



كلية الشرق الأوسط
Middle East College

Middle East College

Muscat, (Sultanate of Oman)

Validated Programme Leading to the Award of:
**BEng (Hons) Computer Hardware and
Networking**

1. ESSENTIAL QUALITIES AND ATTRIBUTES OF THE PROGRAMME'S GRADUATES

The aim of this programme is to prepare students to apply the technology they have learnt in different areas of hardware and networking in real situations. In particular, this programme prepares students to practice their skills in the design and implementation of large-scale networks, and in the area of computer hardware, to facilitate the students in identifying different hardware components and recognizing their relationship with, and use in, networking.

2. RATIONALE OF THE PROGRAMME

The programme is designed to address the requirements that have emerged consequent to the unprecedented growth in the use of computers and peripheral devices and the supporting networking technologies. In today's world that is rich in technology and science, use of computers has penetrated into many different activities including those that are closely associated with daily life. Be it business, science, the economy, the environment, education, fashion or cultural pursuits, computers have a well defined and constructive role to play. With the increasing use of individual or linked hardware devices, the challenges are ever growing.

These challenges are not restricted to one region, market or a group of users, although some of the issues may be user specific. They provide opportunities for well qualified professionals to not only resolve issues but also, with their experience and continuous research in real environments, to provide a variety of options by which to support the development of new easy-to-use products. With most of the hardware being activated through software and the employment of a growing range of networking techniques and principles, the scope for integrated design and development of the technologies of software, hardware and networking has increased enormously.

This programme is unique in addressing the needs of the region within established international practices. The curriculum includes subjects that help to sharpen the analytical skills and logical reasoning of students. The curriculum is a fine mix of theory and practical work and involves in-depth exposure to real life situations through project work. There is a step-wise progression of evolving complexity and the increasingly abstract nature of the topics considered.

Growing regional requirements and industrial developments coupled with the country's plan of progress necessitate a programme of this nature. It aims to support the technology sector and the allied industrial development through enrichment of human resources with academic knowledge. Considering the industrial growth and use of computing devices in the region, a programme of this nature will be valuable. It will support the students by providing them with the necessary skills and knowledge to contribute professionally to the industry and help them meet the challenges of daily life in a technology environment.

BEng (Hons) - Computer Hardware and Networking													
	Year 1	CU Level	C.P	Year 2	CU Level	C.P	Year 3	CU Level	C.P	Summer	Year 4	CU Level	C.P
Fall Semester	College Mathematics	0	10	Discrete Mathematics	1	10	INTRODUCTION TO PROGRAMMING	0	15	INTERNSHIP	Omani Studies	0	10
	Programming Logic Development	0	10	Business Communication	0	10	SYSTEM ANALYSIS AND DESIGN	1	15		SPECIAL TOPIC / SYSTEMS PROJECT MANAGEMENT	3	15
	English for Special Purpose	0	10	COMPUTER ARCHITECTURE	2	15	Design of Network Security	3	10		DATABASE ADMINISTRATION	3	15
	FUNDAMENTALS OF COMPUTER HARDWARE	0	15	Digital Electronics	1	10	Implementing Network Security	3	10		Principles of Routing	2	10
	ELECTRICAL ENGINEERING	0	15	ELECTIVE - I	1	15	Communication Server Administration	2	10		Project Planning	3	10
			60			60			60				60
Spring Semester	Calculus and Numerical Methods	1	10	Computer Network Protocols	1	10	Business Environment	0	10		Advanced Networking Technologies	3	10
	Probability and Statistics	0	10	Network Administration	2	10	FUNDAMENTALS OF RELATIONAL DATABASE MANAGEMENT SYSTEM	2	15		Routing Protocols	2	10
	Introduction to Internet	0	10	Internet Administration	1	10	Microprocessors and Interfacing	2	10		ELECTIVE - III	3	10
	ELECTRONICS ENGINEERING	1	15	Advanced Computer Hardware	1	10	Enterprise Mobility	3	10		Project Design and Implementation	3	30
	FUNDAMENTALS OF COMPUTER NETWORKS	1	15	PROJECT - I	2	20	ELECTIVE - II	2	15				
		60			60			60			60		
	<i>Certificate in Computing</i>			<i>Diploma in Computer Hardware and Networking</i>			<i>Advanced Diploma in Computer Hardware and Networking</i>				<i>BEng (Hons) in Computer Hardware and Networking</i>		
WHITE	10	COLLEGE REQUIREMENT				Level 0	125						
TURQUOISE	10	DEPARTMENTAL REQUIREMENT				Level 1	120						
YELLOW	13	MAJOR ELECTIVES				Level 2	115						
RED	2	PROJECT				Level 3	120						
LAVENDAR	4	ELECTIVES					480						
	39					Level 2+Level 3	235						

3. PROGRAMME LEARNING OUTCOMES

On completion of this programme, graduating engineering students should be able to:

- demonstrate knowledge and understanding of essential facts, concepts, principles and theories, and a sound grasp of science, mathematics and the technological base, relevant to computer hardware and networking.
- analyse and interpret data and, when necessary, design experiments and use laboratory and workshop equipment to generate new data;
- design a system, component or process to meet a given need, and evaluate the designs, processes and products of others in order to make improvements;
- use a wide range of tools, techniques and equipment, including pertinent software;
- communicate effectively with colleagues and others, using both written and oral methods;
- work in a multi-disciplinary team and demonstrate an understanding of professional and ethical responsibilities;

4. PROGRAMME LEARNING OUTCOMES and CORE MODULES: MAPPING

MODULE	1	2	3	4	5	6
Programming Logic Development				x		
Intoduction to Internet				x		
Fundamentals of Computer Hardware	x					
Electrical Engineering	x	x				
Electronics Engineering	x	x				
Introduction to Programming	x		x	x		
Fundamentals of Computer Networks	x		x			
Digital Logic Design		x		x		
Computer Network Protocols			x			
Network Administration			x		x	
Advanced Computer Hardware	x			x		
Project 1	x				x	x
Internet Administration			x		x	
System Analysis and Design		x		x		
Fundamentals of RDBMS	x		x			
Design of Network Security			x			
Implementing Network Security		x	x			
Microprocessors and Interfacing	x	x				
Computer Architecture	x			x		
Communication Server Administration		x			x	
Enterprise Mobility				x		x
Systems Project Management				x	x	x
Database Administration		x		x	x	
Advanced Networking Technologies		x	x			
Routing Protocols		x				
Principles of Routing	x	x				
Project Planning	x	x	x	x	x	x

Project design and implementation	x	x	x	x	x	x
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