

ECL-102-A	ELEMENTS OF COMMUNICATION SYSTEMS	L	T	P	Cr
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**Objective:** The objective of the course is to introduce the fundamentals of communication systems, different types of modulations, data transmission system, standards in data communication and in-depth understanding of security in communication systems.

**THEORY:**

**Note:** Question No 1 is compulsory and will be of short answer type from entire syllabus. Two questions are to be attempted out of three questions from each Section A & B.

**SECTION – A**

**UNIT 1: Communication System Components:**

Introduction to Communication: Definition & means of communications; Digital and analog signals: sine waves, square waves; Properties of signals: amplitude, frequency, phase.

**UNIT 2: Introduction To Communication Systems:**

The essentials of a Communication system, modes and media of Communication, Analog Communication & Digital Communication. Basic concepts of Modulation, Demodulators, Channels, Multiplexing & Demultiplexing.

**UNIT 3: Amplitude Modulation:**

Amplitude modulation, Generation of AM waves, Demodulation of AM waves, DSBSC, Generation of DSBSC waves, single side band modulation, generation of SSB waves, demodulation of SSB waves.

**SECTION – B**

**UNIT 4: Angle Modulation :**

Basic definitions: Phase modulation (PM) & frequency modulation(FM), narrow band frequency modulation, wideband frequency modulation, generation of FM waves, Demodulation of FM waves.

**UNIT 5: Pulse Analog & Digital Modulation:**

Sampling theory, Time division (TDM) and frequency division (FDM) multiplexing, pulse amplitude modulation (PAM), pulse time modulation. Elements of pulse code modulation, noise in PCM systems, differential pulse code modulation (DPCM). Delta modulation (DM)

**UNIT 6: Digital Modulation Techniques:**

ASK, FSK, BPSK, QPSK, M-ary PSK. PC-PC data Communication

**Text Books:**

1. Communication systems (4th edn.): Simon Haykins; John wiley & sons.
2. Communication systems: Singh & Sapre; TMH.

**Reference Books:**

1. Electronic Communication systems : Kennedy; TMH.
2. Communication Electronics : Frenzel; TMH.
3. Communication system : Taub & Schilling; TMH.