Housekeeping

- Thurs: ME 27
- Sun: WA 13
- Tues: PL 26
- Final: Starts next week!
Definition of Work

Work of a force

A force does work when it undergoes a displacement in the direction of the line of action.

The work $dU$ produced by the force $F$ when it undergoes a differential displacement $dr$ is given by

$$dU = F \cdot dr$$

Work of a couple

$$dU = M k \cdot d\theta k = M \, d\theta$$
Virtual Displacements

A virtual displacement is a conceptually possible displacement or rotation of all or part of a system of particles. The movement is assumed to be possible, but actually does not exist.

Principle of Virtual Work

The principle of virtual work states that if a body is in equilibrium, then the algebraic sum of the virtual work done by all the forces and couple moments acting on the body is zero for any virtual displacement of the body. Thus,
So what’s the point....
The thin rod of weight $W$ rests against the smooth wall and floor. Determine the magnitude of force $P$ needed to hold it in equilibrium.
Determine the angle for equilibrium of the two-member linkage. Each member has a mass of 10 kg.
Determine the required force $P$ needed to maintain equilibrium of the scissors linkage when the angle is 60 degrees. The spring is unstretched when the angle is 30 degrees.