

Course Learning Objectives - CBE 360

Process Dynamics and Control (3)

At the conclusion of this course, the student should be able to:

1. Develop cause-and-effect models (both steady-state and dynamic) of simple process systems from basic chemical engineering principals.
2. Develop empirical cause-and-effect models from process response data.
3. Describe and analyze the interaction of dynamic systems using block diagrams.
4. Calculate dynamic responses of process systems using both analytical and numerical techniques.
5. Identify and describe the role of the typical elements of an industrial process control loop including the range and span of sensors and flow characteristics of control valves.
6. Describe the PID control law, explain the role of each of its modes, and tune a PID controller for a desired response.
7. Explain the concept of cascade and feedforward control and demonstrate an understanding of where and how they can be used to enhance the operation of a process system.
8. Design a control strategy to achieve stated process operational objectives for unit operations and multiunit systems.
9. Given a process description, design appropriate SPC control charts and explain their use for process monitoring and control.