

# Chemistry 427f/1480f: Statistical Mechanics

Prof. Jeremy Schofield

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- Research Interests: Theoretical Chemical Physics
  - Statics and dynamics of simple/complex fluids
  - Structure and dynamics of macromolecular/biological systems

## Reference Books:

- Statistical Mechanics, by Donald A. McQuarrie (M)
- Statistical Physics: Statics, Dynamics and Renormalization, L.P. Kadanoff (K)
- Statistical Mechanics, T.L. Hill
- A Modern Course in Statistical Physics, L.E. Reichl: a bit more difficult

## TOPICS COVERED

- Equilibrium Statistical Mechanics:
  - Classical Mechanics and Statistics Review Chapter 1:M
  - Ensembles and Fluctuations Chapters 2,3,7:M
  - Quantum Statistical Mechanics Chapters 4-6,8-10:M
  - Distribution Functions Chapter 13:M
- Dynamics and the Approach to Equilibrium
  - Lattice models and Stochastic Dynamics

- Liouville equation, Fokker-Planck Equation Chapter 6:K
- Response Theory and Time Correlation functions
- Computer Simulation?

### GRADING

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|-------------------------|-----|
| 1. 3 Problem Sets       | 60% |
| 2. Take home final exam | 40% |