

Material for Week 5

Physics 4488/6562: Statistical Mechanics

<https://sethna.lassp.cornell.edu/Teaching/562/>

Exercises due Wed. Mar 02

Last correction at January 11, 2022, 9:03 pm

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Enjoy your break next Monday.

Monday

In-class question: [5.10](#) *Entropy increases: diffusion*

In-class question: [5.15](#) *Shannon entropy*

Wednesday

Read: Chapter 6, Sec. 6.1 (Canonical Ensemble), 6.2 (Uncoupled Systems), and 6.3 (Grand canonical ensemble)

Pre-class question: [5.14](#) *Information entropy*

In-class question: [6.18](#) *Langevin dynamics*

In-class question: [5.15](#) *Shannon entropy*

Friday

Read: Chapter 6, Sec. 6.4 (What is thermodynamics?) and 6.5 (Mechanics: friction and fluctuations)

Pre-class question: [6.16](#) *Rubber band free energy*

In-class question: [6.13](#) *Pollen and hard squares*

Wednesday

Read: Chapter 6, Sec. 6.6 (Chemical equilibrium) and 6.7 (Free energy density)

Pre-class question: [6.15](#) *Gas vs. rubber band*

Exercises for everyone (4488 and 6562)

[5.24](#) *Nucleosynthesis and the arrow of time.*

Exercises for Graduate Course (6562 only)

[6.3](#) *Negative temperature.*

[5.26](#) *Phase conjugate mirror.*