

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>U20OE420EC</b>
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 2. Explain why multiplexing methods are necessary in communications and compare FDM with TDM 3. Compare and contrast FSK and BPSK modulation schemes employed in digital data transmission 4. Draw the block diagrams of different types of communication systems and explain their operation	<i>On completion of the course, students will be able to</i> 1. Identify the Radio frequency spectrum and the bands of different types of radio systems 2. Analyze the power, efficiency and transmission bandwidth of Amplitude and Frequency Modulated signals. 3. Convert the Radio frequency to Intermediate frequency and explain the operation of Superheterodyne Receiver. 4. Compare and contrast Frequency Division Multiplexing and Time Division Multiplexing used in the Communication systems 5. Detect and correct errors present in bit stream data using parity check 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:**

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

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

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