

**Course Objectives/Course Outline**  
**Spokane Community College**

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**Course Title:** Maintenance Welding

**Prefix and Course Number:** IMMA 121

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**Course Learning Outcomes:**

**By the end of this course, a student should:**

- Demonstrate proper welding and cutting safety techniques
- Describe welding processes and technology, including SMAW (stick), GMAW, and OFW
- Describe metal cutting processes and technology, including carbon arc, oxy fuel, and plasma
- Describe brazing processes and technology
- Demonstrate the preparation of the equipment and materials for welding
- Evaluate job scenarios in order to select the proper welding or cutting process
- Create work pieces joined by welding and brazing processes
- Demonstrate safe and proper operation of an ironworker
- Create work pieces using metal cutting technology, such as carbon arc, oxy fuel, or plasma arc
- Apply finishing techniques to welded or fabricated materials
- Evaluate completed work pieces for quality using inspection techniques and measuring tools
- Demonstrate professionalism, critical thinking, and teamwork during in-class discussions, presentations, and hands-on activities

**Course Outline:**

A. *NOTE:* This course schedule is subject to change at the discretion of the instructor.

**I. Week One**

- A. Welding Safety
- B. Welding Processes
- C. Weld and Joint Types
- D. Lab: Safety Overview and Tour

**II. Week Two**

- A. Oxyfuel Equipment, Processes, Safety
- B. Oxyfuel Cutting Principles
- C. Lab: Oxyfuel Cutting

**III. Week Three**

- A. Oxyfuel Welding Principles
- B. Brazing Principles
- C. Lab: Oxyfuel Welding and Brazing

**IV. Week Four**

- A. Gas Metal Arc Welding Principles Equipment and Safety
- B. Lab: GMAW

**V. Week Five**

- A. GMAW Electrodes and Shielding Gases
- B. Surfacing, Hardfacing, Repair Welding
- C. Lab: GMAW

**VI. Week Six**

- A. Midterm Exam covers skills learned in Weeks 1 - 5

B. Lab Midterm: Processes Week 1-5

**VII. Week Seven**

- A. Air Carbon Arc Cutting
- B. Plasma Arc Cutting
- C. Ironworker Operation and Safety
- D. Lab: Cutting Processes/Step Project

**VIII. Week Eight**

- A. Shielded Metal Arc Welding Principles
- B. Equipment and Safety
- C. Pipe Welding
- D. Lab: SMAW

**IX. Week Nine**

- A. SMAW Electrodes
- B. Lab: SMAW/Step Project

**X. Week Ten**

- A. Lab: Step Project

**XI. Week Eleven**

- A. Welding Inspection
- B. Weld Discontinuities
- C. Nondestructive & Destructive Testing
- D. Lab: NDT, Step Project

**XII. Week Twelve**

- A. Final Exam covers skills learned in Weeks: 1 - 11
- B. Lab Final: Processes Week 1-11