# ECE 463/663 - Homework #12

LQG/LTR.  Due Monday, April 26th

**LQG / LTR**

1) Design a control law so that the ball and beam system behaves like the following reference model:

$$y_m = \left( \frac{0.5}{s^2+s+0.5} \right) R$$

1) Give a block diagram for your controller

2) Plot the step response of the model and the linearlized plant for yor control law for

- $Q = 100 \ e^2$ or $100 \ z^2$
- $Q = 1{,}000 \ e^2$ or $1{,}000 \ z^2$
- $Q = 10{,}000 \ e^2$ or $10{,}000 \ z^2$