HIGHER NITEC IN ADVANCED MANUFACTURING (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
Elective 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	
Fundamentals of Manufacturing	3
3D CAD	3
3D CAM	3
CNC Turning	3
CNC Milling	3
Forming Technologies	3
Quality Engineering	3
Advanced CAD/CAM & Simulation	3
Automation & Robotics	3
Machining Analytics	3
Additive 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	

Last updated on 28 Nov 2025

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.

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

Fundamentals of Manufacturing

On completion of the module, students should be able to set up and operate lathes, milling machines and drilling machines to produce precise components that meet design specifications, while emphasising safety protocols and quality control measures.

3D CAD

On completion of the module, students should be able to create and generate 2D and 3D models in accordance with ISO standards.

3D CAM
On completion of the module, students should be able to create models and generate CNC programmes using CAM system.

CNC Turning
On completion of the module, students should be able to set up and operate CNC turning machines to produce components in accordance with given specifications.

CNC Milling
On completion of the module, students should be able to set up and operate CNC milling machines to produce components in accordance with given specifications.

Forming Technologies
On completion of the module, students should be able to program and set up sheet metal fabrication machines in accordance with given specifications.

Quality Engineering
On completion of the module, students should be able to apply tools, instruments and techniques for quality inspection.

Advanced CAD/CAM & Simulation
On completion of the module, students should be able to create 3D models, simulate and optimise tool paths for machining.

Automation & Robotics
On completion of the module, students should be able to program robot for manufacturing applications.

Machining Analytics
On completion of the module, students should be able to monitor the overall efficiency of manufacturing processes and interpret production data to improve productivity using machine monitoring system.

Additive Manufacturing
On completion of the module, students should be able to create 3D models, set up and produce printed components in accordance with given specifications.

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 Life Skills Modules
For details, click here.