

Virginia Western Community College

WEL 145

Welding Metallurgy

Prerequisites

None.

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.

Semester Credits: 3 Lecture Hours: 3 Lab/Clinical/Internship Hours: 0

Required Materials

Textbook:

Modern Welding.

Althouse

Edition: 12

ISBN: 9781635636864

Other Materials

The student supplies the following PPE for student use in the welding labs:

- Safety Glasses MUST BE WORN AT ALL TIMES IN LAB
- Helmet
- Proper Shade Lens
- Welding Hood / Jacket
- Gloves

Students are responsible for replacing any lost or removed equipment.

Course Outcomes

At the completion of this course, the student should be able to:

- To explore the metallurgical aspects involved in refining, processing and utilizing difference metals.
- To extensively study characteristics and theory pertaining to ferrous materials and the welding industry.
- To understand the use and importance of Quality Control and QC testing.

- To develop information allowing a student to identify unknown materials in the field situation.
- To finish with a knowledge of the specific differences between cast iron and steels.

Topical Description

Week 1	Introduction
Week 2	Production of Metals
Week 3	Production of Metals
Week 4	Test One – Production of Metals (Open book, open notes)
Week 5	Metal Properties and Identification
Week 6	Metal Properties and Identification
Week 7	Test Two - Metal Properties and Identification (Open book, open Notes)
Week 8	Heat Treatment of Metals
Week 9	Heat Treatment of Metals
Week 10	Heat Treatment of Metals
Week 11	Test Three – Heat Treatment of Metals (Open book, open notes)
Week 12	Inspecting and Testing Welds
Week 13	Inspecting and Testing Welds
Week 14	Thanksgiving Break
Week 15	Test Four – Inspecting and Testing Welds (Open book, open notes)
Week 16	Final Exam

Notes to Instructors

- None