

Basic Knowledge in Physics

Introduction: Physical quantities - measurement units - scientific notation - scalar and vector quantities - examples of physical quantities: speed, acceleration, force, kinetic and potential energy, work. Newton's Laws.

Electrostatics and Magnetism: atomic structure and electrical charges - Coulomb's law - difference of potential - electric current - magnetic field - electromagnetic induction.

Waves: Introduction to undulatory motion - Longitudinal and transversal waves - Interference and diffraction - Mechanical waves: sound waves and ultrasonic waves - Electromagnetic waves – Frequency and wavelength - The spectrum of electromagnetic waves.

Optics: introduction to geometrical optics - visible light - laws of reflection and refraction - refractive index and the speed of light - thin lenses - converging and diverging lenses - real and virtual images - the optical microscope.

Texts and websites

- Basic Physics: A Self-Teaching Guide, 3rd Edition (Wiley Self-Teaching Guides) 3rd Edition by Karl F. Kuhn and Frank Noschese.
- <http://www.physicsclassroom.com>.