VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

IBRAHIMBAGH, HYDERABAD – 500 031

**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

# INTRODUCTION TO COMMUNICATION SYSTEMS (OPEN ELECTIVE)

SYLLABUS FOR B.E. IV – SEMESTER (for other branches)

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| L:T:P (Hrs./week) : 3:0:0 | SEE Marks : 60 | Course Code: **U19OE420EC** |
| Credits : 3 | CIE Marks : 40 | Duration of SEE : 3 Hours |

| COURSE OBJECTIVES | COURSE OUTCOMES |
|---|---|
| 1. Distinguish between Amplitude and Frequency modulation methods and their application in Communication Receivers<br>2. Explain why multiplexing methods are necessary in communications and compare FDM with TDM<br>3. Compare and contrast FSK and BPSK modulation schemes employed in digital data transmission<br>4. Draw the block diagrams of different types of communication systems and explain their operation | *On completion of the course, students will be able to*<br>1. Identify the Radio frequency spectrum and the bands of different types of radio systems<br>2. Analyze the power, efficiency and transmission bandwidth of Amplitude and Frequency Modulated signals.<br>3. Convert the Radio frequency to Intermediate frequency and explain the operation of Superheterodyne Receiver.<br>4. Compare and contrast Frequency Division Multiplexing and Time Division Multiplexing used in the Communication systems<br>5. Detect and correct errors present in bit stream data using parity check<br>6. Explain the basic principles of different types of communication systems. |

**UNIT - I :**

**Introduction to Electronic Communication:** Communication systems, Types of Electronic Communication, Modulation and Multiplexing, The Electromagnetic Spectrum, Bandwidth, Communication Applications, Gain and Attenuation definitions

**Amplitude Modulation Fundamentals**: AM concepts, Modulation Index and Percentage of Modulation, Sidebands and the Frequency Domain, AM Power

**UNIT - II :**

**Fundamentals of Frequency Modulation:** Basic principles of Frequency Modulation, Principles of Phase Modulation, Modulation Index and Sidebands, Noise – Suppression Effects of FM, Frequency Modulation verses Amplitude Modulation.

**Communication Receivers**: Basic Principles of Signal Reproduction, Superheterodyne Receivers, Frequency Conversion, Intermediate Frequency and Images, Noise.

**UNIT - III :**

**Digital Communication Techniques:** Digital Transmission of Data, Parallel and Serial Transmission, Data Conversion, Pulse Modulation.

**Multiplexing and De-multiplexing**: Multiplexing Principles, Frequency Division Multiplexing, Time Division Multiplexing, PCM Multiplexing.

**UNIT - IV :**

**Transmission of Binary Data in Communication Systems:** Digital Codes, Principles of Digital Transmission, Transmission Efficiency, Modem Concepts and Methods – FSK, BPSK, Error Detection and Correction

**UNIT - V :**

**Different Types of Communication Systems:** Microwave Concepts, Optical Principles, Optical Communication System, Satellite Communication Systems, Satellite Orbits, Cellular Telephone Systems, Bluetooth and Wi-Fi basics

**Learning Resources:**


1. Louis E. Frenzel, Principles of Electronic Communication Systems, 3rd Edition. Tata Mcgraw Hill.
2. Wayne Tomasi, Electronic Communications Systems, 5th Edition, Pearson Education.
3. https://nptel.ac.in/syllabus/syllabus.php?subjectId=117102059
4. https://nptel.ac.in/courses/117101051/12


The break-up of CIE : Internal Tests + Assignments + Quizzes

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| 1. | No. of Internal Tests | : 2 | Max. Marks for each Internal Test | : | 30 |
| 2. | No. of Assignments | : 3 | Max. Marks for each Assignment | : | 5 |
| 3. | No. of Quizzes | : 3 | Max. Marks for each Quiz Test | : | 5 |

Duration of Internal Tests: 90 Minutes