SYLLABI OF COURSES FOR DIPLOMA PROGRAMME IN MEDICAL ELECTRONICS, LEVEL IV & V 31

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			5192 -	BIOTE	LEMET	RY	_			
a la la la Dan Wook			Progressive Assessment		Examination Schedule (Marks)					
Teaching Schedule Per Week					Theorem		Practi	cal Ex.	Total	
Lectures	Practical	Credits	Assessment		Theory				200	
		5	25	25	3 Hrs	100		50	200	
3	Z				teory Test T		otal TV	V PR	Gr Total	
Pre-requisite		Source	Some		eory 1	est I	Jun 1			
Nil		MEX	Semester							

Rationale: Telemetric transmission of functional and physiological information offers many advantages in medical diagnostics and patient surveillance. The telemetric data link avoids direct connections to the recording equipment, which are sometimes embarrassing and restraining, thus leaving the patient freely movable. The course helps to understand this new and emerging field.

 INTRODUCTION AND OVERVIEW OF COMMUNICATION SYSTEMS Classification of communication networks. The variety and description of tele-communications traffic. The conversion of analogue and digital signals. The transmission of information. The relationship between information, bandwidth and noise. The description and types of communication channels. Digital signals. The description and types of communication channels. Digital transmission and switching. Standards. COMMUNICATION TECHNIQUES Time, frequency and bandwidth, analog modulation and demodulation AM, FM, PM. Digital modulation, ASK, FSK and PSK. Spread spectrum techniques. Digital demodulation, DPSK and MSK. Noise in communication systems: probability and random signals. Errors in digital communication. Timing control in digital communication. Design limitations on maximum data-rate and channel capacity. COMMUNICATION CHANNELS Transmission lines. Optical fibre wave-guide. The electromagnetic spectrum: propagation in free space and the atmosphere, noise in free-space. Microwave link communications. MFORMATION AND CODING THEORY Information sources and Entropy; Information source coding; Channel coding-Hamming distance; Channel capacity; Error detection coding; Error correction coding; Encryption. BROADBAND ISDN, SWITCHING & NETWORKS Broadband ISDN services, Network architecture, Signalling, Protocol Reference Model, Operation and maintenance, Asynchronous Transfer Mode (ATM), ATM Adaptation Layer, Physical Layer, SONET and SDH, Connectionless Service, Switching, and watchens are the tapterfere (EDD). 		CONTENTS	nis	IVINO
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 COMMUNICATION TECHNIQUES Time, frequency and bandwidth, analog modulation and demodulation AM, FM, PM. Digital modulation, ASK, FSK and PSK. Spread spectrum techniques. Digital demodulation, DPSK and MSK. Noise in communication systems: probability and random signals. Errors in digital communication. Timing control in digital communication. Design limitations on maximum data-rate and channel capacity. COMMUNICATION CHANNELS 10 Transmission lines. Optical fibre wave-guide. The electromagnetic spectrum: propagation in free space and the atmosphere, noise in free-space. Microwave link communications. Satellite communication. Optical fibre cables. Mobile communications. 4. INFORMATION AND CODING THEORY Information sources and Entropy; Information source coding; Channel coding-Hamming distance; Channel capacity; Error detection coding; Error correction coding; Encryption. 5. BROADBAND ISDN, SWITCHING & NETWORKS Broadband ISDN services, Network architecture, Signalling, Protocol Reference Model, Operation and maintenance, Asynchronous Transfer Mode (ATM), ATM Adaptation Layer, Physical Layer, SONET and SDH, Connectionless Service, Switching, Layer, Physical Layer, SONET and SDH, Connectionless Service, Entropre, Sonet Michae, Switching, services in networks, High Speed Networks, Topola, Switching, Services in networks, High Speed Networks, Specific Harding, Specific DDD, Specific Specific DDD, Specific Specific Specific DDD, Specific Spe	commu transmi	tion of communication networks. The tartogue and digital signals. The mications traffic. The conversion of analogue and digital signals. The ission of information. The relationship between information, bandwidth and The description and types of communication channels. Digital transmission	10	30
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HUMAN RESOURCE & CURRICULUM DEVELOPMENT CELL, DIRECTORATE OF TECHNICAL EDN, GUA.VL-ALV, 11-2

SYLLABI OF COURSES FOR DIPLOMA PROGRAMME IN MEDICAL ELECTRONICS, LEVEL IV & V $\,$

PRACTICALS:

- 1. Assemble and test 2/3 band radio receiver, fault finding and servicing the receiver.
- 2. Assemble and test AM/FM modulator, demodulator and detector.
- 3. Fibre optic link.
- 4. Study of optical fibre.
- 5. Study of LAN systems.
- 6. Study of modems.

FIELD VISIT:

Visit to A.I.R.

REFERENCE BOOKS:

Electronic Communication Systems by George Kennedy.
 Electronic Communication Techniques by Young.

