Middle East College

Muscat, (Sultanate of Oman)
Validated Programme Leading to the Award of:
BEng (Hons) Wireless Networks

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

This programme prepares students to address the requirements of the technology of the era viz. wireless technology. The programme aims at providing the students with knowledge and skills for a thorough understanding of network technology and administration with a focus on the wireless environment.

2. RATIONALE OF THE PROGRAMME

The programme in addresses the latest emerging technologies in the field of computer networks & communication. Technology handles networks with simplicity, at less cost and with a minimum of administrative effort. For decades mankind has sought to improve human communication and the ability to work effectively in teams using several communication channels. Computers play a vital role in providing the best communication at very low cost.

Computer communication started in the early 1960's in the form of computer networks with multi-user time sharing systems & dumb terminals. These have evolved into global networks and e-government portals. Computer networks have evolved through many designs and structures during this time. As modern business has become more international with the global economy, the need for wireless and mobile communication has become increasingly important.

This programme not only addresses the latest wireless technologies of GSM, CDPD, GPRS and CDMA but also provides a complete understanding of how to handle corporate networks using wireless technologies. The programme fosters innovative thinking and encourages new approaches to solving problems through the use of emerging technologies. It provides students with the advance knowledge and skills necessary to design and use modern computer-based systems. The curriculum is divided between aspects of theory and practical work, the balance of which has been determined following a detailed study of market needs and having considered expert opinion. This is expected to yield the desired outcome of providing the students with many opportunities in the job market.

The programme provides a comprehensive knowledge of wireless technologies and establishes a backbone understanding of computer networks. The programme also meets the challenge faced by the world today to provide secure systems. An important goal of the programme is to provide students with a level of specialization beyond that provided by more general information systems or information technology programs. Industrial development is progressing rapidly in Oman and wireless network solutions are becoming a necessity because of their features of portability, cost effectiveness and versatility. This programme is useful in providing technical skills and in-depth knowledge that studentsneed in order to take part professionally in the economy and to meet the challenges of today's wireless technology environment.

BEng (Hons) - Wireless Networks

	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		Omani Studies	0	10
	Programming Logic Development	0	10	Business Communication	0	10	FUNDAMENTALS OF RELATIONAL DATABASE MANAGEMENT SYSTEM	2	15		SPECIAL TOPIC / SYSTEMS PROJECT MANAGEMENT	3	15
	English for Special Purpose	0	10	SYSTEMS ANALYSIS AND DESIGN	1	15	Design of Network Security	3	10		DATABASE ADMINISTRATION	3	15
	FUNDAMENTALS OF COMPUTER HARDWARE	0	15	Electromagnetic Fields	2	10	Implementing Network Security	3	10		Routing Protocols	2	10
	ELECTRICAL ENGINEERING	0	15	ELECTIVE - I	1	15	Antenna Theory and Communication Systems	3	10	INTERNSHIP	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	COMPUTER ARCHITECTURE	2	15		Enterprise Mobility	3	10
	Introduction to Internet	0	10	Internet Administration	1	10	Communication Server Administration	2	10		ELECTIVE - III	3	10
	ELECTRONICS ENGINEERING	1	15	Wireless Technology	2	10	Principles of Routing	2	10				
	FUNDAMENTALS OF COMPUTER NETWORKS	1	15	PROJECT - I	2	20	ELECTIVE - II	2	15		Project Design and Implementation	3	30
			60			60			60				60
	Certificate in Networking			*Diploma in Wireless Networks*			*Advanced Diploma in Wireless Networks*				*BEng (Hons) in Wireless Networks*		

WHITE	10	COLLEGE REQUIREMENT
TURQUOISE	10	DEPARTMENTAL REQUIREMENT
YELLOW	13	MAJOR ELECTIVES
RED	2	PROJECT
LAVENDAR	4	ELECTIVES
	39	

Level 0	125
Level 1	100
Level 2	125
Level 3	130
	480
Level 2+Level 3	255

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 wireless technology.
- 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
Intoduction to Internet				x		
Programming Logic Development				x		
Fundamentals of Computer Hardware	x				x	
Electrical Engineering	x	x				
Electronics Engineering	x	x				
Introduction to Programming	x		x	x		
Fundamentals of Computer Networks	x		x			
Electromagnetics Fields	x					
Computer Network Protocols			x			
Network Administration			x		x	
Internet Administration	x	x	x			
Wireless Technology	x			x		
Project 1	x				x	x
System Analysis and Design		x		x	x	
Fundamentals of RDBMS	x		x			
Design of Network Security			x			
Implementing Network Security		x	x			
Antennas and Wave Propagation	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	
Database Security		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