



**Syllabus for 4-Years UG Honours in B.Sc (Electronics) as Major in
consonance**

with curriculum frame work (W.E.F. AY-2026-27)

COURSE STRUCTURE (for Semester IV)

II	IV	8	Electronic Communication System	3	3
			Electronic Communication System Practical Course	2	1
		9	Microcontroller and Interfacing	3	3
			Microcontroller and Interfacing Practical Course	2	1
		10	Computer Network	3	3

SEMESTER - IV

COURSE 8: ELECTRONIC COMMUNICATION SYSTEMS

Theory

Credits: 3

3 hrs/week

The students will learn :

1. fundamentals of antenna, their characteristics and types,
2. amplitude modulation and demodulation and radio wave transmission and reception,
3. frequency modulation and demodulation and FM radio wave transmission and reception,
4. Principle of analog and digital pulse modulation and their applications,
5. transmission and detection of digital signals.

UNIT-I (9 Hrs)

Antenna - Effective resistance - Efficiency - Directive gain - Bandwidth, Beam width and polarization

- Dipole - Folded dipole - Arrays - Yagi - Uda - Helical - Discone - Parabolic - Dish Antennas - Ground wave, sky wave and space wave propagation - Skip distance - Maximum usable frequency.

UNIT-II (9 Hrs)

Modulation - Needs for Modulation - Types of Modulation - Amplitude Modulation

- Generation and detection circuits - Balanced Modulator - DSB/SC and SSB Modulation - VSB modulation. Block diagram of AM Radio transmitter and super heterodyne Receiver.

UNIT-III (9 Hrs)

Frequency Modulation - Definition - Derivation of Modulated wave - Generation of FM - Varactor diode and Reactance tube Modulators - Detectors - Balanced slope detector, Foster Seeley discriminator, ratio detector - Block diagram of FM transmitter and receiver.

UNIT-IV (9 Hrs)

Pulse Modulation - Sampling theorem - PAM, PWM, PCM - quantizing, sampling, coding, decoding, quantization error, delta modulation and adaptive delta modulation.

UNIT-V (9 Hrs)

Multiplexing - FDM, TDM, CDMA - ASK, FSK, PSK - Advantages of Digital Communication - Introduction to Microwave, Fiber optic, Satellite Communications - RADAR - range equation.

Text Books

1. Electronic Communication Systems - *George Kennedy*, McGraw Hill Book Company, 4/e, 2005.
2. Communication Engineering - *T.G. Palanivelu*, Anuradha Publications, 1/e, 2002.

Reference Books

1. Communication System - Roddy & Coolen, 4/e, Pearson Education, 2005.
2. Principles of Communication Engineering - Anok Singh, 4/e, Sathya prakasam Publications, 2004.
3. Electronic Communication Systems Wayne Tomasi, 4/e, Pearson Education, 2004.


Dr. T. RAGHURAMAN

M.Sc, B.Ed, Ph.D.

Lecturer In Physics

Govt. Degree College

Puttur, Chittoor (Dt.), A.P. - 517 581

SEMESTER - IV

COURSE 8: ELECTRONIC COMMUNICATION SYSTEMS

Practical

Credits: 1

2 hrs/week

Students can do the Practicals from available resources

COURSE OBJECTIVES

1. To understand the basic principles of electronic communication systems.
2. To design and develop a communication system using electronic components.
3. To evaluate the performance of a communication system.

UNIT-I (10 Marks)

Introduction to electronic communication systems. Basic principles of communication systems. Block diagram of a communication system. Types of communication systems. Analog and digital communication systems. Modulation and demodulation. Multiplexing and demultiplexing. Error detection and correction.

UNIT-II (10 Marks)

Modulation techniques. Amplitude modulation (AM). Frequency modulation (FM). Phase modulation (PM). Digital modulation techniques. Binary ASK, FSK, PSK, QPSK. Spread spectrum techniques. Direct sequence spread spectrum (DSSS). Frequency hopping spread spectrum (FHSS).

UNIT-III (10 Marks)

Radio wave propagation. Ground wave propagation. Sky wave propagation. Line of sight (LOS) propagation. Satellite communication. Free space path loss. Antenna characteristics. Antenna gain, directivity, and efficiency. Antenna arrays.

UNIT-IV (10 Marks)

Transmitters and receivers. Block diagrams of transmitters and receivers. Modulators and demodulators. Filters. Amplifiers. Noise and distortion. Signal-to-noise ratio (SNR).

UNIT-V (10 Marks)

Introduction to digital communication systems. Binary digital modulation. Binary ASK, FSK, PSK, QPSK. M-ary digital modulation. M-ary ASK, FSK, PSK, QPSK. Error detection and correction. Cyclic redundancy check (CRC). Convolutional codes. Viterbi decoding.

4- Year UG Honours, Major
Syllabus
(2026-27)
Semester-IV

Model Question Paper

Time : 3hrs

Marks:75

Part-A

Answer any Five Questions. Each Question carries 3 Marks.

5x3=15

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.

Answer the following questions. Each question carries 12 Marks

5x12=60

11. a) Unit-I
(Or)
b) Unit-I

12. a) Unit-II
(Or)
b) Unit-II

13. a) Unit-III
(Or)
b) Unit-III

14. a) Unit-IV
(Or)
b) Unit-IV

15. a) Unit-V
(Or)
b) Unit-V