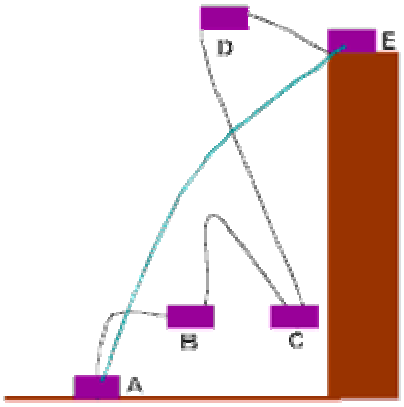
Physics 12 Section 6-5
Conservative and Non Conservative Forces

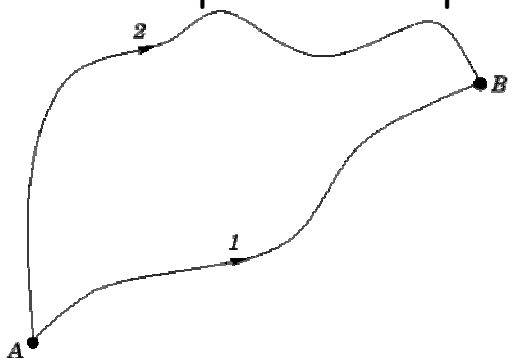
1. A conservative force is a force that when work is done against this force the work done does not depend on the path taken only the initial and final position.



Example: Gravity is a conservative force since the amount of work done in lifting an object is the same regardless of the path taken. The amount of work to lift a 10N object 1m is: W=Fxd or 10J

Conservative forces:	Non-conservative forces:
Gravitational	Friction
Elastic	Air resistance
Electric	Tension in a cord
	Motor or rocket propulsion
	Push or pull by person

2. A non-conservative force is a force that when work is done against this force the work done does depend on the path taken.



Example: Friction is a non-conservative force since the amount of work done in pushing an object from point A to B depends on the path taken.

3. The net work done on an object can now be thought of as the work done by the conservative and non-conservative forces.

$$W_{net} = W_c + W_{nc}$$

W_{net} = ΔKE from the work energy principle

$$\Delta KE = W_c + W_{nc}$$

Work done by conservative forces can be expressed as potential energy

$$Wc = -\Delta PE$$

$$\Delta KE = -\Delta PE + W_{nc}$$

$$\Delta KE + \Delta PE = W_{nc}$$

If there are no non-conservative forces then the above becomes

$$\Delta KE + \Delta PE = 0$$

This means that the total mechanical energy of a system remains constant.

$$E = KE + PE$$

If only conservative forces are acting, that total mechanical energy of a system neither increases nor decreases in any process. It stays constant-it is conserved.