HIGHER NITEC IN DATA ENGINEERING (3 YEARS)

CERTIFICATION

Credits required for certification:

Sector Foundation Modules	:	24
Cluster Core Modules	:	6
Specialisation Modules	:	27
Internship Programme Modules	:	12
Life Skills Modules	:	10
Cross Disciplinary Core Modules	:	9
Electives	:	8
Total	:	96

COURSE STRUCTURE

Module Title	Credits
SECTOR FOUNDATION MODULES	
Networking Fundamentals	3
Fundamentals of Data	3
Operating System Essentials	3
Digital Media Technologies	3
Coding for AI	3
Introduction to UI/UX	3
Web Development Essentials	3
Cybersecurity Fundamentals	3
CLUSTER CORE MODULES	
Software Development Practices	3
Programming Essentials	3
SPECIALISATION MODULES	
Database Concepts	3
Data Science Programming	3
Data Processing	3
Data Extraction & Analytics	3
Data Cleansing	3
INTERNSHIP PROGRAMME MODULES	
Internship Programme 1	4
SPECIALISATION MODULES	
Data Storytelling	3
Data Preparation for Machine Learning	3
Dynamic Dashboard Development	3
Predictive Data Modelling	3
INTERNSHIP PROGRAMME MODULES	
Internship Programme 2	8
ELECTIVES (GENERAL) AND LIFE SKILLS MODULES	

Module Title	Credits
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 such as switches and wireless access points.

Fundamentals of Data
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.

Coding for AI
On completion of the modules, students should be able to experience the concepts of AI through no to low coding methods. Students will create basic program logic and AI model through fun and engaging project.

Introduction to UI/UX
On completion of the module, students should be able to apply User Interface (UI) and User Experience (UX) development process to produce low-fidelity and high-fidelity wireframes and prototypes for websites and mobile apps.

Web Development Essentials
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 the knowledge and essentials skills in all security domains in the cyber world - information security, systems security, network security, mobile security, physical security, ethics and laws, related technologies, defence and mitigation techniques use in protecting.

Cluster Core Modules

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.

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

Specialisation Modules

Database Concepts
On completion of the module, students should be able to create database objects and edit data in tables. Students will be able to query data that utilise relational database concepts.

Data Science Programming

On completion of the module, students should be able to apply techniques to explore, collect, analyse, transform, and leverage data. These involve preparation by processing varying amounts of data from different sources based on business requirements.

Data Processing

On completion of the module, students should be able to manipulate data into usable and desired form that is suitable for analytics processing. Students will also be able to process using a predefined sequence of operation either manually or automatically.

Data Extraction & Analytics

On completion of the module, students should be able to apply data extraction of data sets from various data sources, including data explorations and analytics.

Data Cleansing

On completion of the module, students should be able to clean data, including load data sets into correct data structures, detect/remove/replace unwanted data, format data correctly, check data accuracy, and deal with inconsistencies in the data sets.

Internship Programme Modules

Internship Programme 1

Students will undergo 3-month Internship Programme to reinforce the skills and knowledge acquired at the training institute and to develop competencies in other areas not covered in the curriculum.

Specialisation Modules

Data Storytelling

On completion of the module, students should be able to design data reports, deploy storyboards and present their insights through data storytelling

Data Preparation for Machine Learning

On completion of the module, students should be able to apply techniques to explore, collect, analyse, transform, and leverage data. This involves preparation by processing varying amount of data from different sources based on business requirements.

Dynamic Dashboard Development

On completion of the module, students should be able to implement contemporary techniques, dynamic dashboard to present patterns and trends from data in a strategic manner for targeted audience.

Predictive Data Modelling

On completion of the module, students should be able to generate data insights through machine learning algorithms, computational and statistical data modelling and data visualisation.

Internship Programme Modules

Internship Programme 2

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

Electives (General) and Life Skills Modules

For details, click here.