

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

Course Prefix and Number: WEL 145

Credits: 3

Course Title: Welding Metallurgy

Course Description: Studies steel classifications, heat treatment procedures, properties of ferrous and non-ferrous metals. Discusses techniques and practices of testing welded joints and destructive/nondestructive, visual magnetic and fluorescent testing. Lecture 3 hours per week. Laboratory 1 hour per week. Total 4 hours per week.

General Course Purpose: To help students identify materials, use testing techniques, and better understand the metallurgical changes that occur when welding. To teach students how to control and use these changes to their advantage

Student Learning Outcomes:

Upon completing the course, the student will be able to

- a. Develop a basic understanding of the types of metals and their classification;
- b. Identify the more commonly used metals;
- c. Display an understanding of heat treating and hardening processes;
- d. Display an understanding of basic testing procedures used in welding; and
- e. Display an understanding of the effects of heat on various metals.

Major Topics to Be Included

- a. Classification of metals
- b. Properties of metals
- c. Identification of metals
- d. Heat treatment
- e. Hardening processes
- f. Testing procedures

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