

CLASS READINGS FOR 2025WI

Week	Class: date	Sections of Rex for pre-class reading	Contents of the assigned readings
1	Mon Jan 6	Introduction; 13.3 in Urone	Course syllabus ; Overview, ideal gases (“Urone” means https://openstax.org/details/books/college-physics)
	Weds Jan 8	1.1 – 1.3 (leave 1.4 until wk 11)	Temperature : Basic concepts; Equilibrium state; Equations of state (leave section 1.4 until week 11)
2	Mon Jan 13	2.1 – 2.2; Appendix B.1 – B.3	Reversible processes and work : Review of partial differentiation; material properties; Work done on a compressible substance
	Weds Jan 15	2.3 – 2.4	Work done on other systems; Example of work calculations
3	Mon Jan 20	3.1 – 3.3	The first law of thermodynamics : Heat capacities and enthalpy
	Weds Jan 22	3.4; 3.5	Kinetic theory of gases; Conclusions from the first law of thermodynamics
4	Mon Jan 27	3.6 – 3.7	Fluid flow processes: The Joule-Kelvin Effect; The turbine; Flow through a nozzle
	Weds Jan 29	4.1 – 4.3	The second law of thermodynamics : Carnot cycles; Engine efficiency
5	Mon Feb 3	4.4 – 4.6	Carnot’s theorem; The thermodynamic temperature scale; Heat engines and refrigerators/heat pumps
	Weds Feb 5	Review	Material from chapters 1 – 4
6	Mon Feb 10	Term test	Chapters 1 – 4
	Weds Feb 12	Go over term test	Go over term test
—	Feb 17–21	Reading Week	Reading Week
7	Mon Feb 24	5.1 – 5.2	Entropy : The Clausius inequality
	Weds Feb 26	5.3 – 5.6	Principle of increasing entropy; <i>TS</i> diagrams; Thermodynamic identity; Entropy calculations
8	Mon Mar 3	6.1 – 6.2	Introduction to statistical mechanics ; Microscopic view of entropy
	Weds Mar 5	6.3	The Boltzmann factor
9	Mon Mar 10	7.1 – 7.5 (not 7.6)	More on thermodynamic potentials : <i>U, H, F, G</i> , and Maxwell relations
	Weds Mar 12	7.7 – 7.8	Some examples of using Maxwell relations
10	Mon Mar 17	8.1 – 8.5	General thermodynamic relations : difference in heat capacities; Ratio of heat capacities
	Weds Mar 19	8.6	Calculating the Joule coefficient and the Joule-Kelvin coefficient
11	Mon Mar 24	10.1 – 10.2; 1.4	Phase changes : <i>PVT</i> surfaces; Clausius-Clapeyron equation for first-order phase changes; The ideal gas temperature scale
	Weds Mar 26	11	Open systems and the chemical potential
12	Mon Mar 31	Review	Practice questions
	Weds Apr 2	Review	Practice questions