

MATL 8030 - Thermodynamics and Phase Behavior

Fall 2026 Syllabus, Section 01, CRN 44131,

Credit hours: 3

Instructor

Stefan Moldovan

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Public Instructor Information

Instructor Title: Assistant Professor

Instructor Professional Qualifications: Doctor of Philosophy in Mechanical Engineering, The University of Akron

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Course Description

8030. Thermodynamics and Phase Behavior. Detailed examination of chemical equilibria and chemical changes with an emphasis on the theoretical basis for these phenomena and the properties of phase diagrams. The use of computer models for chemical equilibrium calculations utilizing extensive thermodynamic databases. 3 s.h.

Course Readings

Group	Title	Author	ISBN
Optional	Thermodynamics: An Engineering Approach, 10th edition	Yunus A. Cengel, Michael A. Boles and Mehmet Kanoglu	9781265903534

The course readings are subject to change in the event of extenuating circumstances, research developments, current events, and/or to ensure better learning.

Schedule of Topics and Assignments

Week of	Reading(s)	Proposed Topic	Due/To Prepare for Class
8/24	Introduction and Basic Concepts		
8/31	Laws of Thermodynamics Homework		
9/7	Entropy & Exergy		HW 1
9/14	Thermodynamic Cycles		
9/21	Chemical Reactions		
9/28	Chemical Reactions Homework		
10/5	Chemical Reactions Project Proposal		HW 2
10/12	Chemical Reactions		Project Proposal
10/19	Chemical and Phase Equilibrium		
10/26	Chemical and Phase Equilibrium Homework		
11/2	Chemical and Phase Equilibrium		HW 3
11/9	Chemical and Phase Equilibrium		

11/16	Renewable Energy Homework	
11/23	Project	HW 4
11/30	Project	
12/7	Project	Project

The course schedule, policies, procedures, and assignments in this course are subject to change in the event of extenuating circumstances, by mutual agreement, and/or to ensure better learning.