3. Work and Energy:

A. Definition of work, power and kinetic energy. What are their units? Are they scalar or vector?

B. Work-energy theorem: $W = \Delta K = K_f - K_i$

C. How do we calculate work and kinetic energy?

Work done along by constant force only.

Work done by a force which is not at the same direction of the displacement

Special case, work done by gravitational force.

What about the work done by the normal force or friction?

D. Conservation of mechanical energy.

1. In what situation, the total energy is conserved?
2. What are the potential energy of gravity and potential energy of spring?
3. Force from the spring: Hooke's law.

F. Applications of work-energy theorem:

Using work-energy theorem to find out velocities, height, etc.

4. Momentum and impact.

Basic concept of momentum and momentum conservation.