

Work-Study Diploma in Port Automation Technology

The course equips trainees with the skills and knowledge to perform and supervise maintenance and repair of various port container handling automated systems and equipment, such as network system, automated crane and vehicle, in accordance with planned schedule, quality standards, Standard Operating Procedures (SOPs) and Workplace Safety and Health (WSH) guidelines.

Core Modules

Module 1: Port Automation

On completion of the module, trainees should be able to perform system check on port automation equipment such as gantry crane, quay crane and automated guided vehicle. They should also be able to assess working fundamentals of automated equipment, including communication and controls.

Module 2: Industrial Automation

On completion of the module, trainees should be able to perform system check on an Automated Storage and Retrieval System (ASRS) including sub components such as conveyor, Human Machine Interface (HMI), Programmable Logic Controller (PLC) and robotics system in an industrial automation environment. They should also be able to interface, program and troubleshoot PLC-controlled applications, intelligent modules (using advanced PLC instructions) and robotics system.

Module 3: Quality Management

On completion of the module, trainees should be able to manage continuous improvement activities, and implement engineering and safety management. They should also be able to supervise work performed by maintenance team and contractor, to ensure implementation of safety workflow and worker adoption of safety measures.

Module 4: Data Analytics for Predictive Maintenance

On completion of the module, trainees should be able to monitor and analyse crane maintenance data, and develop a predictive maintenance program.

Module 5: Sensor & Device Technology

On completion of the module, trainees should be able to install and troubleshoot various detection sensors, including video imaging, Lidar, ultrasonic as well as inertial measurement unit.

Module 6: Network System

On completion of the module, trainees should be able to plan installation of network system, configure wired and wireless local area networks, wide area network and IoT communication, as well as troubleshoot network connectivity issue.

Module 7: System Security

On completion of the module, trainees should be able to install and configure Windows and Linux operating systems on end-user computing device. They should be able to set up end-user device security as well as perform system hardening, maintenance and troubleshooting.

Module 8: Electrical Motors & Control System

On completion of the module, trainees should be able to troubleshoot AC synchronous motor, induction motor and servo-drive. They should also be able to test open-loop control of AC motor and perform Proportional-Integral-Derivative (PID) tuning.

Module 9: Company Project

On completion of the module, trainees should be able to apply skills and knowledge acquired to carry out a project relating to automated port operation/environment. They would need to document and prepare a project report, and conduct an oral presentation of the completed project.

Module 10: On-the-Job Training

On completion of the module, trainees should be able to apply relevant skills and knowledge acquired in the first year of study, to perform system check, troubleshoot port automation equipment as well as perform preventive, corrective and predictive maintenance.