Module 8: Energy and Work

Keywords: potential, kinetic energy, work, conservative force.

Formulas:

$KE_i + PE_i + W_{ext.} = KE_f + PE_f$ — energy conservation

$KE = \frac{1}{2}mv^2$

$W_{cons} = -|F_{cons}||\Delta d| \cdot \cos\theta$

$PE_g = mgh$

$PE_s = \frac{1}{2}kx^2$

$Power = P = \frac{W}{t} = \frac{\Delta E}{t}$

Key ideas:

• Energy of closed system is always conserved

• Work done by a conservative force over closed path is zero

• Work is the area between the force curve and position axis.

General approach:

• Identify the closed system. → apply energy conservation.

• Pay attention to the sign of work done!

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