ChE 432 - Process Control Lab

Code and Name: ChE 432 - Process Control Lab
Credit Hours: 1 (Lecture: 0, Tutorial: 2)

Textbook:
- Chemical Reaction Lab Manual, Al-Imam Muhammad Ibn Saud Islamic University

Other References:
- Process Control Lab Experiments (Separate handout for each experiment), By Dr. Shafqat Hussain / Eng. Fahad Iqbal, Mechanical Engineering Dept., Al-Imam Mohammad Ibn Saud Islamic University

Course Description:
Process control, closed loop control, proportional control, Integral control, Derivatives control, gain parameters, damping, control offset, control and manipulated variables

Pre-requisites: ChE 431 Process Control
Co-requisites: None

Course Learning Outcomes:
With relation to ABET Student Outcomes (SOs: 1-7)

1. Recognize the theory of the process control and its design (1)
2. Record the best controller parameters during the performance of experiments (1)
3. calculate, analyze, and interpret the experimental data (6)
4. Conduct the experimental studies (6)
5. Demonstrate the use of the Data Acquisition and Lab View software program (6)
6. Write effectively a technical report (3)

Topics to be covered:

- Overall learning of training device and control software
- Controlling flow through (1) valve adjustment (2) pump speed
- Control the level of fluid in the process vessel and measure its time constant.
- Control the temperature of the water in the heater tank of the CE-117 Process Trainer
- Control the pressure of the process vessel through various means
- Control the level by cascade control configuration with inlet flow

Grading Policy:
The grading for the course are 60% coursework and 40% Final Exam. The course work consists of two Midterm Exams, where each midterm exam is worth 20%. It also includes quizzes, homework, and projects for the remaining 20% that is modified by the course instructor.