

PHYSICS 847: SPRING QUARTER 2009

STATISTICAL PHYSICS II

Time & Place: Tue. and Thu. 09:30 - 11:18 AM; Smith 5024

Instructor: Professor Mohit Randeria
office: 2024 Physics Research Building
phone: 292 2457 email: randeria@mps.ohio-state.edu

Course Website:
www.physics.ohio-state.edu/~randeria/courses/physics_847/physics_847.htm

Prerequisites: Physics 846 (or equivalent)

Specifically, I will assume that students are familiar with thermodynamics and with Statistical Mechanics concepts such as the microcanonical, canonical, and grand canonical ensembles; entropy, Helmholtz and Gibbs free energies, chemical potential; classical ideal gas, Fermi-Dirac and Bose-Einstein distributions.

Text Book: “*Equilibrium Statistical Physics*”
by M. Plischke and B. Bergersen, 3rd Edition, (World Scientific, 2006).

Syllabus:

Bose-Einstein Condensation
Phase Transitions
Mean Field Theory
Critical phenomena and scaling
Elementary ideas about renormalization group

Time permitting, I will also cover additional topics like:
Monte Carlo simulations
Linear response theory

Course Grades

Home Work: 30%
Mid-Term Exam: 30%
Final Exam: 40%

Exam Dates

- Mid Term: Tuesday, May 5, in class
- Final Exam: Thursday, June 11, 9:30 - 11:30 AM (**as announced in the University Final Exam Schedule**)

Grader: Nicolas Bock (bock-garcia.1@osu.edu)