IV B. Tech – I Semester

(20EC7745) Principles of Communication
(Minors)

Int. Marks	Ext. Marks	Total Marks	L	T	P	C
30	70	100	3	1	0	4

Pre-Requisites: Signals & Systems, Analog & Digital Communications

Course Objectives:

- To understand the concept of various amplitude modulation schemes and multiplexing.
- To understand the concept of various angle modulation schemes.
- To apply the concept of various modulation schemes to solve engineering problems.
- To understand the concept of various digital modulation schemes.
- To evaluate various modulation scheme in real time applications.

UNIT-I: Amplitude Modulation
Introduction to Noise and Fourier Transform. An overview of Electronic Communication Systems. Need for Frequency Translation, Amplitude Modulation: DSB-FC, DSB-SC, SSBSC and VSB. Frequency Division Multiplexing. Radio Transmitter and Receiver.

UNIT-II: Angle Modulation
Angle Modulation, Tone modulated FM Signal, Arbitrary Modulated FM Signal, FM Modulation and Demodulation. Stereophonic FM Broadcasting.

UNIT-III: Pulse Modulation
Sampling Theorem: Low pass and Band pass Signals. Pulse Amplitude Modulation and Concept of Time Division Multiplexing. Pulse Width Modulation. Digital Representation of Analog Signals.

UNIT-IV: Digital Modulation
Binary Amplitude Shift Keying, Binary Phase Shift Keying and Quadrature Phase Shift Keying, Binary Frequency Shift Keying. Regenerative Repeater.

UNIT-V: Communication Systems
Satellite, RADAR, Optical, Mobile and Computer Communication (Block diagram approach only).

Course Outcomes:

After successful completion of the course, the students can be able to

S. No	Course Outcome	BTL
1	Apply the concept of amplitude modulation to solve engineering problems.	L3
2	Analyse angle modulation schemes.	L3
3	Understand the concept of various pulse modulation schemes and time division multiplexing.	L2
4	Understand & Analyse various digital modulation schemes.	L3
5	Analyse various modulation schemes, and evaluate various modulation scheme in real time applications	L3

Correlation of Cos with POs & PSOs:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO 1	3	2	1	-	-	-	-	-	-	-	-	1	2	-
CO 2	3	2	1	-	-	-	-	-	-	-	-	1	2	-
CO 3	3	2	1	-	-	-	-	-	-	-	-	1	2	-
CO 4	3	2	1	-	-	-	-	-	-	-	-	1	2	-
CO 5	3	-	-	-	-	-	-	-	-	-	-	2	2	-

Text Books:

1. B. P. Lathi, Zhi Ding and Hari M. Gupta, "Modern Digital and Analog Communication Systems", 4th Edition, Oxford University Press, 2017.
2. George Kennedy and Bernard Davis - Electronic Communication Systems – Tata McGraw Hill Education Pvt Ltd, 2019.

Reference Books:

1. Herbert Taub, Donald L Schilling and Goutam Saha, "Principles of Communication Systems", 3rdEdition, Tata McGraw-Hill Publishing Company Ltd., 2008.

2. K. Sam Shanmugam "Digital and Analog Communication Systems", Wiley India Edition, 2008.