

Feedback Control for Optimal Process Operation

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Contents

1. Introduction to process dynamics
2. State estimation
 - Linear observers and filters
 - Estimation with unknown inputs/ parameters
 - Nonlinear observers
 - Reaction calorimetry
 - Moving horizon estimation
3. Model predictive control
4. Feedback control for optimal process operation
 - Control structure selection
 - NCO Tracking
 - Online optimizing control
 - MHE estimation

Provisional Schedule

- Day 1
 - Lecture 1
 - TU Dortmund, Biochemical & Chemical Engineering
 - Motivation: Feedback control for optimal process operation
 - Basics of linear systems theory
 - Linear observers, Kalman filter
 - Lecture 2
 - Tutorial on state estimation
 - Calorimetry
 - Lecture 3
 - Nonlinear observers and moving horizon estimation
 - Introduction to MPC

Provisional Schedule

- Day 2
 - Control structure selection
 - NCO Tracking with application to emulsion polymerization
 - Online optimizing control with application to chromatography
 - Moving horizon estimation for SMB processes
 - Research at DYNLAB