**Lecture Plan**

**No. Of Lectures: 40**

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| **S.NO.** | **Topics to be Covered** | **No. of Lectures** |
| **First Term** |
|  | **Introduction:** Overview of Communication system, Communication channels | 1 |
| 2. | Mathematical Models for Communication Channels | 1 |
| 3. | **Introduction of random Variables:** Definition of random variables, PDF, CDF and its properties | 2 |
| 4. | Joint PDF, CDF, Marginalized PDF, CDF, Numericals | 1 |
| 5. | UDF, GDF, RDF, Binomial distribution, White process, Poisson process, Wiener process. | 1 |
| 6. | WSS wide stationery, strict sense stationery, non stationery signals, Ergodicity | 2 |
| 7. | **Analog Modulation:** Modulation- Need for Modulation, Amplitude Modulation theory: DSB-FC, DSB-SC Modulators and Demodulators | 2 |
| 8. | SSB Modulators and Demodulators | 1 |
| 9. | VSB Modulators and Demodulators , Comparison of various AM techniques | 1 |
| 10. | Angle Modulation, Relation between FM and PM Wave | 1 |
| 11. | Generation of FM wave- Direct and Indirect Methods. Bandwidth of FM (NBFM, WBFM) | 2 |
| 12. | **Pulse Analog Modulation:** Sampling theorem ,Sampling-Natural and Flat top | 1 |
| 13. | Sampling-Natural and Flat top. reconstruction , TDM-Pulse Amplitude Modulation (TDM-PAM),  | 1 |
| 14. | Pulse Width Modulation (PWM), Pulse Position Modulation(PPM), Generation and Recovery. | 1 |
| 15. | **Pulse Digital Modulation**: Quantization , Pulse Code Modulation (PCM) | 2 |
| 16. |  Differential Pulse Code Modulation (DPCM),Delta Modulation (DM) | 1 |
| 17. | Numerical on PCM | 1 |
| 18. | ADPCM, Granular Noise , Slope overload | 1 |
|  |  **FIRST MINOR EXAM** |  |
|  | **SECOND TERM** |  |
| 19. | **Digital Modulation and Transmission:** Advantages of digital communication. Modulation schemes: ASK Modulators and Demodulators, Signal space Analysis, BW, PSD.  | 2 |
| 20. | PSK, FSK - Modulators and Demodulators, Signal space Analysis, BW, PSDComparison Of Modulation schemes | 2 |
| 21. | Digital Signaling Formats-Line coding | 2 |
| 22. | **Information and Coding Theory:** Block Diagram**,** Entropy, Information, Channel Capacity | 1 |
| 23. | Source Coding Theorem: Shannon Fano Coding,  | 1 |
| 24. | Source Coding Theorem: Huffman Coding.  | 1 |
| 25. | **UNIT IV Fiber Optical System:**  Basic Optical Communication System. Optical fibers versus metallic cables | 2 |
| 26. | Light propagation through optical fibers. Acceptance angle and acceptance cone | 2 |
| 27. | Fiber configurations. Losses in optical fibers. Introduction to Lasers and light detectors , Applications: Military, Civil and Industrial applications.  | 2 |
| 28. | **Advanced Communication Systems**: Introduction to cellular radio telephones. Introduction to satellite Communication.  | 2 |

**Text Books:**

[T1] George Kennedy, “Electronics Communication System”, TMH 1993

[T2] B.P. Lathi, “Analog& Digital Communication”, Oxford University Press 1999.

**Reference Books**:

[R1] Simon Haykin, “Introduction to Analog & Digital Communication”, Wiley, 2000

[R2] Tannenbaum, “Computer networks”, PHI, 2003

[R3] K. Sam Shanmugam, “Digital & Analog Communication system”, John Wiley & Sons 1998.