**VASAVI COLLEGE OF ENGINEERING(A), IBRAHIMBAGH, HYDERABAD-31**

**DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING**

**LESSON PLAN**

**Subject Name:** **Digital Communication**  **Class**: **3/4 ECE B**

**Academic Year:** **2017-2018** **Semester - 2nd**

**Name of the Staff Members : K.R. Deepthi**

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| **S.**  **No.** | **Unit**  **No.** | **Date** | **Topic** | **No. of**  **Periods** | **Cumulative**  **Periods** |
| 1 | **I** | 2/1/2018 | Elements of Digital Communication System Block diagram of digital communication system | 1 | 1 |
| 2 | **I** | 3/1/2018 | Advantages and Disadvantages of Digital Communication | 1 | 2 |
| 3 | **I** | 4/1/2018 | Analog to digital conversion-block diagram | 1 | 3 |
| 4 | **I** | 5/1/2018 | Quantization and Encoding techniques | 1 | 4 |
| 5 | **I** | 9/1/2018 | Comparison of DM and PCM | 1 | 5 |
| 6 | **I** | 10/1/2018 | Block diagram- PCM,advantages | 1 | 6 |
| 7 | **I** | 11/1/2018 | numerical in PCM, | 1 | 7 |
| 8 | **I** | 12/1/2018 | Companding in PCM systems - u law and A law, | 1 | 8 |
| 9 | **I** | 16/1/2018 | TDM,differences between analog and digital signals | 1 | 9 |
| 10 | **I** | 17/1/2018 | Modulation and demodulation of DM and DPCM,Linear prediction theory | 1 | 10 |
| 11 | **I** | 18/1/2018 | Quantization noise and Slope overload error in DM,ADM | 1 | 11 |
| 12 | **I** | 19/1/2018 | SNR of PCM and DM,Vocodersproblems- | 1 | 12 |
| 13 | **II** | 23/1/2018 | Uncertainty, Information and entropy. | 1 | 13 |
| 14 | **II** | 24/1/2018 | Fano and Huffman coding | 1 | 14 |
| 16 | **II** | 25/1/2018 | Discrete memory less channels | 1 | 16 |
| 16 | **II** | 30/1/2018 | Probability relations in a channel | 1 | 16 |
| 17 | **II** | 31/1/2018 | Channel capacity, mutual information | 1 | 17 |
| 18 | **II** | 1/2/2018 | Information rate and information capacity | 1 | 18 |
| 19 | **II** | 2/2/2018 | Numericals on entropy, channels | 1 | 19 |
| 20 | **II** | 6/2/2018 | Source coding theorem | 1 | 20 |
| 21 | **II** | 7/2/2018 | Rate distortion Theory | 1 | 21 |
| 22 | **II** | 8/2/2018 | Channel capacity theorem | 1 | 22 |
| 23 | **II** | 9/2/2018 | Numericals | 1 | 23 |
| 24 | **II** | 14/2/2018 | Revision Quiz test | 1 | 24 |
| 25 | **III** | 15/2/2018 | Need for error control coding Syndrome and error detection | 1 | 25 |
| 26 | **III** | 16/2/2018 | Minimum distance of a block code, Standard array and syndrome decoding | 1 | 26 |
| 27 |  | 20/2/2018 | I Internal | 1 | 27 |
| 28 |  | 21/2/2018 | I Internal | 1 | 28 |
| 29 |  | 22/2/2018 | I Internal | 1 | 29 |
| 30 |  | 23/2/2018 | I Internal | 1 | 30 |
| 31 | **III** | 27/2/2018 | Binary cyclic codes (BCC):-problems | 1 | 31 |
| 32 | **III** | 28/2/2018 | Description of cyclic codes | 1 | 32 |
| 33 | **III** | 2/3/2018 | Hamming codes-problems | 1 | 33 |
| 34 | **III** | 6/3/2018 | Tutorial-problems | 1 | 34 |
| 35 | **III** | 7/3/2018 | Convolution codes-problems | 1 | 35 |
| 36 | **III** | 8/3/2018 | Encoding, decoding and error correction of cyclic codes-problems | 1 | 36 |
| 37 | **IV** | 9/3/2018 | BCH codes-problems | 1 | 37 |
| 38 | **IV** | 13/3/2018 | Introduction to digital Modulation techniques | 1 | 38 |
| 39 | **IV** | 14/3/2018 | Base band digital data transmission, error probability. Comparison | 1 | 39 |
| 40 |  | 15/3/2018 | Euphoria | 1 | 40 |
| 41 |  | 16/3/2018 | Euphoria | 1 | 41 |
| 42 | **IV** | 20/3/2018 | Error probability, matched filter, Correlation receiver | 1 | 42 |
| 43 | **IV** | 21/3/2018 | coherent and non-coherent ASK | 1 | 43 |
| 44 | **IV** | 22/3/2018 | coherent and non-coherent PSK | 1 | 44 |
| 45 | **IV** | 23/3/2018 | Derivation of probability of error of ASK,PSK | 1 | 45 |
| 46 | **IV** | 27/3/2018 | Derivation of Probability of error of FSK,Coherent Non coherent FSK | 1 | 46 |
| 47 | **IV** | 28/3/2018 | Comparison of digital modulation with analog modulation techniques | 1 | 47 |
| 48 | **V** | 29/3/2018 | Synchronization methods ,Revision, Quiz test | 1 | 48 |
| 49 | **V** | 3/4/2018 | Need for spreading a code | 1 | 49 |
| 50 | **V** | 4/4/2018 | Generation and characteristics of PN | 1 | 50 |
| 51 | **V** | 6/4/2018 | Direct sequence spread spectrum Acquisition schemes for spread spectrum receivers | 1 | 51 |
| 52 | **V** | 10/4/2018 | Frequency hopping | 1 | 52 |
| 53 | **V** | 11/4/2018 | Applications. Acquisition schemes for spread, Tracking of FH and DS signals. | 1 | 53 |
| 54 | **V** | 12/4/2018 | Jamming Margin, Chip rate | 1 | 54 |
| 55 |  | 13/4/2018 | Revision ,Old question papers | 1 | 55 |
| 56 |  | 17/4/2018 | II Internal | 1 | 56 |
| 57 |  | 18/4/2018 | II Internal | 1 | 57 |
| 58 |  | 19/4/2018 | II Internal | 1 | 58 |
| 59 |  | 20/4/2018 | II Internal | 1 | 59 |

