

CHE 323: Process Control

COURSE OUTLINE

1. Introduction
 - Control system examples
 - Control system elements
 - Reasons for control
 - What does control engineer
 - Control implementation
2. SISO Linear system tools
 - Basic Modeling
 - Linearization
 - Laplace Transform
 - Solution of linear ODEs
3. SISO Linear systems Analysis
 - First order systems
 - Second order systems
 - Higher order systems
 - Transfer function and Block diagram
4. PID controllers
 - Single loop feedback block diagram
 - Closed-loop transfer function
 - PID control algorithm
 - Closed-Loop analysis
 - Stability analysis
 - Tuning methods

Grading Policy

Homework, assignments	10%
2 Mid term Exams	30%
Term project	10%
Final Exam	50%

References:

1. Stephanopoulos, G., *Chemical Process Control: An Introduction to Theory and Practice*, Prentice Hall, 1984.
2. Marlin, T., *Process Control: Designing Processes and control systems for dynamic Performance*, McGraw Hill, New York, 1995.
3. Luyben, W., *Process Modeling, Simulation and Control for Chemical Engineers*, McGraw Hill, New York, 1990.
4. Smith, C. and Corripio, A., *Principles and Practice of Automatic Process Control*, Wiley & sons, New York, 1997.
5. Seborg, D., Edgar, T., and Mellichamp, D., *Process Dynamics and Control*, Wiley & sons, New York, 1989.
6. Stephanopoulos, G., *Chemical Process Control: An Introduction to Theory and Practice*, Prentice Hall, 1984.