Energy

Energy

- Energy is the ability to do work
  - Energy and work are so closely related that they are both measured in Joules

Types of Energy

- Potential energy is stored energy
  - Gravitational potential energy is stored due to position/height
    - We will talk about this one in great detail later
  - Elastic potential energy is stored due to shape
    - Stretching or compressing
  - Chemical energy is stored in chemical bonds
    - When a chemical reaction occurs, this energy is either released or stored
  - Nuclear energy is stored in the nucleus of the atom
    - When a nuclear reaction occurs, this energy is released

Types of Energy

- Kinetic energy is associated with moving things
    - We will talk in great detail about kinetic energy later
  - Electrical energy is associated with flowing electrons
    - We will talk more about this in another unit
  - Electromagnetic energy moves in waves and is associated with changing electrical and magnetic fields
    - We will talk more about this in another unit

Types of Energy

- Some types of energy are a combination of both potential and kinetic energies
  - Mechanical energy is the sum of an objects potential and kinetic energies
  - Thermal energy is associated with heat
    - We will talk about this is great detail in the next video

Law of Conservation of Energy

- The law of conservation of energy states that energy cannot be created or destroyed, it can only change forms
- An energy conversion occurs when energy changes forms
- Many energy conversions go unnoticed

An Example of Conservation

- When you are riding a bike on a flat path, and stop pedaling, the bike eventually stops. The moving bike had kinetic energy. Where did it go if it wasn’t destroyed?
  - The kinetic energy was slowed & stopped because of the frictional forces. The work done by friction changed the kinetic energy into thermal energy.