

Lesson Plan

CLASS			TE Electronics, Semester V				
Academic Term			July – Nov 2019				
Subject			Digital Communication (ELX 502)				
Periods (Hours) per week			Lecture	4			
			Practical	4			
			Tutorial	--			
Evaluation System				Hours	Marks		
			Theory examination	3	80		
			Internal Assessment	--	20		
			Practical Examination	--	--		
			Oral Examination	--			
			Term work	--			
			Total	--	100		
Time Table							
		Day		Time			
		Monday		8.45-9.45 am			
		Tuesday		2.30 – 3.30 pm			
		Wednesday		9.45 – 10.45 pm			
		Friday		1.30 – 2.30 pm			
Course Content and Lesson plan							
Module 1:Information theory and source coding							
Week	Lecture No.	Date		Topic	Remarks (If any)	Mapped CO	Mapped PO
		Planned	Actual				
1	1	1-7-19		Introduction of Digital communication with block diagram and other parameters		ELX 502.2	PO1, PO2
	2	3-7-19		Concept of information and entropy(H)		ELX 502.2	PO1, PO2
	3	4-7-19		Examples based on H and Shannon Fano theorem for source coding		ELX 502.2.2	PO1, PO2

	4	5-7-19		Shanon Fano coding examples		ELX 502.2	PO1, PO2
	5	8-7-19		Huffman coding examples		ELX 502.2	PO1, PO2
	6	10-7-19		Proof on channel capacity parameters,Bandwidth S/N trade off		ELX 502.2	PO1, PO2
Module 2: Digital Modulation Techniques							
	7	11-7-19		coherent and non- coherent reception BPSK modulation and demodulation		ELX 502.1	PO1,PO5
	8	12-7-19		PSD and constellation diagram		ELX 502.1	PO1
	9	16-7-19		DPSK modulation and demodulation		ELX 502.1	PO1, PO2
	10	17-7-19		DEPSK		ELX 502.1	PO1, PO2
	11	18-7-19		QPSK transmitter		ELX 502.1	PO1, PO2
	12	19-7-19		QPSK receiver,offset and nonoffset QPSK		ELX 502.1	PO1, PO2
	13	23-7-19		Mary PSK		ELX 502.1	PO1, PO2
	14	24-7-19		FSK and Mary FSK		ELX 502.1	PO1, PO2
	15	25-7-19		QAM		ELX 502.1	PO1, PO2
	16	26-7-19		MSK modulator,waveforms	ASSIGNMENT1	ELX 502.1	PO1, PO2
	17	30-7-19		MSK constellation diagram,phase continuity		ELX 502.1	PO1, PO2
	18	31-7-19		MSK demodulator		ELX 502.1	PO1, PO2
	19	1-8-19		Comparison of all techniques based on spectral efficiency,power efficiency.Probability of error in detection		ELX 502.1	PO1
	20	2-8-19		A baseband signal receiver and its Probability of error			
	21	6-8-19		Optimum receiver and its transfer function, matched filter and its			

				properties			
Module 3: Introduction to Digital communication system							
	22	7-8-19		Random variables, Mean and variance of random variables (R.V.)		ELX 502.2	PO1
	23	8-8-19		Numericals based on R.V.		ELX 502.2	PO1
	24	9-8-19		Binomial distribution, Poisson distribution, Gaussian PDF, Rician PDF, central limit theorem		ELX 502.2	PO1
	25	20-8-19		Central limit theorem, Binary synchronous channel. Optimal receiver	13,14,16 August 2019 :UT2	ELX 502.2	PO1
Module 4: Error Control Codes							
	26	21-8-19		Need for channel coding, Discrete memoryless channel, redundancy, Code rate		ELX 502.4	PO1
	27	22-8-19		Hamming bound, Linear block codes		ELX 502.4	PO1
	28	23-8-19		Linear block codes		ELX 502.4	PO1, PO5
	29	27-8-19		Cyclic codes (non systematic)		ELX 502.4	PO1
	30	28-8-19		Cyclic codes (systematic)		ELX 502.4	PO1
	31	29-8-19		Convolution codes: Encoder, trellis diagram		ELX 502.4	PO1, PO5
	32	30-8-19		Convolution codes: Encoder, Code tree, state diagram	ASSIGNMENT 2	ELX 502.4	PO1
	33	11-9-19		Viterbi algorithm		ELX 502.4	PO1

Module 5:Pulse Shaping for Optimum Transmission							
	34	13-9-19		Line codes and their desirable properties,PSD of digital data		ELX 502.3	PO1,PO5
	35	17-9-19		Concept of ISI,raised cosine filter		ELX 502.3	PO1
	36	18-9-19		Nyquist criterion for distortion less transmission,concept of equalizer		ELX 502.3	PO1
	37	19-9-19		Duo binary encoding and modified Duo binary encoding		ELX 502.3	PO1
Module 6 :Application of Digital Communication							
	38	20-9-19		Satellite communication,system model,transponder		ELX 502.5	PO1
		24-9-19		Satellite orbies:LEO,MEO,GEO		ELX 502.5	PO1
		25-9-19		Satellite:Link analysis		ELX 502.5	PO1
		26-9-19		Advantages of optical Communication system,signal transmission in optical fibres.		ELX 502.5	PO1
		27-9-19		Optical sources and optical detectors	ASSIGNMENT3	ELX 502.5	PO1
		1-10-19		Optical digital communication system		ELX 502.5	PO1
		3-10-19		Revision			
		4-10-19		Revision			
		9-10-19		university papers solving			
		10-10-19		university papers solving			
				UT2: 14,15,16 Oct 2019			

Text- Books:

1. Simon Haykin, "*Communication System*", John Wiley And Sons ,4th Ed
2. Taub Schilling And Saha, "*Principles Of Communication Systems*", Tata Mc-Graw Hill, Third Ed
3. John G. Proakis, "*Digital Communications*", Mcgraw Hill , 5th Ed
4. Anil Maini and Varsha Agarwal, "*Satellite Communication*", Wiley publication

Internal Assessment:

Two tests will be conducted which will cover at least 80% of syllabus.

The average marks of both the tests will be considered as final IA marks

Semester End Theory Examination:

1. Question paper will comprise of total 6 questions, each of 20 marks.
2. Only 4 questions need to be solved.
3. Question number 1 will be compulsory and will cover all modules whereas sub questions of 2 to 5 marks will be asked
4. Remaining questions will be asked from all the modules

Submitted By	Approved By
Prof. Jagruti Nagaonkar	ii) Prof. K. Narayanan Sign:
Sign:	ii) Prof. Sapna Prabhu Sign:
	iii) Prof. Shilpa Patil Sign:
	iv) Prof. Monica Khanore Sign:
Date of Submission:	Date of Approval:
Remarks by PAC (if any)	