







# **Course Title: Industrial Internet of Things (IIoT)**

### **Objective of the Course:**

This course provides an introduction to the Industrial Internet of Things (IIoT), covering its fundamentals, applications, and implications in industrial settings. Students will learn about key concepts, technologies, and best practices through lectures, case studies, and hands-on activities.

### **Course Objectives:**

- 1. Understand the concept and significance of Industrial IoT.
- 2. Identify key technologies driving IIoT adoption.
- 3. Explore practical applications of IIoT in industrial environments.
- 4. Analyze the impact of IIoT on manufacturing processes and business models.
- 5. Evaluate challenges and considerations for successful IIoT implementation.

### Syllabus:

### Introduction to Industrial IoT (2 hours)

- Definition and evolution of Industrial IoT
- Differences between IoT and IIoT

# Sensors and Connectivity (6 hours)

- Overview of sensors and actuators used in IIoT
- Connectivity protocols (e.g., MQTT, OPC UA)
- Wireless communication technologies (e.g., Wi-Fi, Bluetooth, LoRaWAN)

# Data Acquisition and Processing (6 hours)

- Data acquisition methods and techniques
- Edge computing and fog computing
- Data processing and analysis in IIoT systems

# **IIoT Platforms and Architecture (6 hours)**

- Introduction to IIoT platforms
- Cloud-based vs. edge-based architectures
- Case studies of IIoT implementations

# Security and Challenges in IIoT (4 hours)

- Security considerations in IIoT systems
- Cybersecurity best practices
- Challenges and risks associated with IIoT adoption