



ChE 552: Process Control Lab

1 credit hour, 3 contact hour lab, 1 credit hour Eng.

Instructor

Instructor: Rowaida Zoumot

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Textbooks & References

A. Textbook

	Textbook 1
Title	Control Laboratory Manual
Author(s)	Rowaida Zoumot
Publisher	
Year	2012
Edition	

B. References

1. Luyben, W.L., Process Modeling, Simulation and Control for Chemical Engineers, Second Edition, McGraw-Hill, 1990.
2. Stephanopoulos, G., Chemical Process Control, Prentice-Hall, 1984.
3. Seborg, Edgar, and Mellichamp, Process Dynamics and Control, John Wiley, 1989.

Specific Course Information

Course Catalog:) Illustrations of principles and techniques related to the topics covered in ChE 551. The theory and practice of automated process control is essential for the effective and efficient operation of today's chemical processes. The Process Control Laboratory provides exposure to feedback control of various process operations such as level tanks and pressure tank, as well as to the dynamics of process components such as temperature sensors and motorized and pneumatic valves.

A. Prerequisites or co-requisites

ChE 551

B. Required/Elective or Selected Elective

Objectives and Outcomes*

1. To introduce the student to the basic elements of the control system and enhance the understanding of the fundamentals of control system [1, 2, 3, 4, 6]
2. To familiarize the student with the process control operations and introduce a variety of modern and classical experimental techniques. [1, 2, 4, 6]

* Number in brackets refer to the Program outcomes

3. To demonstrate the different modes of the control system and provide some practice in making engineering judgments, estimates and assessing the reliability of measurements, skills which are very important for any successful engineer [1, 2, 4, 6, 7]
4. To improve written and communication skills through the lab reports. These will also provide students with experience in organizing, analyzing and interpreting engineering data [1, 2, 3, 4, 5, 6]
5. To expose students to a group learning environment by requiring to work in groups, much like the real world [2, 3, 4, 5]

Contribution of Course to Meeting the Professional Component

Relationship to Student Outcomes (%)

1	2	3	4	5	6	7
15	18	16	19	9	19	4

Relationship to Chemical Engineering Program Objectives

PEO1	PEO2	PEO3	PEO4	PEO5	PEO6
Y	Y	Y	Y	Y	Y

Topics Covered

1. Introduction to Control Lab
2. Electrical Console (PCT-10)
3. Temperature Control (PCT-13 + PCT-10)
4. Level Control (PCT-11+ PCT-10)
5. Temperature Control (LAB VIEW)
6. Pressure Control (PCT-3) (LAB VIEW)
7. Process Module (PCT-9) (LAB VIEW) & Level Control (PCT-11) (LAB VIEW)

Evaluation

Assessment Tool	Expected Due Date	Weight
Reports	One week after performed the Experiment	30%
Lab Work and Quizzes	weekly Evaluation	15%
MID Exam	According to the department schedule	15 %
Final Exam	According to the university schedule	40 %