

Physics 10

Big Idea: **Energy is conserved and its transformation can affect living things and the environment.**

Law of Conservation of Energy

- Types of energy

- Calculations and unit conversion

- Gravitational Potential Energy $E_p = mgh$

- Kinetic energy $E_k = \frac{1}{2}mv^2$

- Conservation of Energy $E_{ki} + E_{pi} = E_{kf} + E_{pf}$

Local and global impacts of energy transformations from technologies

- transfer of energy in closed and open systems

- heat ($E_h = mc\Delta T$)

- roller coasters, pendulums

Nuclear energy and radiation:

- How does energy in the form of radiation affect living things?

 - ionizing versus non-ionizing

 - Types of radiation and the electromagnetic spectrum

- Nuclear Reactions

 - Alpha, Beta, Gamma particles

 - Nuclear decay equations

 - Radioactive dating and half-lives

 - Fission vs fusion

- technologies and applications, and implications?

 - Nuclear power, medical isotopes, tanning beds, dental X-rays, food irradiation