

## Tentative Teaching Plan

**B.Tech. ECE, 5<sup>th</sup> Semester (Batch 2017)**

**Session July-Nov/Dec 2019**

### Digital Communication systems

**Subject Code: BECE1-518 L T P C**

**Duration: 48 Hours**

**3 1 0 4**

**Subject In-charge: Dr Jyoti Saxena**

Lecture	Topics to be covered
1	Introduction to the subject
2	Block Diagram of Digital Communication System, Advantages of Digital communication system over Analog communication systems
3	Sampling theorem, Signal reconstruction in frequency domain
4	Signal reconstruction in time domain, Aliasing Problem
5	Sampling of Bandpass Signal
6	Practical and Flat Top Sampling
7	Uniform and Non-uniform quantization and Signal to Quantization ratio of Quantized Signal
8	Introduction to Pulse Code Modulation, Description of basic elements of PCM
9	Advantages and Disadvantages of Pulse Code Modulation
10	Differential pulse code modulation, Adaptive DPCM
11	Delta modulation, Idling noise and slope overload
12	Adaptive delta modulation, Comparison of PCM and DM
13	Introduction to Baseband Transmission, Line Coding and its properties
14	Various types of PCM waveforms, M-ary Pulse Modulation waveforms, Attributes of PCM waveforms
15	Various Line Coding Formats
16	Power Spectra of various line codes
17	Inter-Symbol Interference (ISI)
18	Nyquist criterion for zero ISI and Raised cosine spectrum
19	Error performance degradation in communication systems, $E_b/N_0$ parameter, Requirements of detection technique
20	Introduction to Baseband Detection, Base band signal receiver
21	Probability of error, Optimum filter
22	Introduction to Matched filter and its derivation
23	Probability of error in Matched filter
24	Correlation detector
25	Decision threshold and error probability for binary unipolar (on-off) signaling
26	Introduction to Band-pass Modulation and Demodulation, Types of digital modulation
27	Wave forms for Amplitude, Frequency and Phase Shift Keying
28	Method of generation and coherent & non-coherent detection/reception of binary ASK

29	Method of generation and coherent & non-coherent detection/reception of binary FSK
30	Method of generation and coherent & non-coherent detection/reception of binary PSK
31	Differential phase shift keying, Quadrature modulation techniques
32	QPSK and Error probability for QPSK
33	M-ary FSK
34	Minimum Shift Keying (MSK)
35	Calculation of bit error probability of BPSK, BASK and BFSK
36	Comparison of various digital modulation techniques
37	Multiplexing Techniques
38	Time division multiplexing, Frequency division multiplexing, code division multiplexing
39	Multiplexing PCM signals
40	Introduction to upcoming techniques of transmission
Rest of the contact hours are assigned to Tutorials and two MSTs	