

Core Module Details

Work-Study Diploma in Mechanical Systems Engineering with specialisations in Operations & Maintenance

Course Objectives

This course equips trainees with the skills, knowledge and professional attributes to install, maintain and troubleshoot mechanical equipment, and smart systems, implement quality control and risk management procedures, and manage engineering activities to maximise resources and minimise equipment downtime, ensuring the optimal operating condition of the mechanical system.

On-Campus Training Modules

Module 1: Mechanical Systems Maintenance

On completion of this module, trainees should be able to implement testing procedures and analyse results for follow-up measures, and implement repair and maintenance procedures to ensure the functionality and safe operation of equipment and systems.

Module 2: Engineering Drawing

On completion of this module, trainees should be able to interpret engineering blueprints and equipment specifications, draw engineering components and generate 3D models. He/She should also be able to update engineering drawing, convert 3D model to 2D drawing using CAD software and prepare technical data package for fabrication.

Module 3: Mechanical Systems in Operation

On completion of this module, trainees should be able to set up an optimal operating/workplace environment ensuring adherence to industry specific processes and procedures. He/She should also be able to implement a safety culture, monitor performance of equipment and system components, coordinate maintenance work and prepare technical reports for follow-up.

Module 4: Mechanical Installation

On completion of this module, trainees should be able to apply the principles of equipment lifecycle to perform installation. He/She should also be able to perform testing and commissioning of mechanical equipment and systems in compliance with regulatory requirements and practices, and update technical documentation.

Module 5: Instrumentation & Control

On completion of this module, trainees should be able to perform troubleshooting and root cause analyses on sensors and monitoring systems to identify potential malfunctions and provide solutions. He/She should also be able to perform rectification and calibration to ensure the continuous operations of analog equipment, components and systems.

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Module 6: Robotics Systems

On completion of this module, trainees should be able to collect and interpret system performance data, conduct testing and configure the robotic system to meet equipment performance requirements.

Specialisation : Operations & Maintenance

Module 7: Smart Systems Engineering

On completion of this module, trainees should be able to diagnose faults and troubleshoot any abnormality detected on robotic and automation systems. He/She should also be able to support programming of automation system for optimal performance and maintain the robotic and automation system for operation.

Module 8: Quality & Project Management

On completion of this module, trainees should be able to implement and monitor adherence to Quality Assurance/ Quality Control (QA/QC) procedures and Quality Management System (QMS) requirements. He/She should be able to carry out continuous improvement activities to optimise the quality and efficiency of system and maintenance workflows.

Module 9: Risk Control & Management

On completion of this module, trainees should be able to conduct equipment and system risk and reliability analyses to mitigate risks. He/She should also be able to implement and communicate risk management plans and control measures to stakeholders, and support crisis response and recovery.

Module 10: Engineering Resource Management

On completion of this module, trainees should be able to coordinate with internal and external stakeholders to plan and prioritise maintenance activities based on maintenance data analytics. He/She should also be able to perform resource planning to support asset lifecycle activities, as well as manage the maintenance team and vendors ensuring resourcing plans are adhered to meet operational targets.

Module 11: 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.

Off-Campus Training

Module 12: On-the-Job Training

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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.