

PH315 Reading list (Chronological Order)

Sustainable Energy Without the Hot Air, by McKay (website has link to free pdf)

Numbers not adjectives

- 1. Motivations
- 2. The balance sheet
- 3. Cars
- 4. Wind
- 5. Planes
- 6. Solar
- 7. Heating and cooling
- 8. Hydroelectricity
- 9. Light

Technical chapters

- A. Cars II
- B. Wind II
- C. Planes II
- D. Solar II
- E. Heating II
- F. Waves II

Unit T (Thermal): Some Processes are Irreversible, by Moore

Note: My lectures will follow (approximately) the narrative of the 2nd edition. The 3rd edition was rewritten with more focus on the quantum mechanical foundations of statistical mechanics. I will skip much of this foundational material so that I can spend time on applications. The QM foundations of Stat Mech will be taught in the sophomore physics classes (Paradigms in Physics). A big reason that I like the 3rd edition is the new chapter on climate change.

2 nd edition	3 rd edition
T1 Temperature	T1 Temperature
T2 Ideal Gas	T5 Ideal gas (starting from section 5.5)
T3 Gas processes	T7 Gas processes
T9 Heat engines	T9 Heat engines
	T10 Physics of climate change

Unit Q (Quantum): Particles Behave Like Waves, by Moore

2 nd edition	3 rd edition
Q1 Standing waves	Q1 Wave models
Q2 Wave nature of light	Q2 Standing waves and resonance
Q3 Particle nature of light	Q3 Interference and diffraction
Q4 Wave nature of matter	Q4 Particle nature of light
Q5 Quantum facts of life	Q5 Wave nature of particles
Q7 Bound systems	Q10 Simple quantum models
Q8 Spectra	Q11 Spectra
Q9 Understanding atoms	Q13 Introduction to nuclei
Q12 Introduction to nuclei	Q14 Nuclear stability
Q13 Stable and unstable nuclei	Q15 Nuclear technology
Q14 Radioactivity	