

ELI- 803: Communication

48 Periods

Unit-1

Introduction to Electronic Communication: Evolution of Communication System, Elements of Communication system, Types of electronic communications, Baseband signals and baseband transmission, Modulation techniques, Bandwidth requirements. Concept of noise: External noise, internal noise, signal to noise ratio, noise factor. 8 Periods

Unit-2

Amplitude Modulation: Introduction , Equation of AM signal, Modulation index and percentage of modulation for sinusoidal AM, Frequency spectrum of the AM wave, Average power for sinusoidal AM wave, Effective voltage and current for sinusoidal AM, generation of AM, Amplitude demodulation, DSBSC & SSBSC generation, Vestigial Side band modulation. 14 Periods

Unit-3

Angle modulation: Frequency and Phase modulation, modulation index, frequency spectrum, equivalence between FM & PM, generation of FM (Direct and Indirect method), FM detection (Slope detector, balanced slope detector, PLL).

Transmitter: AM transmitter (low level and high level modulation), FM transmitter.
Receivers: Super Heterodyne receiver, AM receiver, FM receiver. 14 Periods

Unit-4

Pulse Modulation: Pulse Amplitude Modulation, Pulse width Modulation, Pulse Position Modulation. Digital modulation: Sampling theorem, Pulse code modulation(PCM), differential pulse code modulation(DPCM), digital modulation schemes: amplitude, phase and frequency shift keying(ASK,PSK,FSK).
Basics of TDMA, FDMA, CDMA and GSM. 12 Periods

UNIT-1

Chapter-1 & 2 of G.Kennedy, Electronic Communication System, Third edition, Tata McGraw-Hill (1997).

Chapter-1 of Simon Haykin & Michael Moher, Introduction to Analog & Digital Communications, Second Edition, John Wiley & Sons, Inc. (2007).

UNIT-2

Chapter-3 & 4 of G.Kennedy, Electronic Communication System, Third edition, Tata McGraw-Hill (1997).

Chapter-3 of Simon Haykin & Michael Moher, Introduction to Analog & Digital Communications, Second Edition, John Wiley & Sons, Inc. (2007).

UNIT-3

Chapter-5 of G.Kennedy, Electronic Communication System, Third edition, Tata McGraw-Hill (1997).

Chapter- 7, 8 & 10, Roddy & Coolen, Electronics Communication, Fourth Edition, Pearson Prentice Hall, Inc. (1995).

UNIT -4

Chapter-5 & 7 of Simon Haykin & Michael Moher, Introduction to Analog & Digital Communication, Second Edition, John Wiley & Sons, Inc. (2007)

Chapter -3 & 5, Leon W. Couch, II, Digital and Analog Communication systems, Seventh Edition, Pearson Prentice-hall(2011).

Essential books

1. G.Kennedy, Electronic Communication System, Third edition, Tata McGraw-Hill (1997).
2. Simon Haykin & Michael Moher, Introduction to Analog & Digital Communications, Second Edition, John Wiley & Sons, Inc. (2007).
3. Roddy & Coolen, Electronics Communication, Fourth Edition, Pearson Prentice Hall, Inc. (1995).
4. Leon W. Couch, II, Digital and Analog Communication systems, Seventh Edition, Pearson Prentice-hall (2011).

Suggested Books

1. W. Schweber, Electronic Communication Systems, Prentice-Hall of India Private Limited (2002).
2. R.Blake, Electronic Communication Systems, Thomson Business Information (2008).
3. B.P. Lathi, Modern Analog and Digital Communication, Oxford University Press (2007).

Practical based on Communication:

- 1) Study of Amplitude modulation and demodulation.
- 2) Study of Frequency modulation and demodulation.
- 3) Study of AM transmitter and receiver.
- 4) Study of FM transmitter and receiver.
- 5) Study of SSB modulation and demodulation.
- 6) Study of Pulse Amplitude modulation.
- 7) Study of Pulse Width modulation.
- 8) Study of Pulse Position modulation.
- 9) Study of Pulse Code modulation.
- 10) Study of Delta modulation.
- 11) Study of PSK, FSK and QPSK.
- 12) Study of Time Division Multiplexing.