

PHYSICS 347 Introduction to Biological Physics

Contact Info: Eldon Emberly, eemberly@sfu.ca, 778-782-3701, SCB9684

Time & Place: Tu 10:30-11:20 AQ5046, Th 9:30-11:20 AQ2120

Website: <http://www.sfu.ca/~eemberly/phys347>

Office Hours: 2:30 – 3:30 on Tuesdays, but usually available at other times on Tu, Th, Fr.

Text:

“*Physical Biology of the Cell*” by Phillips, Kondev and Theriot. On reserve.

Other Texts: “*Random Walks in Biology*” by Howard Berg. On reserve.

“*Molecular Biology of the Cell*” by Bruce Alberts et al. On reserve.

Prerequisites:

This course is intended for those majoring in Physics, Biology or Molecular Biology. Completion of 45 credit hours in a science program, including BISC 101, CHEM 122, MATH 152 (or 155), PHYS 121 (or 102 or 126 or 141).

Topics:

1. Molecular motion and the cellular environment
2. Random walks and diffusion
3. Fluids and life at low Reynolds number
4. Entropy, free energy & biological complexity
5. Cellular Computation: genetic switches
6. Mechanical properties of biopolymers
7. Molecular Motors
8. Nerve Impulses

Grading:

6 Assignments (bi-weekly):	30%
2 Midterms:	2 x 15% = 30 %
Final Exam:	40%

Important Dates:

Oct 11 – Midterm 1 (in class)

November 8 – Midterm 2 (in class)

Final – Dec 13 12:00 – 3:00 PM (place TBA)