

## ECE410 Lab 3 Report Format

### Cover Page:

- Title and course number
- Names and student numbers
- Lab date
- Submission date

### Note:

- Only one report per group, but each student must hand in his/her prep at the beginning of the lab
- Both hand-written and typed reports are acceptable
- Do not use a lab book for the report
- Lab report is due 2 weeks after your lab session

# 1. Introduction

- Introduction and a **brief** explanation of the lab purpose

# 2. Lab Preparation

- This must be handed in on the day of your lab, one prep per student.

# 3. Simulated Step Response

Closed loop step response graph from simulation.

- Position output  $y(t)$
- Reference signal  $y_d(t)$
- Control signal  $u(t)$

Pole placement original:

State-feedback poles:	Observer poles:

System state values plotted versus time while a step is applied to the input  $y_d(t)$ .

- Actual states  $z_1$  and  $x_2$  from plant
- Estimated states  $z_1$  and  $x_2$  from observer

## 4. Actual Step Response

Pole placement after readjusting to satisfy design specifications:

State-feedback poles:		Observer poles:	

Closed loop step response graph  
using real data.

- Position output  $y(t)$
- Reference signal  $y_d(t)$
- Control signal  $u(t)$

## 5. Comparison of Simulated versus Actual

Closed loop step response graph

- Simulated position output  $y(t)$
- Actual position output  $y(t)$
- Reference signal  $y_d(t)$
  
- Final values of  $K$  and  $L$ .

6. Summary: Summarize your experimental results, comment on any experimental difficulties, and the performance of your final controller.