
Description: Physics in Biology and Medicine, Fourth Edition explores concepts in physics as they apply to living systems. The discussion is organized into 18 chapters encompassing thermodynamics, electricity, optics, sound, solid mechanics, fluid mechanics, and atomic and nuclear physics. Each chapter provides a brief review of the background physics before focusing on the applications of physics to biology and medicine. The book describes biological systems and presents calculations of the forces exerted by muscles, as well as the maximum impact that can be sustained by a body without injury, the height from which a person can jump, the effect of an animal's size on the speed at which it can run, and the circulation of blood in the body. Using the theory of fluids, the role of diffusion in the functioning of cells and the effect of surface tension on the growth of plants in soil are also analyzed. Using the principles of electricity, the conduction of impulses along the nervous system is investigated. Each section contains problems that explore and expand some of the concepts, and some of the techniques of physics and engineering are applied to the study of living systems. Moreover, the use of lasers in medical diagnostics and the applications of nanotechnology in biology and medicine are considered. This book will be a valuable resource for students and professors of physics, biology, and medicine, as well as for applied health workers.

- Provides practical techniques for applying knowledge of physics to the study of living systems
- Presents material in a straightforward manner requiring very little background in physics or biology
- Includes many figures, examples and illustrative problems and appendices which provide convenient access to the most important concepts of mechanics, electricity, and optics in the body

Contents:

Chapter 1: Static Forces
Chapter 2: Friction
Chapter 3: Translational Motion
Chapter 4: Angular Motion
Chapter 5: Elasticity and Strength of Materials
Chapter 6: Insect Flight
Chapter 7: Fluids
Chapter 8: The Motion of Fluids
Chapter 9: Heat and Kinetic Theory
Chapter 10: Thermodynamics
Chapter 11: Heat and Life
Chapter 12: Waves and Sound
Chapter 13: Electricity
Chapter 14: Electrical Technology
Chapter 15: Optics
Chapter 16: Atomic Physics
Chapter 17: Nuclear Physics
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