

HIGHER NITEC IN ELECTRONICS ENGINEERING (2 YEARS)

CERTIFICATION

Credits required for certification:

Core Modules	: 27
Specialisation Modules	: 20
Life Skills Modules	: 9
Cross Disciplinary Modules	: 6
Electives	: 4
<hr/> Total	<hr/> : 66

COURSE STRUCTURE

Module Title	Credits
CORE MODULES	
Electronic Devices & Circuits	3
Digital Electronics & Simulation	3
Analogue Applications	3
Digital Applications	3
Computer Networking	3
Programming & Interfacing	3
Wireless Communications	3
Microcontroller Applications	3
IoT Fundamentals	3
SPECIALISATION MODULES	
<u>Group A (Audio Visual Systems)</u>	
AV Peripherals	3
AV Control & Automation	3
AV Integration	3
AV IT & Streaming	3
Industry Attachment	8
OR	
<u>Group B (IoT & Communications)</u>	
Sensors & Actuators	3
IoT Protocols & Power Management	3
IoT Programming & Cloud Services	3
IoT Data Analytics & Visualisation	3
Industry Attachment	8
OR	
<u>Group C (AI & Automation)</u>	
AI Fundamentals	3
AI Applications	3
Principles of Autonomous Robotic System	3
Autonomous System Applications	3

Module Title	Credits
Industry Attachment	8
OR	
Group D (Microelectronics)	
Semiconductor Fundamentals	3
Semiconductor Processes	3
Semiconductor Metrology	3
Industrial Automation	3
Industry Attachment	8
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

Core Modules

Electronic Devices & Circuits

On completion of the module, students should be able to construct and test analogue electronic devices and circuits.

Digital Electronics & Simulation

On completion of the module, students should be able to test and troubleshoot various digital electronic circuits.

Analogue Applications

On completion of the module, students should be able to analyse, test and troubleshoot analogue electronic applications.

Digital Applications

On completion of the module, students should be able to analyse, construct, test and troubleshoot digital electronic applications.

Computer Networking

On completion of the module, students should be able to set up computer network, troubleshoot network connectivity issues, as well as test network performance.

Programming & Interfacing

On completion of the module, students should be able to write programs and interface with I/O devices in a microcontroller-based system.

Wireless Communications

On completion of the module, students should be able to set up and test electronic communication systems.

Microcontroller Applications

On completion of the module, students should be able to create algorithms and develop microcontroller applications with input and output devices.

IoT Fundamentals

On completion of the module, students should be able to configure, establish communication and process data from IoT environmental elements such as devices, nodes, gateways and cloud.

Specialisation Modules

Group A (Audio Visual Systems)

AV Peripherals

On completion of the module, students should be able to integrate AV devices with peripherals and accessories, as well as align AV equipment.

AV Control & Automation

On completion of the module, students should be able to install, configure, maintain and troubleshoot AV devices for network automation system.

AV Integration

On completion of the module, students should be able to design, install, test and troubleshoot an AV system for an application.

AV IT & Streaming

On completion of the module, students should be able to set up and configure networking devices for streaming network systems.

Industry Attachment

Students will undergo 6-month industry attachment to reinforce the skills and knowledge acquired at the training institute and to develop competencies in other areas not covered in the curriculum.

Group B (IoT & Communications)

Sensors & Actuators

On completion of the module, students should be able to identify applications and perform installation of sensors and output devices.

IoT Protocols & Power Management

On completion of the module, students should be able to install, interface and configure sensors and output devices with controller to establish network communication.

IoT Programming & Cloud Services

On completion of the module, students should be able to apply programming skills with knowledge of embedded system, as well as principles of cloud computing and IoT systems.

IoT Data Analytics & Visualisation

On completion of the module, students should be able to perform data visualisation and analysis for an IoT application by applying business intelligence.

Industry Attachment

Students will undergo 6-month industry attachment to reinforce the skills and knowledge acquired at the training institute and to develop competencies in other areas not covered in the curriculum.

Group C (AI & Automation)

AI Fundamentals

On completion of the module, students should be able to perform various Machine Learning (ML) tasks by applying ML libraries and frameworks.

AI Applications

On completion of the module, students should be able to solve real-world applications by applying AI services and technologies.

Principles of Autonomous Robotic System

On completion of the module, students should be able to deploy and test autonomous systems, as well as perform localisation, mapping and navigation by applying robotic algorithms.

Autonomous System Applications

On completion of the module, students should be able to deploy and troubleshoot autonomous systems, by applying principles of perception, planning, localising, mapping and decision-making capabilities.

Industry Attachment

Students will undergo 6-month industry attachment to reinforce the skills and knowledge acquired at the training institute and to develop competencies in other areas not covered in the curriculum.

Group D (Microelectronics)

Semiconductor Fundamentals

On completion of the module, students should be able to perform cleanroom and safety protocols, and maintain vacuum systems.

Semiconductor Processes

On completion of the module, students should be able to perform automated wafer processes for fabrication of integrated circuits used in electronic devices.

Semiconductor Metrology

On completion of the module, students should be able to perform semiconductor metrology measurements for fabrication of integrated circuits processes.

Industrial Automation

On completion of the module, students should be able to implement electro-mechanical control systems, including common input/output devices, pneumatics, electro-pneumatics and Programmable Logic Controller (PLC) systems in industrial automation.

Industry Attachment

Students will undergo 6-month industry attachment to reinforce the skills and knowledge acquired at the training institute and to develop competencies in other areas not covered in the curriculum.

Life Skills Modules

For details, click [here](#).