

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING  
SYLLABUS FOR B.E. IV SEMESTER

**INTRODUCTION TO COMMUNICATION SYSTEMS**

(for other Departments)

|                           |                |                        |
|---------------------------|----------------|------------------------|
| Instruction : 2 Hrs /week | SEE Marks : 60 | Course Code : OE320EC  |
| Credits : 2               | CIE Marks : 40 | Duration of SEE : 3Hrs |

| Course Objectives   | Course Outcomes  |
|---|--|
| <ol style="list-style-type: none"> <li>1. Distinguish between Amplitude and Frequency modulation methods and their application in Communication Receivers</li> <li>2. Explain why multiplexing methods are necessary in communications and compare FDM with TDM</li> <li>3. Compare and contrast FSK and BPSK modulation schemes employed in digital data transmission</li> <li>4. Draw the block diagrams of different types of communication systems and explain their operation</li> </ol> | <p><b>At the end of the course, students will be able to:</b></p> <ol style="list-style-type: none"> <li>1. Identify the Radio frequency spectrum and the bands of different types of radio systems</li> <li>2. Analyze the power, efficiency and transmission bandwidth of Amplitude and Frequency Modulated signals.</li> <li>3. Convert the Radio frequency to Intermediate frequency and explain the operation of Superheterodyne Receiver.</li> <li>4. Compare and contrast Frequency Division Multiplexing and Time Division Multiplexing used in the Communication systems</li> <li>5. Detect and correct errors present in bit stream data using parity check</li> <li>6. Explain the basic principles of different types of communication systems.</li> </ol> |

**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. Different Types of Communication Systems: Microwave Concepts, Optical Principles, Optical Communication System.

**References:**

1. Louis E. Frenzel, Principles of Electronic Communication Systems, 3<sup>rd</sup> Edition. Tata Mcgraw Hill.
2. Wayne Tomasi, Electronic Communications Systems, 5<sup>th</sup> Edition, Pearson Education.