

Analog Communications and Digital Communications Lab

The communications lab presently serves to give the ECE students a laboratory experience in analog communications and digital communications systems. The concepts of all types of modulation & demodulation can be studied. The recent communication techniques can be demonstrated with available equipment. Students conduct experiments in communication lab where they become acquainted with oscilloscopes, signal generators and spectrum analyzers. This lab has been equipped with highly advanced kits. The Budget of this lab is around. Rs21,69,605/-.



Major Equipment:

| S.No. | Name of the Equipment | Qty. | Cost in Rs. |
|-------|--------------------------------|------|-------------|
| 1. | Spectrum analyzer 1GHz | 02 | 2,93,367.72 |
| 2. | 30MHz Dual Trace Oscilloscopes | 22 | 3,58,050:00 |
| 3. | Function Generator | 20 | 1,81,034:00 |
| 4. | Analog Communication Trainers | 47 | 83,320:00 |
| 5. | Digital Communication Trainers | 82 | 7,98,156:00 |
| 6. | 5KVA Voltage Stabilizer | 01 | 9,170:00 |
| 7. | Regulated DC power supplies | 06 | 53,848:00 |

ANALOG COMMUNICATIONS LAB – 17EC67

List of Experiments (As per curriculum)

PART-A

| S.No. | Name of the Experiment |
|-------|---|
| 1. | Amplitude modulation and demodulation. |
| 2. | Frequency modulation and demodulation. |
| 3. | Balanced modulator and Synchronous detector. |
| 4. | SSB modulation and demodulation. |
| 5. | Pre-emphasis & de-emphasis. |
| 6. | Phase locked loop. |
| 7. | Characteristics of Mixer. |
| 8. | Pulse Amplitude modulation and demodulation. |
| 9. | Pulse Width & Pulse Position Modulation and demodulation. |
| 10. | Sampling Theorem verification |

Part-B (Using MATLAB Communication toolbox and Simulink)

| | |
|---|--|
| 1 | Amplitude modulation and demodulation. |
| 2 | Frequency modulation and demodulation. |
| 3 | Balanced modulator and Synchronous detector. |
| 4 | Pulse Amplitude modulation and demodulation. |
| 5 | Pulse Width & Pulse Position Modulation and demodulation |

List of Experiments (Beyond the Syllabus):

| S.No. | Name of the Experiment |
|-------|--|
| 1. | Spectral analysis of AM using Spectrum Analyzer |
| 2. | Spectral analysis of FM using Spectrum Analyzer. |

DIGITAL COMMUNICATIONS LAB-17EC68

(Minimum 12 Experiments to be conducted)

List of Experiments (As per curriculum)

| S.No. | Name of the Experiment |
|-------|--|
| 1. | Time Division Multiplexing. |
| 2. | Pulse Code Modulation |
| 3. | Differential Pulse Code Modulation and Demodulation.. |
| 4. | Delta Modulation |
| 5. | Adaptive Delta Modulation and Demodulation. |
| 6. | Amplitude Shift Keying Modulation and Demodulation. |
| 7. | Frequency Shift Keying Modulation and Demodulation. |
| 8. | Phase Shift Keying Modulation and Demodulation. |
| 9. | Differential Phase Shift Keying Modulation and Demodulation. |
| 10. | Linear Block Code- Encoder and Decoder. |
| 11. | Binary Cyclic Code- Encoder and Decoder. |
| 12. | Simulation of different Line Coding Schemes using MATLAB. |
| 13. | Simulation of ASK Modulation and Demodulation using MATLAB. |
| 14. | Simulation of FSK Modulation and Demodulation using MATLAB. |
| 15. | Simulation of PSK Modulation and Demodulation using MATLAB. |

List of Experiments (Beyond the Syllabus):

| S.No. | Name of the Experiment |
|-------|---|
| 1. | Analysis of slope overload and granular noise in delta modulation |
| 2. | Quadrature Phase Shift Keying Generation |

Lab Mentor : **Dr. G.L. N. Murthy**

Lab incharge : **Smt.K.RaniRudrama.**

Lab Co-incharge : **Mr.V. Ravi Sekhara Reddy**

Lab Technician : **Mr. A. Lenin Babu**