MEEN 382 Basic Measurements
Exam 1 Formula Sheet

$$N = \sum_{i=0}^{n-1} d_i b^i$$

$$e = x_i - x_t$$

$$e_s = x_{avg} - x_t$$

$$e_r = |x_i - x_{avg}|$$

$$s = \frac{d(output)}{d(input)} = \frac{\Delta output}{\Delta input}$$

$$V_2 = aR\frac{5V}{1023}$$

$$V_2 = V_s\frac{R_2}{R_t + R_2}$$

$$R_t = R_2\left(\frac{5V}{V_2} - 1\right)$$

$$T = \frac{B}{ln\left(\frac{R}{R_1}e^{\frac{B}{T_1}}\right)}$$

$$B = (A'A)^{-1}A'Y$$

$$q = hA\left(T_{mouth} - T_{blub}\right) = mc\frac{dT}{dt}$$

$$T_{mouth} - T_{blub} = \frac{mc}{hA}\frac{dT}{dt}$$

$$\tau = \frac{mc}{hA}$$

$$\frac{x(t) - x_{ss}}{x_0 - x_{ss}} = e^{\frac{-t}{\tau}}$$

$$\tau\dot{x}\left(t\right) + x\left(t\right) = x_{ss}\Phi\left(t\right)$$

$$\tau = \frac{x_{ss} - x_0}{\dot{x}(0)}$$