

## COMMUNICATION SYSTEMS LABORATORY

The Communication Systems laboratory offers a comprehensive training ground for students to grasp the intricacies of both analog and digital signal transmission and reception. It serves as a foundational platform where students delve into the fundamental concepts of analog and digital communication systems. Through hands-on experiments using trainer kits, students gain practical insights into critical concepts such as sampling effects, Time Division Multiplexing (TDM), Amplitude Modulation (AM), Frequency Modulation (FM), Pulse Code Modulation (PCM), and Delta Modulation (DM).

Furthermore, the laboratory extends its scope to cover baseband signaling schemes, including Frequency Shift Keying (FSK), Phase Shift Keying (PSK), and Differential PSK (DPSK), allowing students to implement and understand these modulation techniques firsthand. Additionally, students leverage MATLAB tools to explore and analyze various channel coding schemes. By studying and demonstrating these schemes, students learn how to enhance the noise performance of communication systems, a crucial aspect in real-world communication applications. This comprehensive approach equips students with a deep understanding of communication system principles and practical skills necessary for designing and optimizing modern communication networks.

**Communication Systems laboratory is equipped with the following equipment.**

| S.No | Name of the Equipment                                   | Available Number |
|------|---|------------------|
| 1    | 5MHz Arbitraray Function Generator                      | 8                |
| 2    | Telephone Trainer Kit                                   | 2                |
| 3    | FM Radio Receiver Kit                                   | 2                |
| 4    | Digital Storage Oscilloscope - 50 MHz                   | 10               |
| 5    | Sample & hold circuit                                   | 1                |
| 6    | TDM Trainer kit (Multiplexing& De multiplexing)         | 1                |
| 7    | Amplitude modulations and demodulation kit              | 1                |
| 8    | FM Modulator And Demodulator kit                        | 1                |
| 9    | PCM transmitter& receiver kit                           | 1                |
| 10   | Delta modulation demodulation kit                       | 1                |
| 11   | Line Coding & decoding Kit                              | 1                |
| 12   | Signal Sampling & reconstruction trainer kit            | 2                |
| 13   | Time division multiplexing PAM modulation DE modulation | 2                |

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|----|---|---|
| 14 | AM modulator & demodulator kit                        | 2 |
| 15 | FM modulator & demodulator trainer kit                | 2 |
| 16 | Pulse code modulation (PCM)& demodulation trainer Kit | 2 |
| 17 | Delta modulation (DM) and demodulation trainer Kit    | 2 |
| 18 | Line coding & decoding Schemes trainer Kit            | 2 |
| 19 | 3MHZ function generators                              | 5 |
| 20 | 70MHz DSO   | 5 |
| 21 | Keithley 2231A - 30 - 3 Power Supply                  | 5 |
| 22 | Digital Multimeter                                    | 2 |