

B.Tech. II Year II Semester**ANALOG AND DIGITAL COMMUNICATIONS LAB****Course Code: 21EC407PC****L/T/P/C 0/0/3/1.5****Course Objectives:**

- To develop an ability to design basic model of analog and digital communication systems.
- To understand practically the generation, detection of various analog and digital modulation techniques using MATLAB.
- To acquire practical knowledge of each block in AM, FM transmitters and receivers.
- To discuss various security based transmission techniques.
- To analyze the various modulation techniques in different environments and to verify its performance using MATLAB.

Course Outcomes:

- Analyze the spectrum of various analog and digital modulation techniques.
- Understand the effect of noise present in continuous wave and angle modulation techniques.
- Attain the knowledge of design about analog and digital Transmitters and Receivers using components.
- Apply and analyze the various Modulation techniques in different environments using MATLAB.
- Explains spread spectrum systems to provide security to data using MATLAB.

List of the Experiments/Tasks (All the experiments can be done using hardware or using MATLAB)

1. Amplitude Modulation and Demodulation (ii) Spectrum analysis of AM
2. DSB-SC Modulator & Demodulator (ii) Spectrum Analysis of DSBSC
3. SSB-SC Modulator & Demodulator (ii) Spectrum Analysis of SSBSC
4. Frequency modulation and demodulation (ii) Spectrum analysis of FM
(iii) Pre emphasis and De emphasis
5. Frequency Division Multiplexing & De multiplexing
6. Pulse Amplitude Modulation & Demodulation
7. Pulse Width Modulation & Demodulation
8. Pulse Position Modulation & Demodulation
9. PCM Generation and Detection
10. Delta Modulation
11. Non Uniform Quantization-(i) μ -Law (ii) A-law
12. Amplitude Shift Keying: Generation and Detection
13. Frequency Shift Keying: Generation and Detection
14. Generation and Detection i) DPSK ii) QPSK

Major Equipments Required:

- CRO: 20 MHZ
- Function Generators : 2 MHZ
- Spectrum Analyser
- Regulated power supply : 0-30 V
- MATLAB simulation package with Communication Tool Box
- Analog and Demodulation Trainer Kits