Manufacturing

The Manufacturing career cluster focuses on planning, managing, and performing the processing of materials into intermediate or final products and related professional and technical support activities such as production planning and control, maintenance, and process engineering. This career cluster includes occupations ranging from welder and machinist to industrial engineering technician and semi-conductor processing technician.

Program of Study: Welding (Dual Credit Program)

Limited Seating

The Welding Program of Study focuses on the development and use of automatic and computer-controlled machines, tools, and robots that perform work on metal or plastic. CTE learners will learn how to modify parts to make or repair machine tools or maintain individual machines and how to use hand-welding or flame-cutting equipment.

Courses

9th Grade	Introduction to Welding
10th Grade	Welding I
11th Grade	Welding II (San Jacinto College Course)
12th Grade	Practicum in Manufacturing @ San Jacinto College

Students must maintain a 2.5 GPA or higher to qualify for dual credit.

Work-Based Learning/Expanded Learning Opportunities

Work-Based Learning Activities	• Earn industry certification • Join the American Welding Society
Expanded Learning Opportunities	• SkillsUSA • Earn dual credit hours

Aligned Industry-Based Certifications

- AWS D1.1 Structural Steel



Example Postsecondary Opportunities

Apprenticeships

- Welding

Associate Degrees

- Welding Technology
- Building/Construction Site Management
- Operations Management and Supervision

Bachelor's Degrees

- Welding Technology
- Construction Management
- Project Management
- Building/Construction Site Management

Master's, Doctoral, and Professional Degrees

- Engineering
- Engineering/Industrial Management
- Manufacturing Engineering
- Construction Engineering

Example Aligned Occupations

Welders, Cutters, Solderers, and Brazers
Median Wage: $48,494
Annual Openings: 5,636
10-Year Growth: 23%

First-Line Supervisors of Production and Operating Workers
Median Wage: $62,514
Annual Openings: 6,566
10-Year Growth: 17%

Industrial Production Managers
Median Wage: $124,377
Annual Openings: 1,544
10-Year Growth: 19%

Welding
Course Information

Level 1

Introduction to Welding **13032250**

Grade: 9-12 **Credit: 1**
Recommended Prerequisite: Algebra I

Introduction to Welding will provide an introduction to welding technology with an emphasis on basic welding laboratory principles and operating procedures. Students will be introduced to the three basic welding processes. Topics include: industrial safety and health practices, hand tool and power machine use, measurement, laboratory operating procedures, welding power sources, welding career potentials, and introduction to welding codes and standards. Introduction to Welding will provide students with the knowledge, skills, and technologies required for employment in welding industries. Students will develop knowledge and skills related to welding and apply them to personal career development. This course supports integration of academic and technical knowledge and skills. Students will reinforce, apply, and transfer knowledge and skills to a variety of settings and problems. Knowledge about career opportunities, requirements, and expectations and the development of workplace skills will prepare students for future success.

Level 2

Welding I **13032300**

Grade: 10-12 **Credit: 2**
Recommended Prerequisite: Introduction to Welding

Welding I provides the knowledge, skills, and technologies required for employment in metal technology systems. Students will develop knowledge and skills related to this system and apply them to personal career development. This course supports integration of academic and technical knowledge and skills. Students will reinforce, apply, and transfer knowledge and skills to a variety of settings and problems. Knowledge about career opportunities, requirements, and expectations and the development of workplace skills prepare students for future success.

Level 3

Welding II **13032400**

Grade: 11-12 **Credit: 2**
Prerequisite: Welding I

Welding II builds on the knowledge and skills developed in Welding I. Students will develop advanced welding concepts and skills as related to personal and career development. Students will integrate academic and technical knowledge and skills. Students will have opportunities to reinforce, apply, and transfer knowledge and skills to a variety of settings and problems.

Industry Based Certifications: AWS D1.1 Structural Steel

Level 4

Practicum in Manufacturing @ San Jacinto College **13033000**

Grade: 12 **Credit: 2**
Prerequisite: Welding II

The Practicum in Manufacturing course is designed to give students supervised practical application of previously studied knowledge and skills. Practicum experiences can occur in a variety of locations appropriate to the nature and level of experience.