Module Synopsis
Diploma in Engineering (Computer Engineering) (DECE)

MC 1:	Modular Certificate in Computer Programming & Networks	(195 hours)
1.	**ET0803 Digital Principles**	**(75 hours)**
	The aim of this module is to equip students with the knowledge, understanding and design techniques necessary, to enable them to design simple combinational logic circuits using commercial SSI and MSI integrated circuits. Additional topics covered include sequential logic circuits using as flip-flops and mono-stables.	
2.	**ET0808 Network Fundamentals**	**(60 hours)**
	This module provides a general overview of computer networking. It provides a general introduction to networking terminology, concepts, devices, functionality, applications and standards required for computer networking. Students will learn to build simple LANs, perform basic network and service configurations, and implement IP addressing schemes.	
3.	**ET0809 Structured Programming**	**(60 hours)**
	This module teaches students to write programs in a structured way. It emphasises on good programming techniques and covers topics on fundamental data types, input / output, selection control and loop constructs, functions and basic structures such as arrays. At the end of the module, the students will be able to write programme for simple engineering application that runs on computer and simple engineering application that runs on basic embedded system and control it.	

MC 2:	Modular Certificate in Networking & Cloud	(180 hours)
1.	**ET0868 Computer Networking**	**(90 hours)**
	This module introduces the fundamentals of computer networking and the principles of network routing. Students will gain hands-on experience in configuring routers and enabling dynamic routing protocols to support both LAN and WAN communications. The module also covers the implementation of the IPv6 addressing scheme. In addition, students will explore WAN technologies commonly used to connect small- to medium-sized business networks. Through a comprehensive project, students will apply their understanding of key networking concepts including IP addressing, routing protocols, Network Address Translation (NAT), and security configurations using Access Control Lists (ACLs).	
2.	**ET0869 Cloud Platforms & Services**	**(90 hours)**
	This is an introductory module to Cloud Computing. It introduces students to the fundamental knowledge and overall understanding of cloud computing concepts. Using contents from Amazon Web Services (AWS)'s "Cloud Practitioner" course, this module provides a detailed overview of cloud computing concepts, core services, security, architecture, pricing, and support. Students will apply their cloud computing knowledge in practice with elements of hands-on in lab practical work and projects. This training will prepare students to progress towards practical experience with cloud computing, and the industry recognised "AWS	

Certified Cloud Practitioner" exam, which represents the first milestone to achieve while working through the AWS Academy Cloud Computing Architecture courses.

MC 3:	**Modular Certificate in Application Development**	**(180 hours)**
1.	**ET0812 Full Stack Development**	**(90 hours)**

This module aims to equip students with comprehensive knowledge and skills in full stack development. Students will learn responsive frontend development using latest technologies (e.g. HTML5, CSS3 & JavaScript) and framework. Students will learn back-end development, e.g. creating and deploying cloud database-driven web applications / services using scripting language and backend frameworks. RESTful API and database will be introduced, ensuring students are well-prepared for real-world modern web development challenges.

2.	**ET0890 Mobile Applications Development**	**(90 hours)**

This module provides students with the skills and knowledge to develop and implement applications that can run on cross-platforms, like mobile devices, web browser and desktop. Students will be introduced to open-source software tools available for program development, key concepts in mobile application programming, user-interface classes, and persistent storage with network connection. By the end of the module, students should be able to apply and develop a mobile application with rich UI and features.

MC 4:	**Modular Certificate in DevOps & Artificial Intelligence (AI)**	**(180 hours)**
1.	**ET0859 DevOps for AIoT**	**(90 hours)**

This module introduces DevOps (Development Operations) and its role in the Software Development process today in the development of AIoT (Artificial Intelligence + Internet of Things) applications. The basic Software Development process is explained to the students and the role and as a basis to of explaining how DevOps has become an essential component the modern Software Development process. Students will have hands-on experience using DevOps tools such as Git / Github, Jenkins, Docker, Kubernetes, etc. To consolidate the student's grasp of DevOps and its importance in the Software Development lifecycle, students will implement an AIoT application supported by a full DevOps infrastructure.

2.	**ET0866 Machine Learning & AI with Python**	**(90 hours)**

The aim of this module is to introduce students to the core principles of artificial intelligence (AI) and machine learning (ML), with an emphasis on hands-on learning and practical application. Students will learn how to implement common machine learning algorithms and apply them to solve real-world problems. The module also includes foundational training in Python programming and essential data analytics tools to support data cleaning, exploration, and preparation. By the end of the module, students will be able to analyse data using basic

	statistical methods, apply machine learning models for prediction, and use data visualization techniques to communicate key insights effectively.

MC 5:	**Modular Certificate in IoT & Intelligent Systems**	**(180 hours)**
1.	**ET0867 Smart Systems Architecture**	**(90 hours)**
	This module provides students with the skills to understand and design smart infrastructures, focusing on essential technologies for building sustainable smart cities. Key topics include smart city applications, networking basics, M2M communication, sensor networks, IoT security, data analytics, video analytics systems, and smart city application design. Through these topics, students will learn to create and manage efficient, secure, and innovative smart systems that promote sustainability.	
2.	**ET0894 Microcontroller Applications**	**(90 hours)**
	This module introduces the use of Microcontrollers for applications. Students are taught how a microcontroller works, the programming and use of the microcontroller for applications. In addition, the student will learn basic analogue and digital support circuitry, sensors and actuators/displays required for a microcontroller-based application. This module allows students to develop a project conceived from existing needs and implement a solution with a microcontroller system complete with sensors and output devices.	