PY 482 COURSE INFORMATION Spring 2013

Instructor: Sidney Redner, redner@bu.edu, SCI 321, 353-2618
Office Hours: Tues. 10:30–11:30 & Fri. 10:30–11:30.
Course Website: `physics.bu.edu/~redner/482.html`.

General: This is a seminar course on condensed-matter and biological physics. At each course meeting, a departmental faculty member will give a 45-minute generally-accessible presentation about an aspect of their current research at the Scientific American level. After each presentation, I will provide more general context for each talk and also answer detailed questions. The goal is to expose you to current research in an enjoyable way.

Class Schedule: There will be 14 weekly class meetings on Thursdays from 3:30–5pm in SCI 352 starting January 17, according to the schedule given below.

Date	Speaker	Title
Jan 17	S. Redner	Kinetics of the Ising Model
Jan 24	H. E. Stanley	Physics of Complex Systems with Applications to Liquid State Physics, Econophysics, and Failure Cascades in Interdependent Networks
Jan 31	K. Ludwig	Making Functional Surfaces & Thin Films - Where are the Atoms?
Feb 7	P. Mehta	Thermodynamics of Cellular Computation
Feb 14	D. Campbell	Bose Einstein Condensates in Optical Lattices
Feb 21	B. Goldberg	Graphene Pulled Across a Surface Violates Amonton's Force Law (Increased Load Increases Friction)
Feb 28	K. Smith	Studying Metal to Insulator Transitions in Solids using Synchrotron Radiation-based Spectroscopies
Mar 7	M. El-Batanouny	Massless Electrons, Massive Ions and Topological Insulators
Mar 21	W. Klein	Statistical Physics, Earthquakes and Economics: Simple Models and the Real World
Mar 28	A. Sandvik	Quantum Magnetism
Apr 4	C. Chamon	Designing Electronic Properties of Materials by Driving them Out-Of-Equilibrium: The Case Study of Gaps in Graphene
Apr 11	R. Bansil	Gels, Bacteria and Ulcers
Apr 25	R. Averitt	Ultrafast Spectroscopy of Condensed Matter
May 2	S. Erramilli	Why are Proteins so Fast?

Homework: There may be suggestions for further reading accompanying some of the presentations. You will be expected to write two short (no more than 3-page) essays during the semester to discuss what you've learned from talks of your preference.

Grading: The course grade will be primarily based on class attendance and on essay scores according to the rough scheme given below.

C: miss 3 or more meetings; no class participation; poor essays
B: miss no more than 2 meetings; some class participation; OK essays
A: miss no more than 1 meeting; significant class participation; good essays