Course Number and Name
BEC604 - COMMUNICATION ENGINEERING - II

Credits and Contact Hours
3 and 45

Course Coordinator's Name
Mr R.Mohanraj

Text Books and References

TextBook:

1. Bernard Sklar, *"Digital Communication, Fundamentals and Application"*, Pearson Education Asia,   2nd Edition, 2001.
2. Simon Haykin, *"Communication Systems"*, John Wiley & Sons, 4th Edition, 2000.
3. Taub & Schilling, *"Principle of Communication Systems",* 2nd Edition, 2003.

References:

1. John G. Proakis, "Digital Communication", McGraw Hill Inc, 5th Edition, 2008.
2. Singh, R.P. & Sapre, S.D, "Communication Systems: Analog &Digital", Tata
   McGraw-Hill, 5th reprint
3. www.scribd.com

Course Description

- To learn and understand fundamental concepts of communication systems.
- The process of sampling, quantization and coding that are fundamental to the digital transmission of analog signals and digital modulation systems.
- Baseband and passband transmission systems.
- M-ary signaling and spread spectrum Techniques.

Prerequisites	Co-requisites
Communication Engineering-I	Nil

required, elective, or selected elective (as per Table 5-1)
required

Course Outcomes (COs)

CO1: Students will learn about the basic concepts of Sampling, basic concepts of baseband transmission of binary data

CO2: They gain knowledge about basics of digital modulation techniques.

CO3: They can understand the concepts of spread spectrum digital communication system

CO4: To provide in-depth analysis of noise performance in various receivers

CO5: Design basic communication systems

CO6: To understand the basic concepts of analog pulse modulation techniques

Student Outcomes (SOs) from Criterion 3 covered by this Course

COs/SOs	a	b	c	d	e	f	g	h	i	j	k
CO1	H	M		M		M	H		H		
CO2	M	M	H		M	M	M		H		M
CO3	M			H					H		
CO4	M	M			M		M		H		
CO5											
CO6		L	H		M						M

List of Topics Covered

UNIT I   SAMPLING AND QUANTIZATION   9

Sampling Process – Aliasing – Instantaneous sampling – Natural Sampling –Flat Sampling – Quantization of signals – sampling and quantizing effects –channel effects – SNR for quantization pulses – data formatting techniques –Time division multiplexing.

UNIT II   DIGITAL MODULATION   9

PCM Systems – Noise Considerations in PCM system – Overall Signal-tonoise ratio for PCM system – Threshold effect – Channel Capacity – Virtues,Limitations & Modification of PCM system – PCM Signal Multiplexing – Differential PCM – Delta Modulation – Noise Considerations in Delta Modulation – SNR Calculations – Comparison of PCM, DPCM & DM.

UNIT III   BASE BAND PULSE TRANSMISSION   9

Maximum likelihood receiver structure – Matched filter receiver – Probability error of the Matched filter – Intersymbol interference – Nyquist criterion for distortionless baseband transmission – Correlative coding – Eye pattern.

UNIT IV   PASS BAND DATA TRANSMISSION   9

Pass Band Transmission Model – Generation, Detection, Signal Space Diagram, Probability of Error for BFSK, BPSK, QPSK, DPSK, and Schemes – Comparison.

UNIT V M-ARY SIGNALING AND INTRODUCTION TO SPREAD SPECTRUM TECHNIQUES   9

M-ary signaling, vectoral view of MPSK and MFSK signaling, symbol error performance of M-ary systems –Introduction – Discrete Sequence Spread Spectrum technique – Use of Spread Spectrum with CDMA-Ranging Using Discrete Sequence Spread Spectrum – Frequency Hopping Spread Spectrum –Generation & Characteristics of PN Sequence.