

ADVANCED CONTROL SYSTEMS

IPC012

COURSE OVERVIEW

This 5 days course delves into the intricate realm of Advanced Control Systems within the context of Instrumentation and Process Control. Participants will explore cutting-edge technologies and methodologies, gaining a deep understanding of how to optimize and enhance control systems for various industrial processes. The course ensures participants are well-equipped to tackle real-world challenges.

COURSE OBJECTIVES

By the end of the course, participants will be able to:

- Understand and implement advanced control algorithms such as Model Predictive Control (MPC), Adaptive Control, and Fuzzy Logic Control to improve system performance.
- Learn to analyze and incorporate dynamic process behaviors into control strategies, ensuring a robust and adaptive response to varying operating conditions.
- Explore optimization methods to fine-tune control parameters, minimizing energy consumption, improving efficiency, and enhancing overall system performance.
- Acquire skills in detecting and diagnosing faults in control systems, enabling proactive maintenance and reducing downtime.
- Apply theoretical knowledge and analyze real-world case studies to reinforce understanding and problem-solving skills.

WHO SHOULD ATTEND

This course is designed for professionals and engineers involved in Instrumentation and Process Control, including but not limited to:

- Control System Engineers
- Process Engineers
- Automation Engineers
- Instrumentation Engineers
- System Integrators

COURSE DURATION

5 Working Days

COURSE OUTLINES

1. Fundamentals of Advanced Control

- Introduction to Model Predictive Control (MPC)
- Adaptive Control Techniques
- Overview of Fuzzy Logic Control

2. Process Dynamics and Control

- Dynamic Modeling of Industrial Processes
- Feedback Control Strategies
- Feedforward Control and Cascade Control

3. Optimization in Control Systems

- Optimization Techniques for Control Parameter Tuning
- Multi-variable Optimization
- Case Studies on Optimization in Control

4. Fault Detection and Diagnosis

- Fault Detection Methods
- Fault Diagnosis and Isolation
- Practical Implementation of Fault Detection

5. Practical Applications and Case Studies

- Analysis of Real-world Case Studies
- Q&A Session and Course Wrap-up

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