**Signature of the Faculty Signature of the HOD Signature of Principal**

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**DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING**

**COURSEPLAN**

**Subject Name:** **Digital Communication**  **Class**: **3/4 ECE B**

**Academic Year:** **2017-2018** **Semester - 2nd**

**Name of the Staff Members : K.R. Deepthi**

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| --- | --- | --- | --- |
| S.  No. | Unit | Brief Details of unit | No. of periods required |
| 1 | I | Elements of Digital Communication System, Advantages and Disadvantages of Digital Communication Systems over Analog Communication Systems, Analog to Digital Conversion, Quantization and Encoding techniques, application of PCM, Companding in PCM systems - μ law and A law, TDM, example of PCM system, modulation and demodulation of DM and DPCM. Quantization noise and Slope overload error in DM, Comparison of DM and PCM. Introduction to Linear Prediction Theory with applications in DM, modulation and demodulation of ADM. SNR of PCM and DM. Vocoders. | 12 |
| 2 | II | Uncertainty, Information and entropy. Source coding, Shannon – Fano and Huffman coding. Discrete memoryless channels, Probability relations in a channel, priori & posteriori entropies, cascaded channels, Channel capacity, mutual information, information rate and information capacity. Rate distortion. | 12 |
| 3 | III | Types of transmission errors, need for error control coding, Linear Block Codes (LBC): description of LBC, generation, Syndrome and error detection, Minimum distance of a block code, error correcting and error detecting capabilities, Standard array and syndrome decoding, Hamming codes. Binary cyclic codes (BCC): description of cyclic codes, encoding, decoding and error correction of cyclic codes using shift registers. BCH codes, and Convolution codes: description, encoding, decoding. | 12 |
| 4 | IV | Base band digital data transmission, error probability, matched filter, correlation receiver, coherent and non-coherent ASK and FSK, DPSK, QPSK, error probability. Comparison of carrier modulated and base band transmissions. M-ary signaling schemes. Synchronization methods. | 12 |
| 5 | V | Need for spreading a code, generation and characteristics of PN sequences. Direct sequence spread spectrum and Frequency hopping spread spectrum systems and their applications. Acquisition schemes for spread spectrum receivers, Tracking of FH and DS signals. | 11 |
| Total | | | 59 |

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