

MECH 436 – Applied Controls

PID Controller Tuning

For this laboratory you will use the MATLAB program to simulate a feedback control system. Each individual has been assigned a specific system which you should use.

For your system do the following:

1. Tune a PD controller to respond as fast as possible to a step input with less than 5% overshoot and a steady state error of less than 1%.
2. Tune a PID controller to respond as fast as possible to a step input with less than 5% overshoot and a steady state error of less than 1%.
3. Tune a PID controller to respond as fast as possible to a step input with no overshoot and a steady state error of less than 0.5%.

Turn in:

- Short memo with the system description and your gains
- Plot of your systems response for each case
- Compare the results of your 'controlled' system to the open loop response of the same system to a step input.