

## CLASS READINGS FOR 2022WI

Week	Class: date	Sections of Rex for pre-class reading	Contents of the assigned readings
1	Mon Jan 10	Introduction; 13.3 on Urone	<b>Course syllabus</b> ; Overview, ideal gases (Urone here means <a href="https://openstax.org/details/books/college-physics">https://openstax.org/details/books/college-physics</a> )
	Weds Jan 12	1.1 – 1.3 (leave 1.4 until wk 11)	<b>Temperature</b> : Basic concepts; equilibrium state; equations of state (leave section 1.4 until week 11)
2	Mon Jan 17	2.1 – 2.2; Appendix B.1 – B.3	<b>Reversible processes and work</b> : Review of partial differentiation; material properties; work done on a compressible substance
	Weds Jan 19	2.3 – 2.4	Work done on other systems; example of work calculations
3	Mon Jan 24	3.1 – 3.3	<b>The first law of thermodynamics</b> : Heat capacities and enthalpy
	Weds Jan 26	3.4; 3.5	Kinetic theory of gases; conclusions from the first law of thermodynamics
4	Mon Jan 31	3.6 – 3.7	Fluid flow processes: the Joule-Kelvin Effect; the turbine; flow through a nozzle
	Weds Feb 2	4.1 – 4.3	<b>The second law of thermodynamics</b> : Carnot cycles; engine efficiency
5	Mon Feb 7	4.4 – 4.6	Carnot's theorem; the thermodynamic temperature scale; heat engines and refrigerators/heat pumps
	Weds Feb 9	Review	Material from chapters 1 – 4
6	Mon Feb 14	<b>Term test</b>	<b>Chapters 1 - 4</b>
	Weds Feb 16	Go over term test	Go over term test
—	Feb 21–25	<b>Reading Week</b>	<b>Reading Week</b>
7	Mon Feb 28	5.1 – 5.2	<b>Entropy</b> : The Clausius inequality
	Weds Mar 2	5.3 – 5.6	Principle of increasing entropy; <i>TS</i> diagrams; thermodynamic identity; entropy calculations
8	Mon Mar 7	6.1 – 6.2	<b>Introduction to statistical mechanics</b> ; microscopic view of entropy
	Weds Mar 9	6.3	The Boltzmann factor
9	Mon Mar 14	7.1 – 7.5 (not 7.6)	<b>More on thermodynamic potentials</b> : <i>U, H, F, G</i> , and Maxwell relations
	Weds Mar 16	7.7 – 7.8	Some examples of using Maxwell relations
10	Mon Mar 21	8.1 – 8.5	<b>General thermodynamic relations</b> : difference in heat capacities; ratio of heat capacities
	Weds Mar 23	8.6	Calculating the Joule coefficient and the Joule-Kelvin coefficient
11	Mon Mar 28	10.1 – 10.2; 1.4	<b>Phase changes</b> : <i>PVT</i> surfaces; Clausius-Clapeyron equation for first-order phase changes; the ideal gas temperature scale
	Weds Mar 30	11	<b>Open systems and the chemical potential</b>
12	Mon Apr 4	12	<b>The third law of thermodynamics</b> : Statements of the third law; some consequences
	Weds Apr 6	Review	Practice questions