



Structural Transformations

MATSCEN 7850

Credit Hours:

2.00 - 2.00

Course Levels:

Graduate (5000-8000 level)

Course Components:

Lecture

Course Description:

Structural transformations in materials with emphasis on basic phenomena. Selected topics will be developed based on classical approaches and recent advances.

Prerequisites and Co-requisites:

Prereq: 6730 and 6737.

Course Goals / Objectives:

- Provide fundamental knowledge of Structural Transformations
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Course Topics:

- Introduction and classification of phase transformations
 - Phase stability
 - Order-disorder transformations
 - Spinodal decomposition and continuous ordering
 - Precipitation from solid solutions (nucleation, growth and coarsening)
 - Coherency elastic strain and coherency transformations
 - Martensitic transformations and dislocation dynamics
 - Massive transformations, recrystallization and grain growth
 - Computational thermodynamics and kinetics of phase transformations
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Designation:

Elective