

Engineering Program

Specialization	Technology of remote industrial sensing and controlling
Course Number	20413247
Course Title	Automatic Process control
Credit Hours	3
Theoretical Hours	3
Practical Hours	0

Brief Course Description:

This course covers

Course Objectives:

Upon the completion of the course, the student will be able to:

1-

Detailed Course Description:

Chapter No.	Unit title	Content	Time Needed
1	Introduction to process control	<ul style="list-style-type: none"> • What is a process • Types of control systems <ul style="list-style-type: none"> - Human Aided control - Automatic control - Servomechanisms - Discrete control system • Process control block diagram • Identification elements • System Evaluation • Analog and digital control 	3 weeks
2	Process Responses and Transfer Functions	<ul style="list-style-type: none"> • Process Control Basics • Control System Parameters • Process Dynamics • Laplace Transform Basics • Dead Time Responses in Laplace Form • Lag Responses in Laplace Form • Types of Second-Order Responses 	2 weeks
3	Process Controller principle	<ul style="list-style-type: none"> • Process equation • Process load, lag and transient • Self-regulation process • Control system parameters continuous and discontinuous controllers 	4
4	Loop Tuning	<ul style="list-style-type: none"> • System configuration • Cascade control • Single and multivariable systems • Quality of control • Process loop tuning 	3weeks
5	P&ID Symbols	Connecting lines General instrument Math operation Process elements and actuators	3 weeks

Evaluation Strategies:

		Percentage	Date
1. Exams	First Exam	20%	/ /20__
	Second Exam	20%	/ /20__
	Final Exam	50%	/ /20__
2. Homework and Projects		10%	/ /20__
Total		100%	

Teaching Methodology:

- Lectures
- PowerPoint slides
- Term projects

Text Books & References:

Textbooks

1. Process control instrumentation Technology Curtis D. Johnson 8-th ed
2. PROGRAMMABLE CONTROLLERS, THEORY AND IMPLEMENTATION, L. A. Bryan E. A. Bryan, second edition

References