

## Texts and References

**Required:** none

**Recommended:**

- i) “Nonequilibrium Statistical Mechanics”; R. Zwanzig
  - Concise, physical, broad coverage
- ii) “Physical Kinetics”; E.M. Lifshitz and L. Pitaevski
  - Good for kinetic theory, detailed
- iii) “Stochastic Processes in Physics and Astronomy”; S. Chandrasekhar (available as RMP, online)
  - Golden oldie on stochastic processes, phenomena. Price is right!
- iv) “Nonequilibrium Statistical Physics”; N. Pottier
  - Accessible general text
- v) “A Kinetic View of Statistical Physics”; P. Krapivsky, et al.
  - Good treatment of advanced applications

**References:**

### a) Statistical Physics

- “Nonequilibrium Statistical Physics — A Modern Perspective”; R. Livi, P. Politi
- “Stochastic Processes in Physics and Chemistry”; N.G. Van Kampen
- “Handbook of Stochastic Methods”; C.W. Gardiner
- “Qualitative Methods in Physical Kinetics and Hydrodynamics”; V.P. Krainov
- “Statistical Physics”; L.D. Landau, E.M. Lifshitz
- “Soft Matter Physics”; M. Doi

### b) Foundations

- “Chaos in Dynamical Systems”; E. Ott

- “Hamiltonian Chaos and Fractional Dynamics”; G. Zaslavsky
- “An Introduction to Chaos in Nonequilibrium Statistical Mechanics”; J. R. Dorfman
- “Non-equilibrium Thermodynamics”; S.R. de Groot, P. Mazur

**c) Kinetic Theory**

- “The Mathematical Theory of Non-uniform Gases”; S. Chapman, T. Cowling
- “Qualitative Methods in Physical Kinetics and Hydrodynamics”; V. P. Krainov

**d) Fluids**

- “Fluid Mechanics”; L.D. Landau, E.M. Lifshitz
- “Fluid Dynamics for Physicists”; G. Falkovich
- “Hydrodynamic Fluctuations, Broken Symmetry, and Correlation Functions”; Dieter Forster

**e) Renormalization**

- “Lectures on Phase Transitions and the Renormalization Group”; N. Goldenfeld
- “Renormalization Methods — A Guide for Beginners”; D. McComb

→ Additional references forthcoming.

→ See “Handouts: Supplementary Materials” for additional material.