

NSRAR Module Synopses

MM9221 - Industrial Automation System

The module aims to equip learners with knowledge and application skills to integrate industrial communication standards into an automated control system; assembled with Programmable Logic Controller (PLC), and electro-pneumatic field devices. At the end of the module, learners will be able to recall and apply basic PLC programming to control an automated system, and configure a Human-Machine Interface (HMI). In addition, learners will integrate various field devices using IO-Link sensors for data collection, EtherCAT for motion control, and Open Platform Communications Unified Architecture (OPC-UA) for Machine-to-Machine (M2M) communication.

ET1561 - PLC with Cloud Analytics

Industrial controllers (PLCs) are generally used to control industrial and process automation and they are typically networked within the local premises. With the Cloud computing technology, PLCs today will be able to send their data to the remote servers for monitoring and data analytics. The module will provide the students with the most up-to-date skills in developing PLC based automation processes and projects which could send data to the cloud for monitoring, visualization, and analytics. In addition, students will learn how to integrate control devices on a industrial network to extend controllability and accessibility over LAN and WAN. At the end of the module, students would be able to apply what they have learnt from the module and develop a PLC application that sends data to the cloud for analytics and visualization.

MM9222 - Collaborative Robots

The module aims to equip participants with the knowledge and skills of programming and operating a collaborative robot, with the appropriate collaborative functions, to complete basic tasks. By the end of the module, participants will be able to 1. Recall collaborative robot system and operating procedures. 2. Set up robot system and troubleshoot common errors. 3. Program and operate collaborative robot to perform basic movements and tasks. 4. Implement collaborative functions to perform force compliance and collision detection during robot operation.

MM9223 - Industrial Robots

The module equips the learner the fundamental knowledge and application skills to simulate, program and operate industrial robots for advanced manufacturing applications. It includes integration of the robots with other devices such as programmable logic controllers, IO sensors, vision cameras, and end-effectors. Students will also learn about various industrial communication protocols such as OPCUA, Modbus TCP, and EtherNet IP, and how to program/configure a machine vision controller and integrate with the robot for pick and place applications. In addition, they will get to study how industrial robots are deployed and integrated in Machine Tending Cells.