

GURU TEGH BAHADUR INSTITUTE OF TECHNOLOGY

SEMESTER: 3rd

BRANCHES: ECE

ACADEMIC PLAN FOR III SEMESTER

Subject: Analog Communication

Subject Code: ECC – 209

Class: IIIrd Sem. (ECE)

Credits: 4

Total Lecture classes available: 40

S.No.	TOPICS TO BE COVERED	No. of Lectures
1	Course basic: (a) The Communication Process, Sources of Information. (b) Review of Fourier Transforms and Dirac Delta Functions	3
2	Transmission through Linear Systems, Filters (low pass and band pass signals),	2
3	Amplitude Modulation: (a) Introduction Definition and mathematical representation (b) Modulation Index (c) Power relation of modulated signals (d) Efficiency	3
4	Double Sideband – Suppressed Carrier Modulation DSB-SC Modulator (a) Modulator, Demodulator and application	2
5	Types of AM modulation, (a) Single-Sideband 1) Definition and mathematical representation 2) Power content SSB Modulator and Demodulator (b) Vestigial-Sideband (1) VSB Modulation and demodulation	2
6	Quadrature – Carrier Multiplexing, Frequency Translation, Frequency-Division Multiplexing	2
7	Angle Modulation: Introduction, Basic Definitions, Frequency Modulation (Transmission BW of FM Signal) Generation of NBFM and WBFM, (a) Direct method (b) Indirect method	2
8	Nonlinear Effects in FM Systems	1
9	Phase-Locked Loop	1
10	Superheterodyne receiver (a) Basic Elements and principle (b) Working (c) Intermediate frequency	2
	1st term exam	
11	Probability and Random Processes: Introduction; Probability; Random Variables,	2
12	Statistical Averages Random Processes (a) Mean	3

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	(b) Correlation (c) Covariance functions;	
13	Transmission of a Random Process Through a Linear Filter	2
14	Power Spectral Density	2
15	Gaussian Process, Noise, Narrowband Noise	2
16	Noise: Introduction, Receiver Model	2
17	Noise in DSB-SC Receivers DSB-SC Demodulator	2
18	Noise in AM Receivers	2
19	Noise in FM Receivers	2
20	Pre-emphasis and De-emphasis in FM.	1

Textbook(s):

1. Simon Haykins and Michael Moher, "Communication Systems" John Wiley & sons Inc, 5th edition, 2009.

References:

1. B P Lathi and Zhi Ding, "Modern Digital and Analog Communication Systems", OUP, 5th edition, 2019.
2. H. Taub, D. L. Schilling and Gaotam Saha, "Taub's Principles of Communication Systems", McGraw Hill Education, 4th edition, 2017.
3. J. G. Proakis, M. Salehi, "Fundamentals of Communications Systems", Pearson, 2nd Edition, 2014.
4. W. Tomasi, "Electronic communications systems (Fundamentals Through Advanced)", Pearson Education, 5th Edition, 2008.
5. G. Kennedy and B. Davis, "Electronic communication systems", TMH, 4th Edition, 2008 (reprint)