

ME 560, SPRING 2003, RAHN
LAB 2: Transform-Based Control Design

The objective of this lab is to give ME 560 students an opportunity to design and experimentally implement a digital controller using transform (transfer function) techniques.

Approach:

- Choose a control objective and performance metrics for your system (overshoot, rise time, ...).
- Based on a dynamic model of the plant, conduct analyses to select a control architecture (e.g. PID, Lead/Lag, ...) and set of gains that provide the best possible performance.
- Implement your digital controller and experimentally measure the step and frequency response.

Deliverables

1. Control objective and performance metrics
2. Chosen control architecture
3. Plots showing root locus design and theoretical closed loop step and frequency responses.
4. Plots of experimental closed loop step and frequency responses
5. Table summarizing performance
6. Discussion of discrepancies between theory and experiment.