HIGHER NITEC IN AI APPLICATIONS (2 YEARS)

CERTIFICATION

Credits required for certification:

Sector Foundation Modules	:	3
Cluster Core Modules	:	6
Specialisation Modules	:	38
Life Skills Modules	:	9
Cross Disciplinary Core Modules	:	6
Electives	:	4
Total	:	66

COURSE STRUCTURE

Module Title	Credits
SECTOR FOUNDATION MODULES	
Programming 1	3
CLUSTER CORE MODULES	
Programming 2	3
Software Development Practices	3
SPECIALISATION MODULES	
Machine Learning	3
Data Acquisition & Processing	3
Applied Computer Vision	3
Deep Learning	3
Applied Natural Language Processing	3
Edge AI	3
Project Planning	3
Project Development	3
Smart Robots	3
Responsible AI Development	3
Internship Programme	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

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.

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.

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.

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.

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 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.

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.

Project Planning

On completion of the module, students should be able to track AI projects across various maturity levels. They will learn to define basic principles, conceptualise and develop AI proofs of concept, validate prototype in controlled environments.

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.

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.

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.

Internship Programme

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.