

**SEWARD COUNTY COMMUNITY COLLEGE
COURSE SYLLABUS**

I. TITLE OF COURSE: CT2123- Introduction to Metallurgy

**II. COURSE DESCRIPTION: 3 credit hours
3 credit hours of lecture and 0 credit hours of lab per week.**

This course introduces the student to the metallurgical terms and definitions in an effort to understand the behavior and service of metals in industry. Characteristics during heating, cooling, shaping, forming, and the stress related to their mechanical properties are covered, as well as the theory behind alloys, heat treatment processes and wear resistance.

For each unit of credit, a minimum of three hours per week with one of the hours for class and two hours for studying/preparation outside of class is expected.

Pre-requisite: None

III. PROGRAM AND/OR DEPARTMENT MISSION STATEMENT:

[Mission]

IV. TEXTBOOK AND MATERIALS:

1. Metallurgy Fundamentals
2. Notebook
3. Pens and Pencils
4. Calculator

V. SCCC OUTCOMES

Students who successfully complete this course will demonstrate the ability to do the following SCCC Outcomes.

6: Exhibit skills in information and technological literacy

9: Exhibit workplace skills that include respect for others, teamwork competence, attendance/punctuality, decision making, conflict resolution, truthfulness/honesty, positive attitude, judgment, and responsibility

VI. COURSE OUTCOMES:

1. Examine the history of iron and steel and its role in industry
2. Summarize the production of iron and steel
3. Summarize the production of non-ferrous metals
4. Define an Alloy and an alloying element
5. Demonstrate understanding of metal classification systems
6. Demonstrate understanding of Heat Treatment processes

VII. COURSE OUTLINE:

1. Practical Applications of Metallurgy
2. Metallurgical and Chemical Terminology
3. Hardness
4. What is Steel
5. Manufacture of Iron and Steel
6. Crystal Structure
7. Failure and Deformation of Metal
8. Iron-Carbon Diagram
9. Microstructural Analysis
10. Heat Treating and Quenching
11. Annealing and Normalizing
12. Isothermal Transformation Diagrams
13. Tempering
14. Surface Hardening
15. Processing Non-ferrous Metals
16. Aluminum and Aluminum Alloys
17. Copper, Bronze, and Brass
18. Magnesium, Zinc, Tin, and Specialty Metals

VIII. INSTRUCTIONAL METHODS:

1. Lecture
2. Discussion
3. Demonstration
4. Hands on Applications

IX. INSTRUCTIONAL AND RESOURCE MATERIALS:

1. Metallurgy Fundamentals
2. Calculator
3. Machinery's Handbook – Twenty Eighth Edition/Industrial Press
4. Internet

X. METHODS OF ASSESSMENT:

The student evaluation will be based upon class discussion, examinations, class attendance, student participation, and student objective worksheets. Shop activities and live work projects are used.

XI. ADA STATEMENT:

Under the Americans with Disabilities Act, Seward County Community College will make reasonable accommodations for students with documented disabilities. If you need support or assistance because of a disability, you may be eligible for academic accommodations. Students should identify themselves to the Dean of Students at 620-417-1106 or going to the Student Success Center in the Hobbie Academic building, room 149 A.