HIGHER NITEC IN MECHATRONICS 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
IoT for Engineering	3
Sustainable Engineering	3
Mechanical Fundamentals	3
Coding Essentials	3
SPECIALISATION MODULES	
Computer Aided Design (CAD) & Modelling	3
Mechanical Applications	3
Pneumatic System	3
Electronics Applications	3
Electrical & Motor Control	3
Microcontroller Applications	3
Programmable Logic Controllers (PLC)	3
Sensors Integration	3
Industrial Automation	3
Robotics System	3
Digitalisation in Smart Manufacturing	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.

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.

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.

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.

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

Computer Aided Design (CAD) & Modelling
On completion of the module, students should be able to interpret geometric dimensions and produce engineering drawings using Computer-aided design software (CAD).

Mechanical Applications
On completion of this module, students should be able to fabricate mechanical components within tolerance. Assemble, align and level aluminium profile structures and mechanical unit.

Pneumatic System
On completion of the module, students should be able to install, maintain and troubleshoot pneumatics and electropneumatic system.

Electronics Applications
On completion of this module, students should be able to analyse circuit schematics, board layout, conduct performance tests and troubleshoot electronics control system.

Electrical & Motor Control

On completion of the module, students should be able to install an electrical equipment according to schematic design and perform troubleshoot during maintenance.

Microcontroller Applications

On completion of the module, students should be able to set up microcontroller boards as well as apply programming concepts to control circuits of microcontroller-based-equipment.

Programmable Logic Controllers (PLC)

On completion of the module, students should be able to program Programmable Logic Controller (PLC) modules using Ladder Diagram and Sequential Function Chart (SFC) instructions for industrial automation systems.

Sensors Integration

On completion of the module, students should be able to integrate sensor modules into automated manufacturing system. They should be able to troubleshoot the sensor modules (including Human Machine Interface (HMI).

Industrial Automation

On completion of the module, students should be able to install, operate and troubleshoot automated systems.

Robotics System

On completion of the module, students should be able to set up, program, operate, maintain and troubleshoot a robotics system.

Digitalisation in Smart Manufacturing

On completion of the module, students should be able to collect and analyse production data, and apply these skills to improve efficiency, support data-driven decision-making, and enhance flexibility in smart manufacturing processes.

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.