HIGHER NITEC IN AI APPLICATIONS (3 YEARS)

CERTIFICATION

Credits required for certification:

Sector Foundation Modules	:	24
Cluster Core Modules	:	6
Specialisation Modules	:	39
Life Skills Modules	:	10
Cross Disciplinary Core Modules	:	9
Electives	:	8
Total	:	96

COURSE STRUCTURE

Module Title	Credits
SECTOR FOUNDATION MODULES	
Networking Fundamentals	3
Applied Data Fundamentals	3
Operating System Essentials	3
Digital Media Technologies	3
Programming 1	3
Generative AI Essentials	3
AI-Assisted Web Development	3
Cybersecurity Fundamentals	3
CLUSTER CORE MODULES	
Programming 2	3
Software Development Practices	3
SPECIALISATION MODULES	
Machine Learning	3
Deep Learning	3
Applied Computer Vision	3
Applied Natural Language Processing	3
Project Development	3
Internship Programme 1	4
Data Acquisition & Processing	3
Edge AI	3
Responsible AI Development	3
Smart Robots	3
Internship Programme 2	8

Module Title	Credits
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

Networking Fundamentals
On completion of the module, students should be able to set up, configure, set up and troubleshoot wired and wireless network system for small office environment. They should be able to provide network support and configure devices.

Applied Data Fundamentals
On completion of the module, students should be able to import data from external sources, perform basic data manipulation and present simple visualisation of the data.

Operating System Essentials
On completion of the module, students should be able to install and configure operating system (OS) and application software on end user computing devices. In addition, they should also be able to perform OS maintenance and troubleshooting.

Digital Media Technologies
On completion of the module, students should be able to apply their knowledge and skills in processing appropriate digital media formats for various platforms delivery.

Programming 1
On completion of the module, students should be able to apply computational thinking for business applications. They will learn to break down complex problems into manageable tasks, apply pseudocode to design algorithms, and implement these solutions through programming.

Generative AI Essentials
On completion of the module, students will gain knowledge in Generative AI applications for design and content creation.

AI-Assisted Web Development
On completion of the module, students should be able to develop web pages using HTML and CSS.

Cybersecurity Fundamentals
On completion of the module, students should be able to apply foundation knowledge and skills in basic cybersecurity controls, detect threats and vulnerabilities, implement security measures aligned with the key security information principles to protect system and device.

Cluster Core Modules

Programming 2
On completion of the module, students should be able to apply fundamental programming concepts and computational thinking for basic programs.

Software Development Practices
On completion of the module, students should be able to apply their knowledge and skills in software development methods on recommended solutions.

Specialisation Modules

Machine Learning
On completion of the module, students should be able to grasp the basic concepts of machine learning, apply concepts to differentiate between supervised and unsupervised learning, and implement basic machine learning algorithms.

Deep Learning
On completion of the module, students should be able to demonstrate a comprehensive understanding of core concepts such as perceptrons, neural networks, transfer learning and fine-tuning.

Applied Computer Vision
On completion of the module, students should be able to apply their practical skills to harness computer vision in real-world applications. They will be able to utilise pre-trained models and generate images to develop AI solutions.

Applied Natural Language Processing
On completion of the module, students should be able to apply practical skills in natural language processing (NLP), with a focus on hands-on experiences and real-world applications. They will gain proficiency in using pre-trained models to develop AI solutions

Project Development
On completion of the module, students should be able to develop AI proofs-of- concept to prototype, and then deploy and optimise AI solutions.

Internship Programme 1
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.

Data Acquisition & Processing
On completion of the module, students should be able to gather and prepare data for AI applications. They will learn to cleanse and preprocess data, engineer features, and perform exploratory data analysis.

Edge AI
On completion of the module, students should be able to prepare edge devices for on-device AI inference and assessing system performance in real-world use cases. They will be able to gain an understanding of edge-AI concepts, including device constraints, connectivity considerations, and AI model deployment. They will build practical skills in hardware setup, runtime configuration, and applying model optimization techniques such as quantization.

Responsible AI Development

On completion of the module, students should be able to apply key principles of responsible AI development by observing relevant legal and ethical frameworks, adopting human-centric design approaches, and implementing practical safety measures and guardrails in AI systems. They will be equipped to identify risks, apply compliance requirements, and integrate responsible practices into AI development workflows.

Smart Robots

On completion of the module, students should be able to support the development and testing of ROS 2-based robots across a range of applications, including mobile, collaborative, and autonomous platforms. They will develop a foundational understanding of robotic systems, including sensors, actuators, embedded controllers, and ROS 2 integration. They will also acquire skills in analysing user requirements, configuring robot hardware, and setting up communication between hardware and software

Internship Programme 2
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.

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