Zero to Automation – Technical Courses – 20 Hrs Robotics Program Detailed Syllabus & Schedule

Industrial Basics and Anatomy(3 Days)

- Need of Robotics
- Definition of Robotics
- Structure of Industrial Robots
- Industrial Robots – Specifications
- End Effectors
- Selection of End Effectors
- Industrial Robots Application
- Programming Methods
- Dynamic Robots Application

Components and Structure of Robotic System(2 Days)

- Sensors
- Controller
- Servo Motor

Arduino Software Programming(4 Days)

- Software Configuration and C Basics
- Arduino Functions
- Application Design Programming

Application Programming (Robot Arm)(3 Days)

- Servo Motor Special Functions
- Define Servo's
- Initialize Home Positions
- Configuration
- Controlling from External Devices

Industrial Projects Overview(3 Days)

- Other Controlling Methods of Robot Arm
- Robotic Vision System
- Collaborative Robots
- Current Trends and Technological Transitions in Robots Industry

Course Review(1 Day)

- Programming
- Selection Methods
- End Effectors – Designing and Implementation

Total **16 Days (1 ~ 1.5 Hrs. /Day)**

Project Output of the Course:

Pick & Place DIY Robot Arm

Assignments:

- Assignment 1 – Basics
- Assignment 2 – Basics
- Assignment 3 – Devices & Modules
- Assignment 4 – Programming
- Assignment 5 – Programming
- Final Exam

Note:

- Two Certificates will be provided
  - **Participation Certification**
  - **Grading Certification**
- **Assignment Marks must** be considered for the **Graded Certificate**.
- After the assignments submission, participants **shall allow to write the Final Exam** which is considering **50% of the grading in Certification**
- Participants can take **max of 4 Days** to submit the "Final Exam"
- For both Certificates, Participants **must submit the Assignment and Final Exam Document**
- All Forms and Documents **will be uploaded** regularly for your reference

Zero to Automation – Technical Courses – 20 Hrs IoT Program Detailed Syllabus & Schedule

Conceptual Analysis(3 Days)

- Integrated Product Development
- Product Development Life Cycle
- Functional Requirements of PDLC
- Internet of Things – Evolution
- IoT Applications
- Data Security

Components(2 Days)

- Sensors
- Communication Module
- Controller

Arduino Software Programming(4 Days)

- Software Configuration and C Basics
- Arduino Functions
- Application Design Programming

Application Programming (ECG Monitoring)(3 Days)

- ECG Module Integration
- Bluetooth Connection and Configuration
- Serial Communication
- Mobile App Configuration
- Testing and Simulation

Industrial Projects Overview(3 Days)

- Different Communication Protocols and Modules
- IoT Based Oil Condition Monitoring System
- Industrial IoT Connectivity
- Data Threats and Security

Course Review(1 Day)

- Programming
- Selection Methods – Sensors, Controller and Communication Module
- Internet Based Connectivity

Total **16 Days (1 ~ 1.5 Hrs. /Day)**

Project Output of the Course:

IoT - ECG Monitoring through Android Application

Assignments:

- Assignment 1 – Basics
- Assignment 2 – Basics
- Assignment 3 – Devices & Modules
- Assignment 4 – Programming
- Assignment 5 – Programming
- Assignment 6 – Programming
- Final Exam

Note:

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Zero to Automation – Technical Courses – 20 Hrs Industrial Automation Program Detailed Syllabus & Schedule

Basics of Automation(4 Days)

- Computer Integrated Manufacturing
- Numerical Control
- Open & Closed Loop Systems
- Industrial Process List
- Types of Automation
- Automated Storage and Retrieval System
- Radio Frequency Identification
- Automated Guided Vehicle
- Navigation Methods in AGV
- Industrial Communications

Components and Devices(3 Days)

- Circuit Breakers and Fuses
- Switches
- Relay
- Sensors
- PLC
- HMI & SCADA
- Variable Frequency Drive

Ladder Logic Programming(6 Days)

- Basic Instruction and Symbols
- Programming Structure and Sequence
- Problem Identification for Application Development
- Ladder Logic Programming – 1
- Ladder Logic Programming - 1
- Ladder Logic Programming - 1
- Other Important Instructions and Symbols

Application Programming (Integration of Industrial Devices)(3 Days)

- Drive Configuration
- Modbus Protocol Framing
- PLC Logics and Sequence
- Development

Course Review(1 Day)

- Communication and Protocol
- Selection Methods – Sensors, PLC, HMI
- Drive Configuration

Total **16 Days (1 ~ 1.5 Hrs. /Day)**

Project Output of the Course:

Industrial Automation – Integration of Field Device, PLC & Drive System.

Assignments:

- Assignment 1 – Basics
- Assignment 2 – Basics
- Assignment 3 – Devices & Modules
- Assignment 4 – Devices & Modules
- Assignment 5 – Programming
- Assignment 6 – Programming
- Assignment 7 – Programming
- Final Exam

Note:

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