

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)

L:T:P (Hrs./week) : 3:0:0	SEE Marks : 60	Course Code: <b>U18OE420EC</b>
Credits : 3	CIE Marks : 40	Duration of SEE : 3 Hours

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><i>On completion of the course, students will be able to</i></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

**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, 3<sup>rd</sup> Edition. Tata Mcgraw Hill.
2. Wayne Tomasi, Electronic Communications Systems, 5<sup>th</sup> 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

1. No. of Internal Tests	: <input type="text" value="2"/>	Max. Marks for each Internal Test	: <input type="text" value="30"/>
2. No. of Assignments	: <input type="text" value="3"/>	Max. Marks for each Assignment	: <input type="text" value="5"/>
3. No. of Quizzes	: <input type="text" value="3"/>	Max. Marks for each Quiz Test	: <input type="text" value="5"/>

Duration of Internal Tests: 90 Minutes