DIPLOMA IN AUTOMATION ENGINEERING

MODULE OBJECTIVES

Module 1: Mechanical System

On completion of the module, trainees should be able to plan for the installation of equipment. They should also be able to set up, install, check, perform periodic servicing and maintenance, as well as troubleshoot faults on pneumatic and mechanical transmission systems.

Module 2: Electrical & Electronics Systems

On completion of the module, trainees should be able to interpret equipment electrical circuit diagrams, set up, install, check and troubleshoot equipment electrical distribution system. They should also be able to interpret schematic drawings of electrical and electronic systems, set up, install, check, fine-tune, and troubleshoot electronic system.

Module 3: Sensory System

On completion of the module, trainees should be able to interpret data sheets, diagrams and drawings of sensors and transducers, integrate with control units and perform alignment and adjustments on sensory system. They should also be able to set up a vision system for inspection, as well as optimise inspection speed and accuracy.

Module 4: Automated System Integration

On completion of the module, trainees should be able to perform equipment automation using programmable logic controllers (PLC), program robotic systems and automation processes, as well as integrate station / equipment into automated system. They should also be able to interpret the system requirements and develop the application programs.

Module 5: Automated System Maintenance

On completion of the module, trainees should be able to choose the appropriate maintenance strategy (breakdown, preventive and predictive) to improve equipment performance. They should also be able to collect and interpret data for predictive maintenance, as well as identify and rectify faults for breakdown maintenance.

Module 6: Smart Monitoring System

On completion of the module, trainees should be able to apply the concept and capabilities of Industrial Internet of Things (IIoT) to set up a smart monitoring system. They should also be able to select and configure IIoT devices for desired application, acquire data, as well as create visualisations to monitor overall equipment effectiveness (OEE).

Module 7: Conceptual Design

On completion of the module, trainees should be able to gather customer requirements and interpret technical specifications to produce a user requirement specification (URS). They should also be able to interpret user requirement specifications to produce concept drawings and establish the design costing.

Module 8: Automated System Improvement

On completion of the module, trainees should be able to collect and interpret system performance data to identify areas for operational improvement. They should also be able to develop and conduct a proof of concept (POC).

Module 9: Company Project

On completion of the module, trainees should have applied their acquired competencies in an authentic project that would value-add to the company.

Module 10: On-the-Job Training

On completion of the module, trainees should be able to apply the skills and knowledge acquired at ITE College and workplace to take on the full job scope, including supervisory function where appropriate, at the company.

OJT LIST OF COMPETENCIES

Course Title: Automation Engineering   **Level:** Work-Study Diploma

S/n	List of Competencies (Standard)
1.	Perform pre-installation set up
2.	Install pneumatic system
3.	Install mechanical transmission system
4.	Install electrical equipment and wiring
5.	Install electronic equipment
6.	Install sensors and transducers
7.	Set up vision system
8.	Perform equipment automation using programmable logic controller (PLC)
9.	Program robotics system
10.	Develop program for automation processes
11.	Integrate station / equipment into automated system
12.	Perform breakdown maintenance of equipment / system
13.	Perform preventive maintenance of equipment / system
14.	Perform predictive maintenance of equipment / system
15.	Implement Industrial Internet of Things (IIoT) application system
16.	Acquire data from IIoT devices
17.	Prepare information for overall equipment effectiveness (OEE) monitoring
18.	Prepare user requirement specifications (URS)
19.	Prepare design specifications and costing
20.	Develop system performance improvement plan
21.	Develop proof of concept (POC)