HIGHER NITEC IN MECHANICAL ENGINEERING (3 YEARS)

CERTIFICATION

Credits required for certification:

Sector Foundation Modules	:	24
Specialisation Modules	:	33
Internship Programme Modules	:	12
LifeSkills Modules	:	10
Cross-Disciplinary Core Modules	:	9
Electives Modules	:	8
Total	:	96

COURSE STRUCTURE

Module Title	Credits
SECTOR FOUNDATION MODULES	
Workplace Safety, Health & Environment	3
Data & Digital Essentials	3
Electrical Fundamentals	3
Engineering Drawing	3
Sustainable Engineering	3
IoT for Engineering	3
Mechanical Fundamentals	3
Coding Essentials	3
SPECIALISATION MODULES	
Industrial Piping & Valve Systems	3
Plant Equipment Maintenance	3
Electro Pneumatics & Hydraulics	3
Machinery Maintenance	3
Engineering CAD	3
Quality Engineering	3
Engineering Materials	3
System Integration	3
Instrumentation & Control	3
Engineering Development & Prototyping	3
Engineering Modelling & Applications	3
INTERNSHIP PROGRAMME MODULES	
Internship Programme 1 (IP1)	4
Internship Programme 2 (IP2)	8
ELECTIVES (GENERAL) AND LIFE SKILLS MODULES	
For details, click here	

Note: The offer of electives is subject to the training schedule of respective ITE Colleges. Students are advised to check with their Class Advisors on the availability of the elective modules they intend to pursue.

MODULE OBJECTIVES

SECTOR FOUNDATION MODULES

Workplace Safety, Health & Environment

On completion of the module, students should be able to apply Workplace Safety and Health (WSH) policies, Environmental Management System procedures and practices in the planning, preparation and execution of work activities to ensure a safe and reliable workplace environment.

Data & Digital Essentials

On completion of the module, students should be able to prepare data for analysis, use online tools for collaborative work and maintain information security when online.

Electrical Fundamentals

On completion of the module, students should be able to interpret circuit schematic and board layout, perform DC circuit connection and in-circuit measurement.

Engineering Drawing

On completion of the module, students should be able to interpret and create engineering drawings in accordance with ISO standards.

Sustainable Engineering

On completion of the module, students should be able to determine key contributors to environmental changes and the challenges involved in implementing sustainable initiatives, and propose effective strategies to promote sustainability and address environmental challenges across various industries.

IoT for Engineering

On completion of the module, students should be able to set up an IoT, configure the controller to transmit sensor's collected data wirelessly to an IoT platform.

Mechanical Fundamentals

On completion of the module, students should be able to measure and fabricate mechanical components for assembly.

Coding Essentials

On completion of the module, students should be able to perform basic coding to solve general problems as well as develop programmable board-based engineering applications.

SPECIALISATION MODULES

Industrial Piping & Valve Systems
On completion of this module, students should be able to perform installation, repairs and replace fluid supply pipes and fittings. They should also be equipped to effectively maintain, troubleshoot, and repair industrial fluid valves.

Plant Equipment Maintenance
On completing of this module, students should be able to carry out a preventive maintenance programme, maintain, troubleshoot and repair air compressor systems and industrial fluid pumps.

Electro Pneumatics & Hydraulics
On completion of this module, students should be able to install, maintain and troubleshoot electro pneumatic and hydraulic systems.

Machinery Maintenance
On completion of the module, students should be able to maintain and service mechanical transmission systems; lift and move heavy loads safely and assist in troubleshoot and repair machinery.

Engineering CAD
On completion of this module, students should be able to interpret engineering drawings, create 3D models and convert 3D models to 2D drawings by using CAD system.

Quality Engineering
On completion of the module, students should be able to interpret the requirements of ISO 9001 and 14001, apply Lean Six Sigma tools, such as Statistical Process Control, in problem solving and quality inspection.

Engineering Materials
On completion of the module, students should be able to classify engineering materials, conduct destructive and non-destructive testing.

System Integration
On completion of the module, students should be able to program PLC systems, interface engineering components and sub-systems, as well as perform troubleshooting and testing.

Instrumentation & Control
On completion of the module, students should be able to perform testing, calibration, fault diagnosis and maintenance of instrumentation and control equipment.

Engineering Development & Prototyping
On completion of the module, students should be able to carry out design and development activities including applications of design concepts and verify product design. They should also be able to perform 3D printing and product design enhancements for manufacturability and sustainability.

Engineering Modelling & Applications

On completion of the module, students should be able to solve engineering problems, conduct stress and motion simulations; and perform product testing through engineering software. The students should also be able to model machine assembly by selecting standard component parts.

INTERNSHIP PROGRAMME MODULES

Internship Programme 1 (IP1)

On completion of the module, students should be able to integrate and apply the skills and knowledge acquired at ITE College, and further develop competencies at the workplace.

Internship Programme 2 (IP2)

On completion of the module, students should be able to integrate and apply the skills and knowledge acquired at ITE College, and further develop competencies at the workplace.

ELECTIVES (GENERAL) AND LIFESKILLS MODULES

For details, click here.