

Course Text: R.K. Pathria and P.D. Beale, *Statistical Mechanics*, 3rd ed., Academic Press, 2011; pb [978-0123821881]. UMCP Online Resources QC174.8 .P38 2011

Strongly Recommended:

Mehran Kardar, *Statistical Physics of Particles*, Cambridge, 2007 [978-0521873420]. The lecture notes on which the book is based can be downloaded free from <http://ocw.mit.edu/courses/physics/8-333-statistical-mechanics-i-statistical-mechanics-of-particles-fall-2007/index.htm>

Leonard M. Sander, *Equilibrium Statistical Physics: with Computer Simulations in Python*, CreateSpace Independent Publishing Platform, 2013; pb [978-1491066515]

Donald A. McQuarrie, *Statistical Mechanics*, Univ. Science Books, 2000 [1891389157], esp. for chemists.

James P. Sethna, *Statistical Mechanics: Entropy, Order Parameters and Complexity*, Oxford, 2006; pb [978-0198566779].
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Other Statistical Physics Texts:

Kerson Huang, *Statistical Mechanics*, 2nd ed., Wiley, 1987 pb [0471815187].

Lukong C. Fai and Gary M. Wysin, *Statistical Thermodynamics: Understanding the Properties of Macroscopic Systems*, CRC Press, 2013 [978-1-4665-1067-8].

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D. Goodstein, *States of Matter*, Dover reprint, 2002; pb [978-0486495064].

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E. Schrödinger, *Statistical Thermodynamics*, Cambridge, 1964, Dover, 1989; pb [978-0486661018].

P.M. Morse, *Thermal Physics*, 2nd ed., 1969; [978-0805372021]

Luca Peliti, *Statistical Mechanics in a Nutshell*, Princeton, 2011 [978-0691145297]

Mark E. Tuckerman, *Statistical Mechanics: Theory and Molecular Simulation*, Oxford, 2010 [978-0198525264]

Thermodynamics Texts:

Herbert B. Callen, *Thermodynamics*, Wiley, 1960; *Thermodynamics and an Introduction to Thermostatistics*, Wiley, 1985 [978-0471862567].

E. Fermi, *Thermodynamics*, 1936, Dover, 1956; pb [486-60361-X]

A.B. Pippard, *Classical Thermodynamics*, 1957; for a more readable exposition, see C.J. Adkins (Pippard's student), *Equilibrium Thermodynamics*, 3rd ed., Cambridge, 1984; pb [978-0521274567]

Numerical Techniques:

H. Gould, J. Tobochnik, and Wolfgang Christian, *An Introduction to Computer Simulation Methods: Applications to Physical Systems*, 3rd ed., Addison-Wesley, 2006; pb [978-0805377583].

Dieter W. Heermann, *Computer Simulation Methods in Theoretical Physics*, 2nd ed., Springer, 1990; pb [0387522107].

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D.C. Rapaport, *The Art of Molecular Dynamics Simulation*, Cambridge, 1997; pb [0521599423].

J.M. Thijssen, *Computational Physics*, Cambridge, 1999; pb [052157588]: lots of physics, presented in a format useful for computations, but over 1/3 on electronic aspects.

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B. Widom: *Statistical Mechanics: A Concise Introduction for Chemists*, Cambridge U Press, 2002; pb [978-0521811194];

W. Greiner and L. Neise, *Thermodynamics and Statistical Mechanics*, Springer, 1995; pb [0387942998].

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Waveland Press, 2008 [978-1577666127].

More-Advanced Texts (most from Phys. 704):

Mehran Kardar, Statistical Physics of Fields, Cambridge,
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P. Krapivsky, S. Redner and E. Ben-Naim, A Kinetic View of
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Condensed Matter Physics, Cambridge, 2000; pb
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N.G. van Kampen, Stochastic Processes in Physics and
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Outstanding series: Phase Transitions and Critical
Phenomena, C. Domb and J.L. Lebowitz (formerly M.S.
Green), Academic; no longer pub.

Other Noteworthy Advanced Texts:

Radu Balescu, Equilibrium and Nonequilibrium Statistical
Mechanics, Wiley, 1975; out of print [0471046000]; esp.
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J.R. Dorfman, An Introduction to Chaos in Nonequilibrium
Statistical Mechanics, Cambridge, 1999; pb [0521655897].

R.P. Feynman, Statistical Mechanics, W.A. Benjamin, 1972;
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R. Kubo, M. Toda, and N. Hashitsume, Statistical Physics II:
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G. F. Mazenko, Equilibrium Statistical Mechanics, Wiley,
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H. Eugene Stanley, Introduction to Phase Transitions and
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Advanced Specialized Texts:

Radu Balescu, Statistical Dynamics: Matter out of
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J.P. Hansen and I.R. McDonald, Theory of Simple Liquids,
3rd ed., Academic, 2006 [978-0123705358].

Extensive compilation of texts, inc. most of the above:
<http://stp.clarku.edu/books/#grad/> ; see also a commented
list at [http://crab.rutgers.edu/
~cowley/thermal1/textbooks.htm](http://crab.rutgers.edu/~cowley/thermal1/textbooks.htm)

Books with underlined 1st author are on reserve at EPSL.

Last update: Jan 16, 2014