

**Course Code – 212304**  
**Fundamentals of Communication**

<b>Credit Points</b>	<b>Teaching Hrs/Week</b>	<b>Practical Hrs/Week</b>
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- Objective**
- Need of Analog Communication and Advantages of Digital Communication.
  - Necessity of Modulation.
  - Basic AM and FM circuits.
  - Study of Transceivers
  - Antenna fundamentals and Mechanism of Wave Propagation.

**Prerequisites** None

Unit	Topic Name	Details	Hrs
1	<b>Introduction To Communication System</b>	Definition of communication, analog communication & digital communication, Communication System, Communication Channels, Types of communications, Base band Communication, Need for modulation, RF Spectrum and its use.	6
2	<b>Amplitude Modulation</b>	AM concepts, Derivation of an AM equation, Modulation index, efficiency, power relations, DSB-SC and SSB-SC AM – Need, circuits, merits, demerits, Frequency Division Multiplexing.	6
3	<b>Angle Modulation</b>	Basic principles of FM and PM, Mathematical representation of FM and PM, Modulation index and sidebands, Noise suppression effects of FM, FM generation methods, circuits, NBFM and WBFM, Comparison – AM, FM, PM.	6
4	<b>Communication Transmitters</b>	Transmitter fundamentals, Carrier Generators, AM Transmitter, Low level and high level AM Transmitters, SSB Transmitter, FM Transmitter.	4
5	<b>Communication Receivers</b>	The Super heterodyne Receiver, Frequency conversion, Intermediate frequency and image frequency, Performance parameter for receiver such as Sensitivity, Selectivity, Fidelity, image frequency rejection etc., AM detectors – Simple diode detector, practical diode detector, DSBSC and SSBSC detectors, FM detectors – Phase discriminator, ratio-detector.	7

- 6 Antennas and Wave Propagation** Antenna Fundamentals –Radio waves, Antenna operation, Antenna Reciprocity, Basic Antenna; Common Antenna Types; Radio wave propagation – Optical characteristics of Radio Waves, propagation through space, calculating received power; Common propagation problems – Multipath fading, shadow fading, Rayleigh fading, remedies on these problems. **6**

**Lab/ Term Work**

1. Fourier Analysis of signals such as sine wave, triangular wave, square wave using Digital Storage Oscilloscope (DSO)
2. Generation and detection of DSB-FC (AM) signal
3. Generation and detection of DSB-SC signal
4. Generation and detection of SSB-SC signal
5. IC Based FM Generation & demodulation using ratio-detector
6. Measurement of receiver characteristics
7. Measurement of radiation pattern for Yagi Antenna

<b>Text Books</b>	1. Louis E Frenzel, ‘Principles of Electronic Communication Systems’, TMH Publication, Third Edition
<b>Reference Books</b>	<ol style="list-style-type: none"> <li>1. Kennedy &amp; Devis, ‘Electronic Communication’, TMH Publication</li> <li>2. Dennis Roddy &amp; Coolen, ‘Electronic Communication’, PHI Publication</li> <li>3. Antennas and Wave Propagation – K.D. Prasad, Satya Prakashan, Tech India Publications</li> </ol>

<b><u>Examination Scheme</u></b>	<b>Internal Assessment</b>	<b>40 marks</b>
	<b>Term Work</b>	<b>25 marks</b>
	<b>Final Theory Paper</b>	<b>60 marks</b>