Module List

Tables 1 to 4 list the modules of the programme

Table 1: Stage 1, Semester 1

		Links
ELEK1101	Physical Computing 1	COMP1201
COMP1101	PC Hardware & Security 11	
DTEC1101	Digital Age Technology 1	
PROJ1101	Information Literacy 1	PROJ1201
NETW1101	Network Fundamentals (CCNA 1)	NETW1201

Table 2: Stage 1, Semester 2

		Links
COMP1201	Web Development 1	
ELEK1201	Physical Computing 2	COMP1101
COMM1201	Applied Data Networking 1	
PROJ1201	Information Literacy 2	PROJ1101
NETW1201	Routing Protocols and Concepts (CCNA 2)	NETW1201

Table 3 :Stage 2, Semester 1

		Links
COMP2101	Operating Systems 1	SOFT2201
MICR2101	Microprocessors 1	MICR2201
PROJ2101	Project (Continues in Semester 2)	
BUS2101	Business 1	BUS2201
NETW2101	LAN Switching & Wireless (CCNA 3)	NETW2201

Table 4: Stage 2, Semester 2

		Links
SOFT2201	Problem Solving with C	COMP2101
MICR2201	Microprocessors 2	MICR2101
PROJ2101	Project (Continued from Semester 1)	
BUS2201	Business 2	BUS2101
NETW2201	WAN Technologies (CCNA4)	NETW2201

The following is a brief listing of what the student is expected to be able to do at the end of each module

ELEK1101 Physical computing 1

On completion of this module the learner will be able to:
- Draw block diagrams of systems and describe processes using flowcharts
- program simple microcontroller systems
- construct simple microcontroller applications that interact with the real world.
  Calculate resistance values for simple interfacing applications

COMP1101 Computer Hardware & Security 1

On completion of this module, the learner will be able to:
- Identify, install, configuration, test and troubleshoot computer hardware components.
- Specify an operational computer system for a given user requirement.
- Identify significant threats and install and apply relevant security software.
- Identify the issues involved in being a security aware computer user.
- Understand the importance of patching and backing up a system.
- Identify the issues involved in the secure usage of the internet.
- Select a UPS based on its VA rating.
- Work out the power requirements of a computer system.
- To understand the concepts and requirements for “low power computing” technologies and their environmental benefits.

DTEC1101 Digital Age Technology 1

On completion of this module the learner will be able to:
- discuss and explain some of the important technologies employed in the 21st century
- describe the relevance of maths and physics to these technologies
- apply a systematic approach to problem solving and perform basic calculations.
- construct virtual instruments using graphical programming techniques (LabVIEW)

PROJ1101 Information Literacy

On successful completion of this module, the student will be able to:
- Work, as a member of a small team, with an external agency to develop a project idea to support the technical or other needs of the agency
- Produce a logical and coherent plan for the project, including interim and final goals and success criteria
- Generate a formal written project proposal for the project, demonstrating good written communication skills
- Produce a formal presentation on their proposal, demonstrating good oral and presentation skills
- Use and evaluate critically resource materials.
- Show how their technical work benefits the wider community.

NETW1101 Network Fundamentals 1 (CCNA2)

On completion of this module, the learner will be able to:
- Explain the importance of communications and data networks in supporting business communications and everyday activities.
- Explain the role of and use of network protocols models to explain the layers of communications in networks.
- Describe the protocols and services provided by the application, transport, network, data link and physical layers in the OSI and TCP/IP models and describe how these layers operates in various networks.
- Explain the fundamental concepts of routing.
- Design, calculate, and apply subnet masks and addresses to fulfil given requirements.
- Identify various network media needed to make successful LAN and WAN connections and their distinct roles.
- Connecting and configuring computers, switches, and routers into an Ethernet LAN.

