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| **Memorandum** | Image result for cal poly mechanical engineering logo |

**To:** Prof. Denis Gingras, California Polytechnic State University - SLO

**From:** Rahul Goyal, Keyanna Henderson

**Date:** March 11, 2019

**Subject:** Lab 4 – Hydraulic Positioning System

Characterization Graphs

Figure 1. Characterization graph for linear potentiometer.

Figure 2. Characterization graph for servo-valve.

Combination Graphs for Step Input



Figure 3. Step response of system with PD controller.



Figure 4. Step response of system with PID controller.

Combination Graphs for Ramp Input

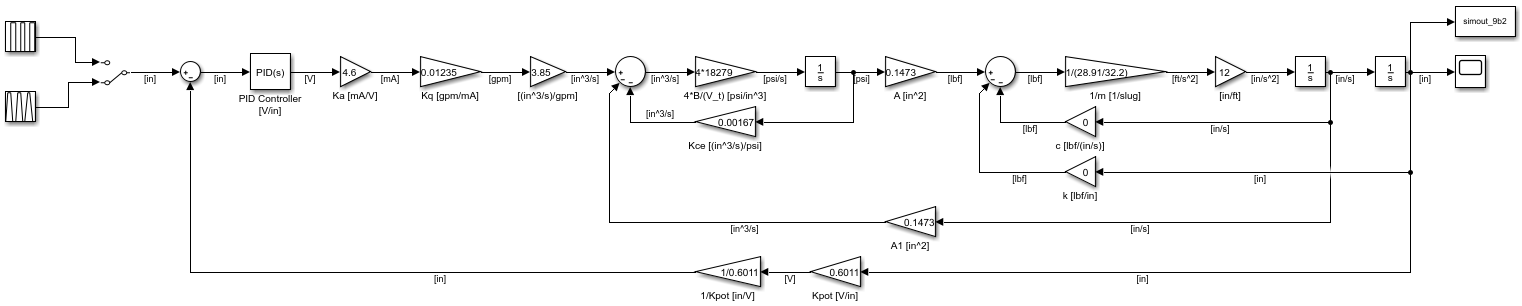


Figure 5. Ramp response for system with P controller.



Figure 6. Ramp response for system with PI controller.

System in Simulink



Derivation of Linear Transfer Function

Analysis for Kce and B/Vt

Root Locus for Open Loop with Closed Loop Poles

