



South Central College

WELD 1065 Metallurgy

Common Course Outline

Course Information

Description	Students will learn how metal discoveries and uses have impacted human history. The course will also include an introduction to the internal structure of metals, how alloys are made, and how metals are affected in the welding process. (Prerequisite: Welding Certificate or equivalent from another college or instructor approval.)
Total Credits	1
Total Hours	16

Types of Instruction

Instruction Type	Credits/Hours
Lecture	1/16

Pre/Corequisites

Welding Certificate or equivalent from another college or instructor approval

Institutional Core Competencies

Communication - Students will be able to demonstrate appropriate and effective interactions with others to achieve their personal, academic, and professional objectives.

Course Outcomes

1. Explain the metallurgic eras of humanity and the importance of each.

Learning Objectives

Explain the characteristics and use of copper during Copper Age.
Explain the characteristics and use of bronze during Bronze Age.
Explain the characteristics and use of iron during the Iron Age.

2. Explain the transformation of iron that led to the discovery of steel.

Learning Objectives

Explain steel's discovery
Define the characteristics of steel

3. Identify how ores are turned into useful metals

Learning Objectives

Define the temperatures to accomplish the transformation.
Define different types of ores

4. Identify the compatibility of various metals and alloys

Learning Objectives

Identify steel alloys which are compatible
Identify aluminum alloys which are compatible
Identify properties of aluminum and iron castings.

5. Identify basic crystalline structures

Learning Objectives

Describe and identify austenite.
Describe and identify bainite.
Describe and identify martensite.

6. Identify the four basic heat treating methods

Learning Objectives

Describe and identify annealing.
Describe and identify hardening.
Describe and identify normalizing.
Describe and identify tempering.

7. Identify the effects of alterations to metals

Learning Objectives

Define the effects of welding metals
Define the effects of heating metals
Define the effects of cutting metals

8. Apply destructive and non-destructive testing of various joints in metal parts

Learning Objectives

Conduct destructive tests to welds
Conduct non-destructive tests to welds

SCC Accessibility Statement

Disability Services provides accommodations and other supports to students with permanent and temporary disabilities that affect their SCC experience. Disabilities may include mental health (anxiety, depression, PTSD), ADHD, learning disabilities, chronic health conditions (migraine, fibromyalgia), sensory disabilities, and temporary disabilities (broken arm, surgery). Common accommodations are extended test time, private room for testing, audiobooks, and sign language interpreter.

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