COMP1201 Web Development 1

On completion of this module, the learner will be able to:
- Competently design and implement hypertext documents for the WWW.
- Design and construct robust Web sites.
- Outline and describe the principles and function of Web Server software.
- Install, administer and maintain Web Server software.
- Work in a team to explore and discuss privacy, security, intellectual property, copyright and other Web related ethical issues.
- Work in a team to build and test usable and accessible Web sites to meet a set of specified criteria.

ELEK1201 Physical Computing 2

On completion of this module the learner will be able to:
- Research and develop, in a team, a microcontroller based application for physical computing
- Design and present a solution for an application and develop a web-page and blog for it
- Program, construct and test a microcontroller based physical computing application.
- Write and present a report based on the application.
- Describe the function and operation of various mechanical, electrical and electronic components and systems for physical computing applications.

COMM1201 Applied Data Networking 1

On completion of this module the student will be able to:
- Describe the elements which are common to all communications systems
- Distinguish between analogue and digital communication.
- Describe modulation and demodulation methods appropriate to analogue and digital systems.
- Describe the effects of transmission system impairments on signal transmission and reception.
- Describe structured cabling standards
- Identify cabling systems, installation techniques and design limitations of data services systems
- Terminate, test and commission cabling systems
- Carry out building surveys to establish data services design parameters and requirements
- Design a structured cabling system for different client requirements
- Carry out basic calculations appropriate to each of the above outcomes

PROJ1201 Information Literacy 2

On successful completion of this module, the student will be able to:
- Work in a small team with an external agent to implement a project plan
- Produce and implement a technical design, as an application of material studied in other modules in real situations
- Research and acquire new knowledge as part of the design process
- Organise and plan work
- Measure the success of the project in accordance with defined success criteria
- Produce a final, formal written report
- Produce and deliver a formal presentation on completion of the project
- Communicate effectively with a variety of audiences
- Demonstrate an awareness of customer needs in the engineering process
- Demonstrate an awareness of professional responsibilities to a wider community.

NETW1201 Routing Protocols and Concepts (CCNA2)

On completion of this module, the learner will be able to:
- Describe the purpose, nature, and operations of a router and explain the critical role that routers play in enabling communication across multiple networks.
- Configure and verify router operation and explain how a router determines a path and switches packets.
- Describe the purpose and procedure for configuring static and dynamic routing.
- Identify the characteristics of distance vector and link state routing protocols.
- Describe the functions, characteristics, and operation of RIPv1 and RIPv2 routing protocols.
- Compare and contrast classful and classless IP addressing.
- Design and implement a classless IP addressing scheme for a given network
- Describe the main features and operation of the EIGRP and OSPF routing protocols.

MICR2101 Microprocessors 1

On completion of this module the learner will be able to:
- describe the behaviour and fundamental operation of various digital electronic systems.
- perform basic calculations to determine the expected output of the systems,
- Draw flowcharts to describe simple processes on an 8-bit microcomputer system.
- Write simple assembly language programs for an 8-bit microprocessor.
- Implement simple interfacing applications in the laboratory and write a report on this.

PROJ2101 Project

On completion of this module the learner will be able to:
- Interpret a written brief so as understand the project aims, the intermediate goals and to generate a work plan
- Plan and manage the project and the project team to meet these goals
- Carry out basic research
- Build and test prototype models
- Simulate component and system operation using appropriate modelling tools
- Use appropriate tools to produce required hardware elements (e.g. PCB, test jigs, etc)
- Design, develop, test and optimise software code
- Perform basic calculations to determine the expected output of the systems
- Make accurate measurements to test validity of results and carry out basic fault finding
- Integrate project elements to produce a final engineered product
- Maintain a working logbook to catalogue the progress of the work
- Prepare progress and final reports
- Give a brief presentation on completion of the project
- Discuss the project in a formal structured interview.

