Course Objective

This course equips trainees with the skills, knowledge and professional attributes to install, maintain and troubleshoot computer-controlled systems, equipment and robotics in advanced manufacturing facilities.

Module Synopsis

Module 1: Mechanical System
On completion of the module, trainees should be able to set up, install, check, perform periodic servicing and maintenance, as well as troubleshoot faults on electro-pneumatic and mechanical transmission systems.

Module 2: Electrical & Electronic Systems
On completion of the module, trainees should be able to interpret electrical and electronics circuit diagrams and to setup, install as well as troubleshoot both electrical equipment and electronics 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: Robotics System
On completion of the module, trainees will gain familiarity with common robotics terminology and concepts. They will develop the competence to interpret data sheets and diagrams, enabling them to confidently undertake commissioning processes and execute functional checks on robotics systems. They should also be able to acquire proficiency in programming robotics systems and command robots for applications like pick-and-place, assembly, and other manipulation tasks.

Module 5: Automated System Integration
On completion of the module, trainees should be able to perform equipment automation using programmable logic controllers (PLC), 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 6: 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 7: 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 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: 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). Trainees should be able to perform simulation on equipment automation. They should also be able to interpret user requirement specifications to produce concept drawings and establish the design costing.

Module 10: Company Project
On completion of the module, trainees should have applied their presentation skills and acquired competencies in an authentic project that would value-add to the company.

Module 11: 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.