Dynamics

- Force = Mass x Acceleration

  - $F = ma$

- Spring Force (Hooke's law) = Elastic constant x extension

  - $F = kx$

- Weight = Mass x gravity

  - $W = mg$

- Momentum = Mass x Velocity

  - $p = mv$

- Force = Change in momentum / time

  - $F = \dfrac{\Delta p}{\Delta t} = \left(\dfrac{m(v2 - v1)}{t2 - t1}\right)$

- Impulse = Force x time

  - $J = F\Delta t \; ; J = \Delta(mv)$

- Moment = Force x Perpendicular distance from the pivot

  - $Moment = F \; x \; d$

- Pressure = Force / Area

  - $P = \dfrac{F}{A}$

- Density = Mass / Volume

  - $\rho = \dfrac{m}{V}$

- Hydraulic Pressure = density x gravity x Height

  - $P_h = \rho g h$

  - $\Delta P_h = \rho g \Delta h$