**LESSON PLAN**

**Name of the Faculty : Suresh Jindal**

**Discipline : ELECTRONICS & COMMUNICATION ENGINEERING**

**Semester : 3rd**

**Subject :** **ANALOG AND DIGITAL COMMUNICATION**

**Lesson Plan Duration : 15 weeks (from 01 Sept.2023 to 15 Dec. 2023)**

**Work Load (Lecture/ Practical) per week (in hours): Lectures-03, Practicals-04**

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| **Week** | **Theory** | | **Practical** | |
| Lecture Day | Topics (including Assignments/Tests) | Practical Day | Topic |
| 1st | 1st | Introduction of Analog Communication | 1st | Introduction of Analog Communication, Components/  sub-components of a CommunicationPractical kits |
| 2nd | Need for modulation, frequency translation |
| 3rd | Demodulation in communication systems |
| 2nd | 4th | Basic scheme of a modern communication system | 2nd | Introduction of Analog Communication, Components/  sub-components of a Communication Practical kits |
| 5th | Derivation of expression for an amplitude modulated wave |
| 6th | Carrier and side bandcomponents |
| 3rd | 7th | Modulation index. Spectrum and BW of AM Wave | 3rd | Observe wave forms at input and output of pulse code modulator with CRO |
| 8th | Relative powerdistribution in carrier and side bands |
| 9th | Elementary idea of DSB-SC, SSB-SC |
| 4th | 10th | ISB and VSB modulations, their comparison, and  areas of applications, Revision | 4th | To observe an AM wave on CRO produced by a standard signal generator using internal andexternal modulation |
| 11th | Expression for frequency modulated wave and its frequency spectrum (without Proof  and analysis of Bassel function) |
| 12th | Modulation index, maximum frequency deviation ratio |
| 5th | 13th | BW of FM signals, Carson’s rule | 5th | To observe an AM wave on CRO produced by a standard signal generator using internal andexternal modulation |
| 14th | Effect of noise on FM carrier,Noise triangle |
| 15th | Role of limiter, Need for pre-emphasis  and de-emphasis |
| 6th | 16th | Capture effect | 6th | To measure the modulation index of the wave obtained in above practical |
| 17th | Comparison of FM and AM in communication systems |
| 18th | Revision, Assignment and Class Test |
| 7th | 19th | Basic block diagram of digital and data communication systems | 7th | To obtain an FM wave and measure the frequency deviation for different modulating  signals. |
| 20th | Their comparison with analog  communication systems. |
| 21st | Sampling theorem and its basic concept. Use of Sampling Theorem |
| 8th | 22nd | Introduction to PAM, PPM | 8th | Observe wave forms at input and output of QPSK modulators |
| 23rd | Introduction to PWM |
| 24th | Quantization and error of Quantization |
| 9th | 25th | PCM, DPCM, their advantage and disadvantages | 9th | Observe wave forms at input and output of PSK modulators |
| 26th | Delta Modulation concept of Companding |
| 27th | AdaptiveDelta Modulation concept of Companding |
| 10th | 28th | Frequency hopping spread spectrum technique | 10th | Observe wave forms at input and output of PSK modulators |
| 29th | Revision |
| 30th | Assignment and Class Test |
| 11th | 31st | Basic block diagram of Amplitude shift keying (ASK) | 11th | Observe wave forms at input and output of ASK modulators |
| 32nd | Principle of working of Amplitude shift keying (ASK) |
| 33rd | Basic block diagram of Interrupted continuous wave (ICW), two tone  modulation |
| 12th | 34th | Principle of working of Interrupted continuous wave (ICW), two tone  modulation | 12th | Observe wave forms at input and output of ASK modulators |
| 35th | Basic block diagram of Frequency Shift keying (FSK) |
| 36th | Principle of working of Frequency Shift keying (FSK) |
| 13th | 37th | Basic block diagram of Phase shift keying (PSK), | 13th | Observe wave forms at input and output of FSK modulators |
| 38th | Principle of working of Phase shift keying (PSK), |
| 39th | Basic block diagram of Quadrature Phase Shift Keying (QPSK) |
| 14th | 40th | Principle of working of Quadrature Phase Shift Keying (QPSK) | 14th | Revision and File Checked |
| 41st | Revision |
| 42nd | Assignment and Class Test |
| 15th | 43rd | Revision | 15th | Viva |
| 44th | Revision and Test of whole syllabus and Revision of previous questions papers |
| 45th | Revision and Test of whole syllabus and Revision of previous questions papers |