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| **EEE 327 :- Analog and Digital Communication Techniques**  **Even Semester , 2016-17**  **INSTRUCTION PLAN**  **L T P: 3-1-0 Credits: 4** | | | | | | |
| **Lecture No** | **Topics Covered** | | | | | **Ref. & Chapter no.** |
| **Unit 1: Fundamentals of Analog Modulation** | | | | | | |
| 1 | Introduction to communication systems ;Need and types of Modulation; | | | | | Text Book 1  Chapter 1 |
| 2-3 | Principles of amplitude modulation, AM envelope, frequency spectrum and bandwidth, modulation index and percent modulation, AM power distribution | | | | | Text Book 1  Chapter 4 |
| 4 | Basic concepts of DSBSC,SSB and Vestigial Amplitude modulation , | | | | |
| 5-6 | Angle modulation - FM and PM mathematical analysis, waveforms, frequency deviation and percent modulation, phase deviation and modulation index | | | | | Text Book 1  Chapter 7 |
| 7-8 | Frequency analysis of angle modulated waves. Bandwidth requirements for Angle modulated waves. comparison of AM, FM and PM | | | | |
| 9 | Noise: External noise ,internal noise ,noise calculations, Signal to Noise ratio in AM and FM systems | | | | | Text Book 1  Chapter 1 and 7 |
| 10 | Signal to Noise ratio in AM and FM systems | | | | | Text Book 1  Chapter 7 |
| **Unit 3: Digital Modulation Techniques** | | | | | | |
| 11 | Introduction to Digital modulation ,information capacity ,bits ,bit rate and baud rate and M-ary coding | | | | | Text Book 1  Chapter 9 |
| 12 | Basics principles of Amplitude Shift Keying( ASK) | | | | | Text Book 1  Chapter 9 |
| 13 | Frequency Shift Keying( FSK) | | | | |
| 14 | Phase Shift Keying (PSK) )-BPSK | | | | |
| 15-16 | concept of QPSK, 8PSK and 16PSK | | | | |
| 17-18 | Quadrature Amplitude Modulation(QAM), 8QAM and 16QAM. | | | | |
| 19 | Comparison of ASK,FSK,PSK and QAM. | | | | |
| **Unit 2: Pulse Modulation Techniques** | | | | | | |
| 20 | | Introduction and types of Pulse Modulation ; Pulse Amplitude Modulation | | | Text Book 1  Chapter 10 | |
| 21 | | Pulse width Modulation (PWM), | | |
| 22 | | Modulation(PAM) Modulation ,Pulse Position Modulation (PPM), | | |
| 23 | | Pulse Code Modulation (PCM) | | |
| 24 | | Differential Pulse Code Modulation (DPCM) | | |
| **Unit 4: Multiplexing Techniques and Transmission Media** | | | | | | |
| 25 | | | Multiplexing of signal transmission media, introduction to TDM, FDM and Space Division Multiplexing | | Text Book 2  Chapter22 | |
| 26 | | | Basic schemes of FDM. | |
| 27 | | | Basic schemes of TDM and Comparison with FDM | |
| 28 | | | Guided transmission media: Twisted pair, UTP and STP cables, coaxial cables | |
| 29 | | | Microwave links and optical fiber | | Text Book 1  Chapter 13 | |
| **Unit5: Radio and Optical Fibre Communication** | | | | | | |
| 30 | | | Basics of microwave radio communication, advantages and disadvantages of Microwave Radio, Analog verses digital microwave | | Text Book 1  Chapter 24 | |
| 31 | | | Frequency modulated microwave radio system | |
| 32 | | | Basics of satellite radio communication, satellite system link models, | | Text Book 1  Chapter 25 | |
| 33 | | | Basic block diagram of optical fiber communication system | | Text Book 1  Chapter 13 | |
| **Evaluation Scheme**   1. Continuous Assessment CA - 7 best quizzes (based on assignments) in tutorial hours; 30 marks 2. MTE - 20 marks 3. ETE - 100 marks (Weightage 50%) | | | | | | |
| Text Books | | | | 1. Wayne Tomasi, “Electronic Communications Systems ”, Pearson Education . 2. Willam Schweber, Electronic Communications Systems ”, PHI Learning . |  | |
| Reference Books | | | | 1.Simon Haykens, “Communications Systems ”,Wiley India.  2.Kennedy and Davis , “Electronic Communications Systems ”, TMH . |  | |