

Systems

- Vector systems and boundaries
- Force systems
- Newton's law
- Momentum in closed systems
- Machines, mechanical advantage and feedback
- Energy systems
- Thermal systems
- Fluids and hydraulics
- States of matter
- Waves and boundaries
- Sound waves
- Light waves
- Light rays, reflection, refraction
- Mirrors, lenses, images
- Light diffraction and interference
- Electric charges and charge transfer
- Electric fields
- Electric circuits
- Magnetic fields
- Atomic energy levels and boundaries
- Nuclear systems and reactions
- Electron motion and energy bands
- Quantization of energy

Constancy

- Invariance
- Uncertainty of measurement
- Constant velocity and acceleration
- Vector equilibrium
- Symmetrical motion
- Projectile motion
- Force stability
- Equilibrium in simple harmonic motion
- Invariance and constancy in motion
- Constancy of momentum
- Constancy of energy
- Conservation of momentum
- Conservation of energy
- Thermal stability and equilibrium
- Invariance of matter
- Fluid/pressure symmetry
- Symmetry of wave motion
- Reflection and refraction
- Mirrors, objects and images
- Lenses, objects and images
- Speed of light
- Electric charges and charge transfer
- Conservation of electric charge
- Symmetry in: electric charges, electric fields, electric circuits, magnetic fields
- Equilibrium of: charged bodies, electrical circuits, electrical fields and forces, magnetic fields and forces
- Duality of waves and particles
- Symmetry of light emission and absorption
- Symmetry in nuclear reactions
- Stability of nuclei
- Particles and antiparticles
- Conservation, nuclear reactions
- Equilibrium in photoelectric effect
- Constancy of spectra
- Conservation of energy and momentum

Patterns of Change

- Variables and their relationships
- Velocity and position
- Graphs

- Changes in motion
- Forces and motion
- Cyclical motion
- Randomness
- Chaos
- Entropy
- Change of state
- Cycles in wave motion
- Reflection and refraction
- Diffraction and interference
- Changing electrical fields
- Changing magnetic fields
- Energy cycles in electrical circuits
- Uncertainty principle
- Randomness in radioactive decay
- Nuclear reactions
- Probability in the quantum theory

Scale

- Range of size
- Sensitivity to scale
- Graphs
- Forces
- Temperature scales
- Scales of order
- Capillary action
- Surface tension
- Crystals, liquids, states of matter
- Frequency and wavelength
- Decibel scale
- Diffraction effects
- Electrical charges and forces
- Electric field strength
- Magnetic field strength
- Electromagnetic waves and spectrum
- Size/scale of atoms, nuclei, and quarks
- Scales of energies
- Scales of fissions, chain and fusion reactions
- Radioactive half-lives
- Range of nuclear forces

Models

- Mathematical models
- Motion, position, distance
- Acceleration
- Vectors
- Forces
- Projectile motion
- Gravitation
- Momentum
- Machines, work, power
- Kinetic and potential energy
- Kinetic-molecular theory
- Thermal energy and temperature
- Evaporation and condensation
- States of matter
- Longitudinal and transverse waves
- Doppler shift
- Polarization
- Reflection and refraction
- Mirrors and lenses
- Light diffraction and interference
- Electrical charges
- Electric field lines
- Electric circuit diagrams
- Magnetic field lines
- Quantum model of atomic structure
- Nuclear equations

Electron gas model of conductors
Band theory of electrical conduction
Fundamental particles and the quark model
Nature and Values of Science
World view
Scientific inquiry and enterprise
Values and attitudes
Scientific inquiry and process
Vector methods
Graphical methods
Newton's law
Heat engines, technology
Hydraulics
Sound, music, instruments
Light, color, illumination
Optics, technology
Uses of electricity
Development of electromagnetism
Generation and transmission of electricity
Development of atomic theories
Application of spectroscopy
Nuclear technology and applications
Laser technology
Electronic devices
Nuclear bombardment techniques