

**Illinois Learning Standards Goal 12
Contents Standards Mapping**

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PHYSICAL SCIENCE	Boardworks High School Physics Presentations
C. Know and apply concepts that describe properties of matter and energy and the interactions between them.	
12.C.4a Use kinetic theory, wave theory, quantum theory and the laws of thermo-dynamics to explain energy transformations.	Changing State Conduction and Convection Observing Line Spectra Particles in Action Wave Properties of Particles
12.C.4b Analyze and explain the atomic and nuclear structure of matter.	Nuclear Fission Nuclear Fusion Structure of the Atom
12.C.5a Analyze reactions (e.g. nuclear reactions, burning of fuel, decomposition of waste) in natural and man-made energy systems.	Energy Transfers Fossil Fuels Nuclear Fusion Nuclear Fission
12.C.5b Analyze the properties of materials (e.g. mass, boiling point, melting point, hardness) in relation to their physical and/or chemical structures.	Changing State Particles in Action
D. Know and apply concepts that describe force and motion and the principles that explain them.	
12.D.4a Explain and predict motions in inertial and accelerated frames of reference.	Acceleration Changes in Momentum Circular Motion Displacement, Velocity and Acceleration Newton's First Law Newton's Second Law Momentum Projectiles Speed and Velocity

<p>12.D.4b Describe the effects of electromagnetic and nuclear forces including atomic and molecular bonding, capacitance and nuclear reactions.</p>	<p>Nuclear Fission Nuclear Fusion Structure of the Atom</p>
<p>12.D.5a Analyze factors that influence the relative motion of an object (e.g. friction, wind shear, cross currents, potential differences).</p>	<p>Acceleration Circular Motion Changes in Momentum Displacement, Velocity and Accelerations Free-Body Diagrams Friction Gravitational Potential Energy Gravity Kinetic Energy Momentum Newton's First Law Newton's Second Law Newton's Third Law Speed and Velocity</p>
<p>12.D.5b Analyze the effects of gravitational, electromagnetic and nuclear forces on a physical system.</p>	<p>Electromagnetic Waves Gravitational Potential Energy Gravity Nuclear Fission Nuclear Fusion Quarks and Antimatter Radioactivity</p>