

MET/MSE 313 - Physical Metallurgy

Course Information:

Course Title: Physical Metallurgy
Course Number: MET/MSE 313
Course Credits: 4 credits
Prerequisites: MET/MSE 201 or ME 261

Instructor Information:

Instructor: Professor Yang-Ki Hong, 303C McClure, Tel 208-885-5915
Office Hour 10:45 ~ 11:45 am (Mon, Wed., and Fri.)

Assigned Text:

R. E. Reed-Hill and R. Abbaschian, Physical Metallurgy Principles, 3rd Edition, PWS Kent publishing company, 1992.

Course Scope:

This course is intended as an introductory course in physical metallurgy and designed for all engineering students at the junior level.

Course Learning Objectives:

By the completion of this course, students are expected to...

1. Describe the structure of crystalline materials using the nomenclature of Bravais lattices and Miller Indices.
2. Quantitatively describe the compositions, phases and microstructures developed during heat treatments of binary solid systems using a binary phase diagram.
3. Understand the nature of the solid phases that occur in alloys.
4. Apply the principles of solid-state diffusion and phase transformation to determination of the effects of heating on composition profiles and hardening in solid solution materials.

Course Topics:

* This schedule is subject to change depending upon the progress of the class.

1. Structure
2. Phase
3. Binary Phase Diagrams
4. Precipitation Hardening
5. The Iron-Carbon System
6. The Hardening of Steel
7. Solid Solution
8. Diffusion in Substitutional Solid Solution

Disability Support Services Reasonable Accommodations Statement:

Reasonable accommodations are available for students who have a documented disability. Please notify the instructor during the first week of class of any accommodation(s) needed for the course. Late notification may mean that requested accommodations might not be available. All accommodations must be approved through Disability Support Services located in the Idaho Commons Building, Room 333.

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