

Physics 452.009/552.008: Biophysics

Three Credits

The course will teach physical biology to physics students and the basic physics of cells to biology students. Some topics:

- Basic physical concepts
- Cells
- Elementary probability
- Random walks, friction, & diffusion
- Viscous fluids and Reynolds numbers
- Entropy, temperature, and free energy
- Entropic forces
- Chemical forces and self-assembly
- Cooperative transitions in macromolecules
- Enzymes and molecular devices
- Machines in membranes
- Nerve impulses

The course has no prerequisites. First-year physics and elementary calculus are not required, but they would be helpful, as would a vague memory of high-school chemistry and biology. The course is open to all students. Undergraduates should sign up for 452.009, graduates students for 552.008.

The textbook is *Biological Physics* by Philip Nelson (W. H. Freeman, 2003, ISBN: 0716743728).

Class will meet on Mondays and Wednesdays during the spring of 2006 from 5:30 to 6:45 PM in room 5 of the physics building on Lomas at Yale.