

**OBJECTIVES:**

- ✓ To introduce the relevance of this course to the existing technology through demonstrations, case studies, simulations, contributions of scientist, national/international policies with a futuristic vision along with socio-economic impact and issues
- ✓ To study the various analog and digital modulation techniques
- ✓ To study the principles behind information theory and coding
- ✓ To study the various digital communication techniques

**UNIT I ANALOG MODULATION**

9

Amplitude Modulation – AM, DSBSC, SSBSC, VSB – PSD, modulators and demodulators – Angle modulation – PM and FM – PSD, modulators and demodulators – Superheterodyne receivers

**UNIT II PULSE MODULATION**

9

Low pass sampling theorem – Quantization – PAM – Line coding – PCM, DPCM, DM, and ADPCM And ADM, Channel Vocoder – Time Division Multiplexing, Frequency Division Multiplexing

**UNIT III DIGITAL MODULATION AND TRANSMISSION**

9

Phase shift keying – BPSK, DPSK, QPSK – Principles of M-ary signaling M-ary PSK & QAM – Comparison, ISI – Pulse shaping – Duo binary encoding – Cosine filters – Eye pattern, equalizers

**UNIT IV INFORMATION THEORY AND CODING**

9

Measure of information – Entropy – Source coding theorem – Shannon–Fano coding, Huffman Coding, LZ Coding – Channel capacity – Shannon–Hartley law – Shannon's limit – Error control codes – Cyclic codes, Syndrome calculation – Convolution Coding, Sequential and Viterbi decoding

**UNIT V SPREAD SPECTRUM AND MULTIPLE ACCESS**

9

PN sequences – properties – m-sequence – DSSS – Processing gain, Jamming – FHSS – Synchronisation and tracking – Multiple Access - FDMA, TDMA, CDMA

**Text books**

T1: Taub & Schiling "Principles of communication systems" Tata McGraw hill 2007.

**T2: S. Haykin "Digital Communications" John Wiley 2005**

**Reference Books**

R1: B.P.Lathi, "Modern Digital and Analog Communication Systems", 3rd edition, Oxford University Press, 2007

R2: H P Hsu, Schaum Outline Series – "Analog and Digital Communications" TMH 2006.

R3: B.Sklar, Digital Communications Fundamentals and Applications" 2/e Pearson Education 2007 Simon Haykin,"Communication Systems",Fourth Edition Tata McGraw Hill.

**R4: K.Muralibabu, "Communication Engineering" Lakshmi Publications,2013**



SRI VIDYA COLLEGE OF  
ENGINEERING & TECHNOLOGY  
COURSE PLAN

Doc.Ref:SVECE02

Revision: 03

Date: 15/06/2018

**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**  
ACADEMIC YEAR: 2018-19(ODD)

Subject Code	EC 8395	L	P	T	C					
Subject Title	COMMUNICATION ENGINEERING	3	0	0	3					
Year / Dept / Sem	II/CSE/ODD	Regulation Year		2017						
Faculty Name / Desg / Dept	T.VENKATESH/AP/ECE									
Course Prerequisite	To introduce the fundamental concepts of modulation & transmissions.									
Course Objectives (CO)	<p><b>CO1:</b> To introduce the relevance of this course to the existing technology through demonstrations, case studies, simulations, contributions of scientist, national/international policies with a futuristic vision along with socio-economic impact and issues</p> <p><b>CO2:</b> To study the various analog and digital modulation techniques</p> <p><b>CO3:</b> To study the principles behind information theory and coding</p> <p><b>CO4:</b> To study the various digital communication techniques</p>									
EC 8395	COMMUNICATION ENGINEERING	L	T	P	C 3 0 0 3					
<b>UNIT I</b>	<b>ANALOG MODULATION</b>									
	Amplitude Modulation – AM, DSBSC, SSBSC, VSB – PSD, modulators and demodulators – Angle modulation – PM and FM – PSD, modulators and demodulators – Superheterodyne receivers									
<b>UNIT II</b>	<b>PULSE MODULATION</b>									
	Low pass sampling theorem – Quantization – PAM – Line coding – PCM, DPCM, DM, and ADPCM And ADM, Channel Vocoder – Time Division Multiplexing, Frequency Division Multiplexing									
<b>UNIT III</b>	<b>DIGITAL MODULATION AND TRANSMISSION</b>									
	Phase shift keying – BPSK, DPSK, QPSK – Principles of M-ary signaling M-ary PSK & QAM – Comparison, ISI – Pulse shaping – Duo binary encoding – Cosine filters – Eye pattern, equalizers									
<b>UNIT IV</b>	<b>INFORMATION THEORY AND CODING</b>									
	Measure of information – Entropy – Source coding theorem – Shannon–Fano coding, Huffman Coding, LZ Coding – Channel capacity – Shannon-Hartley law – Shannon's limit – Error control codes – Cyclic codes, Syndrome calculation – Convolution Coding, Sequential and Viterbi decoding									
<b>UNIT V</b>	<b>SPREAD SPECTRUM AND MULTIPLE ACCESS</b>									
	PN sequences – properties – m-sequence – DSSS – Processing gain, Jamming – FHSS – Synchronisation and tracking – Multiple Access – FDMA, TDMA, CDMA									





