

**Physico-Chemical Basis for Bioengineering**  
**Instructor: Ravi Radhakrishnan, Bioengineering**

**BE 324, Fall 2005**

**Lectures** M, W, F 11.00 AM to 12 Noon at **Moore 216**

**Recitation** W 1 PM to 2 PM at **Towne HLMR**

**Pre-requisite:** Physics 150,151, Math 240, Chemistry 101, 102.

**Course Textbook** Molecular Driving Forces  
K. A. Dill and S. Bromberg  
Taylor and Francis publications  
ISBN: 0-8153-2051-5  
Paperback edition

**Reference textbooks**

**Biological Physics**  
**Energy, Information, Life**  
Philip Nelson  
ISBN: 0-7167-4372-8

**Physical Chemistry for the Biosciences**  
**Raymond Chang**  
ISBN 1-891389-33-5

**Quantum Theory (Paperback)**  
**David Bohm**  
**ISBN:** 0486659690  
Dover Publications

**Course description:** This course aims to provide *theoretical, and conceptual* principles underlying biomolecular and biological systems. The course will start with basic and advanced concepts in physical chemistry and thermodynamics and introduce statistical mechanics as a tool to understand molecular interactions. The applications will be of relevance to bioengineering and biology disciplines. The course will not shy away from mathematical formulations and will stress the molecular perspective.

There will be weekly recitations which are an integral part of this course. Recitation will comprise of illustrations of problems and concepts (worked out by a Teaching Assistant) and quizzes conducted by the TA and graders. These will contribute to a significant fraction of the overall evaluation.

One teaching assistant and a few graders will help with the recitations and the grading. The instructor and the teaching assistant will conduct office hours.

**Details available at Penn's Black Board Site!**