

NOC:Industrial Automation and Control(Course sponsored by Aricent) - Video course

COURSE OUTLINE

This course provides an overall exposure to the technology of Industrial Automation and Control as widely seen in factories of all types both for discrete and continuous manufacturing. The course, in 40 lectures, discusses a wide range of related topics from the advantage and architecture of automation systems, measurement systems including sensors and signal conditioning, discrete and continuous variable control systems, hydraulic, pneumatic and electric actuators, industrial communication and embedded computing and CNC Machines. A student of IIT Kharagpur once commented - "because of the course I can identify and relate to much of the equipment that I see in a factory"..

COURSE DETAIL

Module	Lecture	Title
I	1-2	Introduction
	3-4	Architecture of Industrial Automation Systems
II	5-6	Measurement Systems Characteristics
	7-8	Data Acquisition Systems
III	9-10	Introduction to Automatic Control
	11-12	P-I-D Control
	13-14	PID Control Tuning
	15-16	Feed forward Control Ratio Control
	17-18	Time Delay Systems and Inverse Response Systems
	19-20	Special Control Structures
	21	Concluding Lesson on Process Control (Self-study)
	22-23	Introduction to Sequence Control, PLC , RLL
	24-25	Sequence Control. Scan Cycle, Simple RLL Programs



NP-TEL

NPTEL

<http://nptel.ac.in>

Electrical Engineering

Pre-requisites:

Basic knowledge of Fluid Mechanics, Thermodynamics

Coordinators:

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	26-27	Sequence Control. More RLL Elements, RLL Syntax
	28-29	A Structured Design Approach to Sequence Control
	30-31	PLC Hardware Environment
IV	32-33	Flow Control Valves
	34-35	Hydraulic Control Systems - I
	36-37	Hydraulic Control Systems - II
	38-39	Industrial Hydraulic Circuit
	40-41	Pneumatic Control Systems - I
	42-43	Pneumatic Systems - II
	44-45	Energy Savings with Variable Speed Drives
	46-47	Introduction To CNC Machines
V	48-49	The Field bus Network - I
	50-51	Higher Level Automation Systems
	52	Course Review and Conclusion (Self-study)

References:

1. Industrial Instrumentation, Control and Automation, S. Mukhopadhyay, S. Sen and A. K. Deb, Jaico Publishing House, 2013
2. Chemical Process Control, An Introduction to Theory and Practice, George Stephanopoulos, Prentice Hall India, 2012
3. Electric Motor Drives, Modelling, Analysis and Control, R. Krishnan, Prentice Hall India, 2002
4. Hydraulic Control Systems, Herbert E. Merritt, Wiley, 1991