laboratory where a variety of welding techniques will be taught through practical exercises and reinforced through self and peer inspection.

Credits	**4**
Clock Hours	**60**
Lab Hours	**40**
Lecture Hours	**20**
Prerequisites	**WLD101**

WLD145 : GAS TUNGSTEN ARC-WELDING

This course introduces the concepts and techniques involved with the gas tungsten arc welding process, safety procedures, equipment assembly, electrical theory and machine selection, maintenance and repair, safety testing, electrode selection and preparation, and the production of quality groove and fillet welds in the 1G, 2G, 3G, 4G, 1F, 2F, 3F, and 4F positions. Students will be introduced to GTAW process with carbon steel and Austenitic Stainless Steel, and then build upon that foundation through practical experience in the laboratory where a variety of welding techniques will be taught through practical exercises and reinforced through self and peer inspection.

Credits	**4**
Clock Hours	**60**
Lab Hours	**40**
Lecture Hours	**20**
Prerequisites	**WLD101**

WLD150 : GAS TUNGSTEN ARC-WELDING APPLICATIONS

This course covers concepts and techniques involved with the gas tungsten arc welding process with a focus on the production of quality groove and fillet welds on austenitic stainless steel in the 1G, 2G, 3G, 1F, 2F, and 3F positions and 1G, 2G, 1F, and 2F positions on aluminum. Additionally, this course covers fundamental concepts such as safety hazards and proper procedures, equipment assembly, electrical theory and machine selection, maintenance and repair, safety testing, electrode selection and preparation.

Credits	**4**

Clock Hours	**60**
Lab Hours	**40**
Lecture Hours	**20**
Prerequisites	**WLD101**

WLD155 : PIPE WELDING TECHNIQUES

In this course, students are provided an introduction to welding of pipe using the shielded metal arc welding process (SMAW). Included are electrode selection, equipment setup, and safety procedures. The student will describe equipment and required pipe preparation, perform 1G and 2G welds using various electrodes, and practice up and down hill piping techniques. Students will evaluate their performance abilities to troubleshoot for potential problems. Students will develop interpretation of the AWS coding system and use available materials and equipment properly.

Credits	**4**
Clock Hours	**60**
Lab Hours	**40**
Lecture Hours	**20**
Prerequisites	**WLD101**

WLD160 : WELDING FABRICATION CONCEPTS

In this course, students gain a comprehensive overview of metal fabrication techniques. Through lab projects, they practice skills such as using blueprints and taking accurate measurements. Labs allow for gaining competency with fabrication tools, especially automated devices, such as shears, and press brakes. At the end of this course, students will be competent in metal fabrication techniques.

Credits	**4**
Clock Hours	**60**
Lab Hours	**40**
Lecture Hours	**20**
Prerequisites	**WLD101**

WLD165 : WELDING CERTIFICATION AND CAREER DEVELOPMENT

In this course, students will develop and practice the skills necessary to pass the certification test. Pre-testing will be administered at the completion of 30 hours in both GMAW and SMAW. Pretesting identifies students' readiness for the official Certification Test and provides students with direction for continued lab work and hands on practice. This course will also provide the student with marketable job search techniques and skills.

Credits	**4**
Clock Hours	**60**

Lab Hours	**40**
Lecture Hours	**20**
Prerequisites	**WLD101**