UNIT VII - ENERGY
(WITH LESS WORK)

Instructional Goals

1. **View energy interactions in terms of transfer and storage**
   Develop concept of relationship among kinetic, potential & internal energy as modes of energy storage
   emphasis on various tools (especially pie charts) to represent energy storage
   apply conservation of energy to mechanical systems

2. **Variable force of spring model (see lab notes: spring-stretching lab)**
   Interpret graphical models
   area under curve on **F** vs **x** graph is defined as elastic energy stored in spring
   Develop mathematical models
   F = k**x**
   $E_{el} = \frac{1}{2}kx^2$

3. **Develop concept of working as energy transfer mechanism**
   Introduce conservation of energy
   focus on $W = \Delta E$ in this unit
   Working is the transfer of energy into or out of a system by means of an external force. The energy transferred, W is computed by $W = F_{\parallel} \cdot \Delta x$
   the area under an F-x graph, where F is the force transferring energy.

   Energy bar graphs and system schema represent the relationship between energy transfer and storage

4. **Contrast conservative vs non-conservative forces**
   Energy transfers by conservative forces are reversible

5. **Conservation of energy lab investigation - (see lab notes: 3 optional approaches)**

6. **Power (no specific labs)**
   Define power- rate at which energy is transferred: $P = \frac{W}{t}$
   SI unit: watt