

Physics 360 Course Schedule
Winter 2006

Class	Date	Sections	Notes
Unit 1. Energy and Entropy			
C1	Jan. 9	Intro, 1.1–1.2	Energy and temperature Also: probability distributions, mean values.
C2	Jan. 11	1.3–1.4	Ideal Gas Law
C3	Jan. 13	1.5	Work, energy, and heat in the basic processes: adiabatic, isothermal, constant P, constant V.
	Jan. 16	Holiday	
C4	Jan. 18	1.6	Heat capacities
C5	Jan. 20	1.7	Rates of processes
C6	Jan. 23	2.1–2.2	Two-state paramagnet
C7	Jan. 25	2.3	Interacting systems
Unit 2. Entropy and Interactions			
C8	Jan. 27	2.4	Stirling's Approximation
C9	Jan. 30	Review 1	Test 1: Jan. 31–Feb. 2 at noon.
C10	Feb. 1	2.5	Multiplicity for an ideal gas
C11	Feb. 3	2.6	Entropy
C12	Feb. 6	3.1	Temperature and entropy
C13	Feb. 8	3.2	Entropy and heat
C14	Feb. 10	3.3	Paramagnetic interactions
C15	Feb. 13	3.4	Mechanical equilibrium and pressure
C16	Feb. 15	3.5–3.6	Diffusive equilibrium and chemical potential
Unit 3. Thermodynamics			
C17	Feb. 17	4.1–4.2	Heat engines and refrigerators - basics
C18	Feb. 21	Review 2	Test 2: Feb. 22–Feb. 24 at noon.
C19	Feb. 22	4.3	Real heat engines
C20	Feb. 24	4.4	Real refrigerators, throttling

C21	Feb. 27	5.1	Free energy, fuel cells, batteries
C22	Mar. 1	5.1	Thermodynamic identities
C23	Mar. 3	5.2–5.3	Extensive and intensive quantities, using Gibbs free energy
C24	Mar. 6	5.3	Phase transitions
C25	Mar. 8	5.4	Phase transitions with mixtures of liquids and gases
C26	Mar. 10	5.4	Phase transitions and different phases of solids
C27	Mar. 13	5.5–5.6 (parts)	Chemical equilibrium in gas mixtures and dilute solutions
Unit 4. Statistical Mechanics			
C28	Mar. 15	6.1	The Boltzmann factor and the partition function
C29	Mar. 17	6.2–6.3	Means, standard deviations, and the equipartition theorem
C30	Mar. 20	Review 3	Test 3: Mar. 21–Mar23 at noon
C31	Mar. 22	6.4	The Maxwell speed distribution Also: velocities and components of velocities
C32	Mar. 24	6.5–6.6	Partition functions and Helmholtz free energy, composite systems
C33	Mar. 27	6.7	Partition functions for continuous distributions: the ideal gas
C34	Mar. 29	7.1–7.2	The Gibbs factor and the grand partition function
C35	Mar. 31	7.3	Fermi gases I
C36	Apr. 3	7.3	Fermi gases II
C37	Apr. 5	7.4	Blackbody radiation I
C38	Apr. 7	7.4	Blackbody radiation II
C39	Apr. 10	8.1–8.2 (parts)	Systems of interacting particles – an overview. (Dr. Rees will be out of town.)
C40	Apr. 12	7.5	Debye theory of solids

C41	Apr. 14	7.6	Bose-Einstein condensation
C42	Apr. 17	Review 4	
Test 4: Wed. April 26, 7-10 am, in the classroom			