BUS2101 Business Management 1

On successful completion of this module students will be able to:
- Understand the 'business of business', the workings and structure of a typical business enterprise and the vital role of the business environment and its components
- Understand the ideas of the supply and value chains and particularly the key notions of waste reduction, adding value and surplus creation
- Critically apply (amongst others) the tools of SWOT and PESTEL to a typical enterprise
- Prepare a comprehensive and through report (via a portfolio) on a specific industry branch or a specific business enterprise
- Understand and apply the ideas deriving from a knowledge of the roles, responsibilities, skills and experience(s) of those in the business of managing
- Prepare and present a formal business presentation

NETW2101 LAN Switching & Wireless (CCNA3)

On completion of this module, the learner will be able to:
- Explain basic switching concepts and to perform and verify initial switch configuration and the operation of switches.
- Describe, configure, verify, and troubleshoot VLANs, trunking on switches, inter VLAN routing, VTP, and RSTP.
- Identify, prescribe, and resolve common switched network media issues.
- Describe standards associated with wireless media, such as (IEEE WI-FI Alliance, ITU/FCC) standards.
- Identify and describe the purpose of the components in a small wireless network and their configuration.
- Compare and contrast Wi-Fi Protected Access (WPA) security features and capabilities of open, Wired -- Equivalent Privacy (WEP), and WPA-1/2 networks.
- Describe common wireless-network implementation issues such as interference and misconfiguration.

COMP2101 Operating Systems

On completion of this module, the learner will be able to:
- Explain the role and functions of an Operating System;
- Describe the design of key elements of a modern operating system;
- Use the Unix shell commands;
- Install device drivers;
- Configure user accounts and set security levels;
- Install an Operating System;
- Navigate a Unix and Windows file system;
- Work effectively in a group to research a technical topic;
- Deliver a group presentation;
- Write technical reports;
- Demonstrate an ability to undertake self directed learning

MICR2201 Microprocessors 2

On completion of this module, the learner will be able to.
- Interface a range of data sources and displays to microcomputer/microcontroller systems.
- Draw flowcharts and write code to implement programs for applications using simple peripherals such as seven-segment displays, keypads. And applications using A-D and D-A converters.
- Write a report on an interfacing application developed and tested in the laboratory.
- Test and debug programs in the laboratory.

BUS2201 Business Management 2

Upon completion of this module students will be able to:
- Identify and describe the fundamental challenges faced by the young entrepreneur
- Conduct practical research into the development & elaboration of a potential new product or service
- Formally contact (in writing & orally) potential funders, collaborators and investors and stakeholders
- Draft a marketing plan and conduct small-scale market research (market segmentation, PR, advertising, etc.)
- Carry out a practical small-scale market survey
- Elaborate a basic operations plan for the business
- Measure business performance by means of the elaboration of a set of financial documents: a P & L account, a trial balance sheet and a cash flow forecast, etc.
- Draft and present a professional business plan

SOFT2201 Problem Solving with C

On completion of this module, the learner should be able to:
- Describe the syntax and semantics of the ANSI C programming language
- Explain the use of functions and function decomposition;
- Differentiate local variables from global variables, and state the scope of a variable;
- Work in a team to analyse engineering problems and develop C programs for solving these problems;
- Use the basic utilities and facilities for software development in a Unix operating system environment to code, debug and test software;
- Investigate the core ANSI C language constructs required to implement C programs;

NETW2201 WAN Technologies (CCNA4)

On completion of this module, the learner will be able to:
- Describe different methods for connecting to a WAN
- Implement, verify and troubleshoot WAN connection such as PPP and Frame Relay on routers.
- Describe the importance, benefits, role, impact, and components of VPN technology.
- Describe the impact of Voice Over IP and Video Over IP applications on a network.
- Explain the operation and benefits, configure, verify, and troubleshoot DHCP and DNS operations.
- Describe current network security threats and explain how to implement security policy to mitigate common threats.
- Describe the functions of common security appliances and applications
- Describe the purpose of, configure, monitor and troubleshoot different types of ACLs.
- Explain the basic operation of, configure and troubleshoot Network Address Translation (NAT)