



**London TDM**

# **Engineering and Technical Skills Training Courses**

**Course Venue:** United Kingdom - London

**Course Date:** From 01 March 2026 To 05 March 2026

**Course Place:** London Paddington

**Course Fees:** 7,500 USD

## Introduction

This course on Control Systems and Instrumentation is designed for engineering professionals looking to deepen their understanding of automation processes, control technologies, and instrumentation techniques. Over five intensive days, participants will gain theoretical insights and practical skills applicable to various industrial applications. The curriculum is structured to provide a comprehensive overview of critical concepts, with a focus on modern technological solutions and industry best practices.

- Understand the fundamentals of control systems and their applications in industry.
- Develop skills in the design and analysis of control systems.
- Gain proficiency in selecting and using appropriate instrumentation for various tasks.
- Explore advanced topics including digital control systems and process automation.
- Integrate control systems with real-world instrumentation setups effectively.

## Course Outlines

### Day 1: Introduction to Control Systems

- Overview of control systems and their role in industry
- Basic concepts and components of control systems
- Types of control systems: open-loop vs closed-loop
- Mathematical modeling of dynamic systems
- Introduction to control system simulation tools

### Day 2: Control System Design and Analysis

- Control system design principles
- Stability analysis using root locus and frequency response methods
- PID controller design and tuning
- State-space analysis and design
- Practical exercises in designing control systems

### Day 3: Instrumentation and Measurement

- Introduction to industrial instrumentation
- Sensor and transducer selection criteria
- Signal conditioning and data acquisition
- Calibration techniques for accurate measurements
- Hands-on workshop with common industrial instruments

### Day 4: Advanced Topics in Control Systems

- Digital control systems and discrete-time signals
- Introduction to adaptive and robust control
- Nonlinear control systems and applications
- Decentralized control systems for large-scale processes
- Case studies of advanced control applications

## **Day 5: Integration of Control Systems and Instrumentation**

- System integration techniques and best practices
- Real-time implementation of control strategies
- Networking and communication for instrumentation systems
- Troubleshooting and maintenance of control systems
- Final project: design and implement a control system with instrumentation