Lecture: January 26

• Chapter 3: continued
  – Writing equations of motion:
    • F=ma
    • $K_{eq}$, $M_{eq}$, $C_{ed}$: find the kinetic (or potential) energy and set it to $\frac{1}{2} M_{eq} v^2$ ($1/2 \ K_{eq} x^2$). For $C_{eq}$: match power loss: $C_{eq} v^2$
    • Raligh’s methods (to get natural frequency only)
    • Energy methods: if energy is conserved: then derivative of total mechanical energy is zero. If not, the derivative is net power in (work in minus power taken out by damping): Applied to example 3.7.6
January 26

• Chapter 4:
  – Forcing function = $F_o \sin \omega t$: solving via Laplace Transform: solve for the steady state condition
January 28

• Chapter 4:
  – Transfer function definition (see class handout chapter 4)
  – Getting steady state based on transfer function
  – Dimensionless form (pp 212-213), ratio of peak displacement to static deflection, plots on pp 214 (peak values, how to guess the shape, etc)
  – Section 4.2: Beating, Resonance and Bandwidth
  – Instrument design (page 223-225)vibrometer vs accelerometer