

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

This programme aims to prepare students with the necessary knowledge and skills for them to achieve competence in core areas relating to electronics and communications.

2. RATIONALE OF THE PROGRAMME

With a global revolution taking place in telecommunications, information systems and the electronics industries, there is a need for a quality programme that prepares students to address the growing needs of these industries. The telecommunications industry which includes mobile communications, Internet and digital communications is one of the most dynamic and rapidly growing industrial sectors. As a result, there is an increasing demand for students proficient in this specialization.

The curriculum provides the knowledge and skills in different areas of electronics and telecommunications in a well structured manner and provides a comprehensive understanding of the various engineering topics involved together with improving the students' logical skills and analytical capability. The programme lays emphasis on specialized areas within telecommunication such as telephony, digital communication, radar and satellite communication and microwave communication systems. The programme is a blend of theory and practice through the use of laboratory experiments that employ the required hardware as well as using simulated environments. Subject areas such as VLSI and digital signal processing facilitate the student to gain insights into new application areas.

The programme deals with the overall design of process control systems and provides knowledge of the control algorithms prescribed by manufacturing process experts. Having learned the basic concepts with the 8085 microprocessor, students can adapt to the microcontroller environment (such as INTEL 8051 or Motorola 68HC11) or to the PC environment. The study of 8 – bit microprocessors is appropriate in understanding the working of embedded systems or microprocessor – based products.

The programme is aimed at developing the ability to apply scientific and engineering principles to the solution of practical problems, the ability to design devices and systems to meet specific needs in industry, the ability to design and conduct experiments and to interpret results, and the ability to use the latest technologies and tools, and to understand professional and ethical responsibilities. The programme is aimed at preparing the student for a variety of jobs in specific subject areas that fall under the scope of the electronics and telecommunication. From a regional perspective, the programme plays an important role in sustaining the growth of the electronics and telecommunications industry in Oman.

The programme not only prepares technical specialists and design level experts but also enables the student to develop entrepreneurial skills. Familiarity with the various communication systems provides the ability to keep up with the rapid changes in technology in the areas of electronics and telecommunications. The increased demand for electrical and electronic goods, including computers and communications equipment, has encouraged electronics manufacturers to invest heavily in research and development in order to remain competitive through maintaining a scientific edge. This will provide openings for graduates who have learned the latest technologies. This programme has been prepared considering all such requirements.

BEng (Hons) - Electronics and Telecommunication

	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	Inferential Statistics	1	10	Transmission Lines and Filters	3	10	INTERNSHIP	Omani Studies	0	10
	Computer Fundamentals	0	10	Business Communication	0	10	CONTROL SYSTEMS	2	15		SPECIAL TOPIC / Systems Project Management	3	15
	English for Special Purpose	0	10	AC Electrical Circuit Analysis	2	10	Business Environment	0	10		DIGITAL SIGNAL PROCESSING	3	15
	ENGINEERING PHYSICS	1	15	COMMUNICATION SYSTEMS	1	15	Antennas and Wave Propagation	3	10		VLSI Techniques - I	2	10
	FUNDAMENTALS OF COMPUTER HARDWARE	0	15	ELECTIVE - I	1	15	ELECTIVE - II	2	15		Project Planning	3	10
			60			60			60				60
Spring Semester	Calculus and Numerical Methods	1	10	Electromagnetic Fields	2	10	ELECTRONIC MEASUREMENTS	1	15		Radar and Satellite Communication	3	10
	Descriptive Statistics	0	10	Digital Logic Design	1	10	INDUSTRIAL ELECTRONICS	2	15		VLSI Techniques - II	3	10
	Programming Basics	0	10	Digital Communication	2	10	TELEPHONY	2	10		ELECTIVE - III	3	10
	DC Electrical Circuit Analysis	1	15	Advanced Calculus	2	10	Microwave Communication Systems	2	10		Project Design and Implementation	3	30
	ELECTRONIC CIRCUITS	1	15	PROJECT - I	2	20	Microprocessors and Interfacing	2	10				
		60			60			60			60		
	Certificate in Electronics			Diploma in Electronics and Telecommunication			Advanced Diploma in Electronics and Telecommunication				BEng (Hons) in Electronics and Telecommunication		
WHITE	10	COLLEGE REQUIREMENT					Level 0	95					
TURQUOISE	10	DEPARTMENTAL REQUIREMENT					Level 1	130					
YELLOW	13	MAJOR ELECTIVES					Level 2	135					
RED	2	PROJECT					Level 3	120					
LAVENDER	4	ELECTIVES						480					
	39												

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 the field of electronics and telecommunication;
- 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
Engineering Physics	x	x				
Fundamentals of Computer Hardware	x	x				
Programming Basics*	x	x	x	x		
DC Electrical Circuit Analysis	x	x		x		
Electronic Circuits	x	x	x	x	x	x
AC Electrical Circuit Analysis	x	x		x		
Communication Systems	x	x	x	x	x	x
Electromagnetic Fields	x					
Digital Logic Design	x	x		x		
Digital Communication	x					
Advanced Calculus	x					
Project 1	x	x	x	x	x	x
Transmission Lines and Filters	x					
Control Systems	x	x		x		
Antennas and Wave Propagation	x					
Electronic Measurements	x	x				
Industrial Electronics	x	x	x	x	x	x
Telephony	x	x	x	x	x	x
Microwave Communication Systems	x	x	x	x	x	x
Microprocessors and Interfacing	x	x	x	x		
Systems Project Management				x	x	x
Digital Signal Processing	x	x	x	x		
VLSI Techniques I	x					
Radar and Satellite Communication	x				x	
VLSI Techniques II	x	x	x	x		
Project Planning	x	x	x	x	x	
Project Design and Implementation	x	x	x	x	x	

**It is a replacement of Introduction to Internet. Although it is considered a College Requirement, it is only offered to students in the Electronics and Telecommunication specialization.*