



WELD 2320

Division: Career and Technical Education

Department: Welding Technology

Course: WELD 2320

Title: Metallurgy

Catalog Description:

Metallurgy is the science that explains the properties, behavior, and internal structure of metals. The course emphasizes welding carbon and alloy steels used with metals such as cast iron. Discussions and demonstrations are given on various methods of heat treatment and metal properties.

General Education Requirements: N/A

Semesters Offered: TBA

Credit/Time Requirement: Credit: 4; Lecture: 4; Lab: 0

Clock/Hour Requirements: 60

Offered for Non-Credit: No

Prerequisites: None

Corequisites: None

Justification:

Our program advisory committee approved this course, and it is comparable to UVSC WELD 2320.

Student Learning Outcomes:

Upon successful completion, students will be able to:

- understand the composition of steel
- understand the properties of steel
- know metallurgical and chemical terms
- explain isothermal transformation diagrams.

Content:

Course objectives will be accomplished by providing students with learning experiences in the following subject areas:

- practical applications of metallurgy
- metallurgical and chemical terms
- composition of steel
- manufacture of iron and steel
- hardness
- properties of steel
- crystal structure.

General Education Outcomes:

1) Read effectively, constructively, and critically.

Students will read the required text as well as other assigned readings. Students must be able to answer questions on exams and synthesize information into laboratory experiences.

7) Apply scientific reasoning to a variety of contexts.

Students will understand the structural changes that take place in ferrous and non-ferrous materials during the welding process.

Key Performance Indicators:

In class:

- The students' knowledge and skills are tested through assignments, tests and quizzes. Assignments are worth 30%-40%, written tests are 40%-50%, and quizzes are 10%-20% of the total grade.

Following class:

- Students will demonstrate competency by incorporating knowledge into practical applications, both in class and on the job.

Representative Text and/or Supplies:

- Daniel A. Brandt, *Metallurgy Fundamentals*, current edition, Goodheart-Willcox.

Optimum Class Size: 10

Maximum Class Size: 20

Signatures:

I hereby submit this course syllabus:

Alan Palmer, M. Ed., Associate Professor

I hereby find this course consistent with the goals and resources of the Welding Technology Department:

Alan Palmer, M. Ed., Associate Professor, Chair

I hereby find this course consistent with the goals and resources of the Career and Technical Education Division:

Michael P. Medley, MBA, Assistant Professor, Dean

I have discussed the need for library resources related to this class with the person submitting the syllabus:

Lynn Anderson, MLIS, Technical Services Librarian (Main Campus)

Michelle Olsen, MLS, Campus Librarian (Richfield Campus)