

PHYSICS 101-3

Physics for the Life Sciences I

TEXTBOOK: *"Physics: Custom Edition For Simon Fraser University"*

Author: Giancoli

Publisher: Pearson

COURSE DESCRIPTION:

Force and motion, conservation of energy and momentum, fluids, properties of soft matter and thermal physics with applications taken from the life sciences.

Prerequisite: BC Principles of Physics 12 or PHYS 100 or equivalent. This prerequisite may be waived, at the discretion of the department, as determined by the student's performance on a regularly scheduled PHYS 100 final exam. Please consult the physics advisor for further details.

Corequisite: MATH 150 or 151 or 154 or 157; BISC 100 or 101 or 102. Students with credit for PHYS 120, 125 or 140 may not take PHYS 101 for further credit.

Tutorials will be held in the open workshop format, i.e. unstructured periods each week when teaching assistants are available to answer questions and help with problem assignments.

Quantitative/Breadth-Science.

Topics:

1. Review of linear kinematics and dynamics
2. Friction and viscous drag; drag forces in cells
3. Work and energy; mechanical work in the cell
4. Rotational dynamics; flagellar torques
5. Problem-solving in statics
6. Oscillations; standing and traveling waves
7. Wave power; human hearing
8. Introduction to fluids; buoyancy
9. Fluid flow and viscosity
10. Random walks; diffusion; macromolecular sizes
11. Kinetic theory of gases
12. Properties of materials, including cell components
13. Introductory thermodynamics

GRADING: 10% Assignments
20% Midterm 1
20% Midterm 2
50% Final Exam

GENERAL:

Students who cannot write their exam during the course's scheduled exam time must request accommodation from their instructor in writing, clearly stating the reason for this request, before the end of the first week of classes.