



THE OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING

Advanced Thermodynamics I

CBE 8808

Credit Hours:

3.00 - 3.00

Course Levels:

Graduate (5000-8000 level)

Course Components:

Lecture

Course Description:

Detailed discussion of the thermodynamic properties of pure compounds and mixtures; computational problem work emphasizes the application of thermodynamics in industrial problems.

Prerequisites and Co-requisites:

Prereq: 3508 or 508, and Grad standing; or permission of instructor.

Course Goals / Objectives:

- Thermodynamics: Be familiar with conditions of equilibrium and stability of a phase. Be able to compute for phase coexistence using available equations of state
 - Molecular level basic of thermodynamics: Be introduced to basic concepts of statistical mechanics relevant to molecular theory of pure compounds and mixtures
 - Molecular thermodynamics: Be introduced to various theoretical and computational tools to predict thermodynamic properties of pure compounds and mixtures
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Course Topics:

- Conditions of equilibrium
 - Free energies
 - Phase equilibria
 - Stability of phases
 - Statistical ensembles
 - Partition functions
 - Lattice model
 - Integral equations
 - Density functional theory
 - Computer simulation
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Designation:

Elective

Required