# C.V. RAMAN POLYTECHNIC BBSR

## LESSON PLAN

| Discipline: Diploma Branch: ETC | Semester: 4TH | Name of the Teaching Faculty: Sabyasachi Patra |
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| Subject: Analog and Digital Communication ( ETCPC 204) | No. of Days/per week class allotted: 45days/ 3 class per week | Semester From Date: 22/12/2025 To Date:18/04/2026<br><br>No. of Weeks:15 |
| **Week** | **Class Day** | **Theory** |
| 1st | 1st | 1.1 Communication Process<br><br>1.2 Concept of Elements of Communication System & its Block diagram |
| | 2nd | 1.3 Source of information & Communication Channels<br><br>1.4 Classification of Communication systems |
| | 3rd | 1.5 Modulation Process<br><br>1.6 Need of modulation and classify modulation process |
| 2nd | 1st | 1.7 Analog and Digital Signals & its conversion.<br><br>1.8 Basic concept of Signals & Signals classification (Analog and Digital) |
| | 2nd | 1.9 Bandwidth limitation<br><br>2.1 Amplitude modulation |
| | 3rd | 2.2 Derive the expression for amplitude modulation signal, power relation in AM wave |
| 3rd | 1st | 2.3 Modulation Index. |
| | 2nd | 2.4 Generation of Amplitude Modulation (AM)- Linear level AM modulation only |

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| | 3rd | 2.5 Demodulation of AM waves- Envelope detector |
| 4th | 1st | 2.6 Concept of SSB signal and DSBSC signal |
| | 2nd | 2.7 Concept of Balanced modulators<br>2.8 Vestigial Side Band Modulation |
| | 3rd | 3.1 Concept of Angle modulation & its types (PM & FM) |
| 5th | 1st | 3.2 Basic principle of Frequency Modulation |
| | 2nd | 3.3 Frequency Spectrum of FM Signal.<br>3.3 Expression for Frequency Modulated Signal & Modulation Index and sideband of FM signal |
| | 3rd | 3.4 Explain Phase modulation & difference of FM & PM)- working principle with Block Diagram |
| 6th | 1st | 3.5 Compare between AM and FM modulation (Advantages & Disadvantages) |
| | 2nd | 3.6 Methods of FM Generation (Indirect (Armstrong) method only) working principle with Block Diagram |
| | 3rd | 3.7 Methods of FM Demodulator or detector (Forster-Seely ) |
| 7th | 1st | 4.1 Classification of Radio Receivers |
| | 2nd | 4.2 Define the terms Selectivity, Sensitivity, Fidelity and Noise Figure |
| | 3rd | 4.3 AM transmitter - working principle with Block Diagram |
| 8th | 1st | 4.4 Concept of Frequency conversion, RF amplifier & IF amplifier, Tuning, S/N ratio |
| | 2nd | 4.5 Working of super heterodyne radio receiver with Block diagram |
| | 3rd | 4.6 Working of FM Transmitter & Receiver with Block Diagram. |
| 9th | 1st | 5.1 Concept of Sampling Theorem, Nyquist rate & Aliasing |

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| | 2nd | 5.2 Sampling Techniques (Instantaneous, Natural, Flat Top) |
| | 3rd | 5.3 Analog Pulse Modulation - Generation and detection of PAM, PWM & PPM system with the help of Block diagram & comparison of all above. |
| 10th | 1st | 5.4 Concept of Quantization of signal & Quantization error. |
| | 2nd | 5.5 Generation & Demodulation of PCM system with Block diagram & its applications.<br>5.6 Companding in PCM & Vocoder |
| | 3rd | Class Test/Quiz Test |
| 11th | 1st | 5.7 Time Division Multiplexing & explain the operation with circuit diagram. |
| | 2nd | 5.8 Generation & demodulation of Delta modulation with Block diagram. |
| | 3rd | 5.9 Generation & demodulation of DPCM with Block diagram. |
| 12th | 1st | 5.10 Comparison between PCM, DM , ADM & DPCM |
| | 2nd | Class Test/Quiz Test |
| | 3rd | Doubt Clearing Class |
| 13th | 1st | 6.1 Concept of Multiplexing (FDM & TDM)- (Basic concept, Transmitter & Receiver) & Digital modulation formats |
| | 2nd | 6.2 Advantages of digital communication system over Analog system<br>6.3 Digital modulation techniques & types |
| | 3rd | 6.4 Generation and Detection of binary ASK, FSK, PSK, |
| 14th | 1st | 6.5 Concept of QPSK, QAM, MSK, GMSK |
| | 2nd | 6.6 Working of T1-Carrier system |
| | 3rd | 6.7 Spread Spectrum & its applications |

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| | | 6.8 Concept of Spread Spectrum Modulation Techniques |
| 15th | 1st | 6.9 Define bit, Baud, symbol & channel capacity formula (Shannon Theorems)<br>6.10 Types of Modem & its Application |
| | 2nd | Doubt Clearing Class |
| | 3rd | Previous Year Question Disscussion |

Signature of Faculty

Signature of HOD (ETC)