

JAMESTOWN COMMUNITY COLLEGE
State University of New York

INSTITUTIONAL COURSE SYLLABUS

Course Title: Metallurgy

Course Abbreviation and Number: WLD 2370

Credit Hours: 3

Course Type: Lecture

Course Description: Students will learn the basic properties, characteristics, and production of the major metal families and processes for ferrous and nonferrous metals. General metal properties, testing, and heat treatments are covered, along with crystal structures in metals, iron-carbon phase diagrams, and isothermal transformation diagrams.

Eligibility: PHY 1250.

Student Learning Outcomes:

Students who demonstrate understanding can:

1. List the important differences between ferrous and non-ferrous metals.
 2. List specific effects that temperature histories have on ferrous materials.
 3. Analyze the effects of a series of specific weld operations on both ferrous and non-ferrous materials.
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Topics Covered:

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| <p>1.) Extraction of Metals from Ores</p> <ul style="list-style-type: none">- Carbon Steel- Aluminum- Lead- Zinc- Precious Metals <p>2.) Casting of Metals</p> <ul style="list-style-type: none">- Sand Casting- Die- Centrifugal- Lost Wax <p>3.) Physical and Mechanical Properties of Metals</p> <ul style="list-style-type: none">- Hardness- Tensile properties- Torsion Strength- Strength strain curve- Toughness a.) Impact toughness | <p>4.) Crystal Microstructures of metals</p> <ul style="list-style-type: none">- Austenite- Pearlite- Ferrite- Martensite- Phase Diagrams- Proper etching of metals for microstructure examination. - Types of enchants - Types of materials vs. types of enchants <p>5.) Heat treating</p> <ul style="list-style-type: none">- Annealing- Stress relieving- Normalizing- Hardening- Tempering |
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Information for Students

- Expectations of Students
 - [Civility Statement](#)
 - [Student Responsibility Statement](#)
 - [Academic Integrity Statement](#)
 - [Accessibility Services](#)
Students who require accommodations to complete the requirements and expectations of this course because of a disability must make their accommodation requests to the Accessibility Services Coordinator.
 - [Get Help: JCC & Community Resources](#)
 - [Emergency Closing Procedures](#)
 - Course grade is determined by the instructor based on a combination of factors, including but not limited to, homework, quizzes, exams, projects, and participation. Final course grade can be translated into a grade point value according to the following:

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|-------|--------|-----|--------|-----|--------|-----|-----|
| A=4.0 | B+=3.5 | B=3 | C+=2.5 | C=2 | D+=1.5 | D=1 | F=0 |
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 - Veterans and active duty military personnel with special circumstances (e.g., upcoming deployments, drill requirements, VA appointments) are welcome and encouraged to communicate these to the instructor.
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Effective Date: Fall 2021