SRI VIDYA COLLEGE OF  
ENGINEERING & TECHNOLOGY  
COURSE PLAN

Doc.Ref:SVECEUZ

Revision: 02

Date: 15/06/2018

S.No	Topic Name	Book	Page no	Mode of delivery	No of hrs	Cumulative hrs
<b>UNIT I-ANALOG MODULATION</b>						
1	Introduction	T2	88	BB	1	1
2	AM – Frequency spectrum – vector representation	T2	90	BB	2	3
3	DSB/SC	T2	94	BB	1	4
4	SSB	T2	98	BB	1	5
5	VSB	T2	100	BB	1	6
6	PSD, Modulators & demodulators	T2	102	BB	2	8
7	Angle modulation-PM & FM	T2	107	BB	1	9
8	PSD, Modulators & demodulators	T2	109	BB	1	10
9	Superheterodyne receivers	T2	128	BB	1	11
10	Revision:SSB,VSB,DSB		-		1	12
<b>UNIT II-PULSE MODULATION</b>						
11	Introduction	T2	183	BB	1	13
12	Low pass sampling theorem – Quantization	T2	193	BB	2	15
13	PAM & PCM	T2	188/201	BB	1	16
14	Line coding	T2	204	BB	1	17
15	DPCM & DM	T2	227/218	BB	2	19
16	ADPCM & ADM	T2	229/232	BB	2	21
17	Channel Vocoder	T2	Notes	BB	1	22
18	TDM	T2	211	BB	1	23
19	FDM	T2	105	BB	1	24
20	Revision:PWM,PCM,PPM		-		1	25
<b>UNIT III -DIGITAL MODULATION AND TRANSMISSION</b>						
21	Phase shift keying – BPSK	T2	349	BB	1	26
22	DPSK	T2	414	BB	1	27
23	QPSK – Principles of M-ary signaling M-ary PSK	T2	354/365	BB	1	28
24	QAM & its comparision	T2	369	BB	1	29
25	ISI- Pulse shaping	T2	259	BB	1	30
26	Duo binary encoding	T2	270	BB	1	31
27	Cosine filters	T2	Notes	BB	1	32
28	Eye pattern	T2	293	BB	1	33
29	Equalizers	T2	Notes	BB	1	34
<b>UNIT IV- INFORMATION THEORY AND CODING</b>						
30	Measure of information – Entropy	T2	567	BB	1	35

31	Source coding theorem – Shannon-Fano coding	T2	574	BB	1	36
32	Huffman Coding & LZ Coding	T2	578	BB	2	38
33	Channel capacity – Shannon-Hartley law – Shannon's limit theorem	T2	587/597	BB	2	40
34	Error control codes – Cyclic codes, Syndrome calculation	T2	626/641	BB	2	42
35	Convolution Coding	T2	654	BB	1	43
36	Sequential & Viterbi decoding	T2	661	BB	1	44
<b>UNIT V-SPREAD SPECTRUM AND MULTIPLE ACCESS</b>						
37	Introduction	T2	479	BB	1	45
38	PN sequences & Properties	T2	480	BB	2	47
39	M-sequence, DSSS – Processing gain & jamming	T2	490	BB	2	49
40	FHSS – Synchronisation and tracking	T2	499	BB	1	50
41	Multiple Access – FDMA	T2	513	BB	1	51
42	TDMA	T2	547	BB	1	52
43	CDMA	T2	549	BB	1	53

Signature	Prepared by Mr. Venkatesh.T	Approved by Mr.Balaganesan.P
Name	Mr. Venkatesh.T	Mr.Balaganesan.P
Designation	Assistant Professor / ECE	Assistant Professor & HOD (ECE)
Signed date	14/06/2018	14/06/2018

| Endorsed |  
| Sanjay |  
| P.D.L |