

**J. Sargeant Reynolds Community College –  
Course Content Summary**

**Course Prefix and Number:** WEL 124

**Credits:** 3

**Course Title:** Shielded Metal Arc Welding (Advanced)

**Course Description:** Continues instruction on operation of AC and DC power sources, welding polarities, heats and electrodes for use in joining various metal alloys by the arc welding process. Deals with running beads, butt, and fillet welds in all positions. Emphasizes safety procedures. Prerequisite: WEL 120 or instructor's approval. Lecture 2 hour. Laboratory 3 hours. Total 5 hours per week.

**General Course Purpose:** To provide students with an understanding of the various advanced methods and procedures used in the SMAW process and to develop and acquire the skills necessary for professional employment.

**Course Prerequisites and Co-requisites:**

Prerequisite: WEL 120 or instructor's approval

**Student Learning Outcomes:**

Upon completing the course, the student will be able to

- a. Recognize and use proper safety procedures while performing labs;
- b. Demonstrate the ability to perform correct equipment setup;
- c. Demonstrate the ability to perform welds on both fillet and groove joints in all positions;
- d. Demonstrate a knowledge of use of a variety of procedures and electrodes to make emergency repairs, weld poor fit-ups, and weld hard-to-reach places; and
- e. Demonstrate a knowledge of methods of distortion control.

**Major Topics to Be Included:**

- a. Safety
- b. Electrode characteristics and selection
- c. Metal preparation
- d. Groove welds
- e. Open root
- f. Multiple pass sequence
- g. Restarts
- h. Heat affected zone
- i. Preheating and postheating
- j. Interpass temperature
- k. Back gouging
- l. Overhead and difficult-to-reach welds
- m. Repair welding
- n. Poor fit-up
- o. Difficult-to-weld materials
- p. Weld defects

**Date Created/Updated (Month, Day, and Year):** January 12, 2019