Summary: Vibrations 1 (EOMs)

1. *GOAL*? To derive the differential equation of motion (EOM):

$$m\ddot{x} + c\dot{x} + kx = f(t)$$

2. *HOW*?
   Good news: You already know how to do this! The four-step plan:
   1) *FBD*; 2) *Newton/Euler*; 3) *Kinematics*; 4) *Solve* (here "solve" means combining together into a single EOM.

3. *THE CATCH*: You *EOM must describe motion for all time*, not just a single instant in time. Define your coordinate(s) at the start, and stick with them throughout. If you do, you are all set.

4. *WHAT's NEXT*? We will spend the rest of the semester solving our differential EOMs. You already know how to do that also! Woo Hoo!