

CHEM 3739 - Physical Chemistry 1

Fall 2026 Syllabus, Section 01, CRN 40763,

Credit hours: 3

Instructor

Brian D. Leskiw

Professional Qualifications:

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Blackboard message board.

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Course Description

3739. Physical Chemistry 1. Principles and applications of thermodynamics and kinetics to chemical systems. Prereq.: "C" or better in CHEM 3720, PHYS 2610, MATH 1572. 3 s.h.

Course Readings

Group	Title	Author	ISBN
Required	Atkins' Physical Chemistry (Volume 1) 12th ed	P. Atkinson	

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

Day	Date	Reading(s)	Proposed Topic	Due/To Prepare for Class
Mon	8/24	Focus (Chapters) 1	Introduction, Temperature	
Wed	8/26	Focus 1	Pressure, Gas Laws, Real Gases	
Mon	8/31	Focus 1	Equations of State	
Wed	9/2	Focus 2	1st Law, Work, Heat, Enthalpy, Cv,	Quiz 1
Mon	9/7	No Class		
Wed	9/9	Focus 2	Cp, Adiabatic Changes, Thermochemistry	
Mon	9/14	Focus 3	2nd Law, Entropy, Phase Transition	
Wed	9/16	Focus 3	Boltzmann, Carnot, 3rd Law, Maxwell Relations	Quiz 2
Mon	9/21	Focus 4	Components, Phase Diagrams	
Wed	9/23		Exam 1: Focus (Chapters) 1, 2, 3	
Mon	9/28	Focus 4	Chemical Potential	

Wed	9/30	Focus 5	Mixtures, Partial Molar Volume	
Mon	10/5	Focus 5	Pressure, Colligative Properties	
Wed	10/7	Focus 5	Lever Rule, Binary Systems, Miscible Liquids	Quiz 3
Mon	10/12	Focus 5	Activities, Chemical Equilibrium	
Wed	10/14	Focus 6	Electrochemistry	Quiz 4
Mon	10/19	Focus 6	Half Reactions, Nernst Equation	
Wed	10/21		Exam 2: Focus (Chapters) 4, 5, 6	
Mon	10/26	Focus 16	Kinetic Model of Gases, Mean Free Path	
Wed	10/28	Focus 16	Diffusion, Viscosity	
Mon	11/2	Focus 17	Kinetics, Rate Law	
Wed	11/4	Focus 17	Reaction Order, Integrated Rate Law	
Mon	11/9	Focus 17	Consecutive/Parallel Reactions	Quiz 5
Wed	11/11	No Class		
Mon	11/16	Focus 17	Steady-State Approx.	
Wed	11/18		Exam 3: Focus (Chapters) 6, 16, 17	
Mon	11/23	Focus 18	Reaction Theory, Transition State Theory	
Wed	11/25	No Class		
Mon	11/30	Focus 18	Activated Complex, Pot. Energy Surfaces	Quiz 6
Wed	12/2		Quantum, Particle in a Box	
Mon	12/7		Final Exam: 1:00 p.m. - 3:00 p.m.	

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.