

Dynamics and Interactions of Proteins and Nucleic Acids

BMB961 (sec. 1)/**CEM987** (sec. 1)/**PHY 905** (sec. 3)

Fall 2009

Instructors: Michael Feig, Shayantani Mukherjee

Time: Tuesday 3pm – 3:50pm (BCH 502A) Lecture
Thursday 3pm – 5pm (BCH 202) Computer Lab

This graduate-level special topics course explores the use of advanced computational methods for the study of biological macromolecules through a combination of lectures and weekly hands-on lab sessions. The last weeks of this course will be devoted to an extended project. This course will focus on the following topics:

- Molecular dynamics simulations
- Explicit and implicit solvent representations
- Enhanced and biased simulation techniques
- Free energy calculations (protein-ligand binding)
- Simplified models (coarse-graining)
- Normal mode analysis

This course targets an interdisciplinary audience from biological sciences, chemistry, physics, and other quantitative disciplines. It emphasizes practical training over theoretical foundations. Previous experience with scientific computing environments and some background in structural biology, physical chemistry, and/or biophysics are desirable.

This course is an ideal follow-up to BMB961 “*Concepts in Protein Structure Analysis and Modeling*”.

A preliminary syllabus and other information is available at:
<http://feig.bch.msu.edu/main-teaching-bmb961-fs09.html>

Please contact Michael Feig (feig@msu.edu) for further information.