

Analog Electronics Laboratory

Analog Electronics Laboratory – Objectives

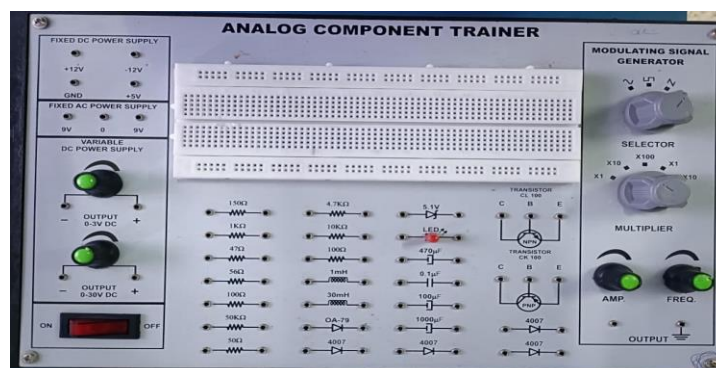
The Analog Electronics Laboratory is aimed at providing strong foundational and practical knowledge in the analysis, design, and testing of analog electronic circuits. The lab enhances the skills of students and engineers in understanding the behavior of discrete and integrated analog components through hands-on experimentation and measurement.

The laboratory offers practical exposure to analog circuits such as diode rectifiers, amplifiers, oscillators, filters, and regulated power supplies using industry-standard instruments including oscilloscopes, function generators, and regulated DC power supplies. It enables learners to analyze real-time signals, validate theoretical concepts, and develop troubleshooting skills essential for analog system design.

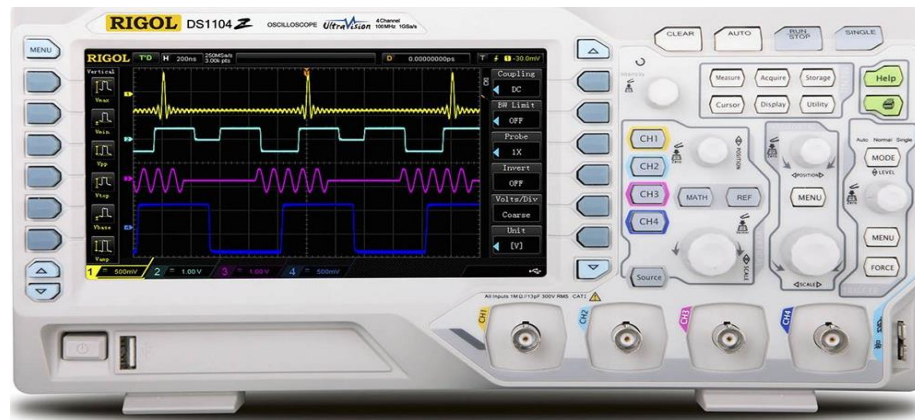
The Analog Electronics Lab supports experiential learning in signal processing, amplification, and waveform analysis, preparing students to meet academic, research, and industry requirements in electronics and communication engineering.

Main Equipment Available:

1. An **Analog Component Trainer** designed for hands-on experimentation with basic electronic circuits in laboratory settings. It integrates a breadboard, fixed and variable power supplies, discrete components, and a signal generator on a single panel. The unit is commonly used for teaching and testing fundamental concepts in analog electronics.



2. A **digital storage oscilloscope** used to observe, measure, and analyze electrical signals in real time. It displays multiple waveforms simultaneously, allowing precise analysis of voltage, frequency, timing, and signal behavior. The instrument is essential in electronics labs for debugging, testing, and signal verification.



3. A **function generator** used to produce standard test waveforms such as sine, square, and triangular signals. It allows precise control over frequency, amplitude, duty cycle, and DC offset for circuit testing. The instrument is commonly used in electronics laboratories for signal injection, analysis, and troubleshooting.



4. A **multiple output DC power supply** designed to provide regulated and stable voltages for electronic circuits. It offers adjustable and fixed voltage outputs with real-time voltage and current display.

The unit is commonly used in electronics laboratories for powering, testing, and debugging circuits safely.



5. A **dual-channel function / arbitrary waveform generator** used to generate precise test signals for electronic circuits. It supports multiple waveforms such as sine, square, ramp, pulse, and arbitrary signals with accurate frequency and amplitude control. The instrument is widely used in laboratories for signal generation, modulation experiments, and circuit validation.



6. A **digital storage oscilloscope** used for real-time observation and analysis of electrical signals. It enables precise measurement of voltage, frequency, phase, and timing across multiple channels.

The instrument is essential in electronics laboratories for signal analysis, debugging, and circuit performance evaluation.



7. A **function generator** capable of producing sine, square, and triangular waveforms up to the MHz range. It provides adjustable frequency, amplitude, duty cycle, and DC offset for precise signal control. The instrument is used in electronics laboratories for testing, modulation experiments, and circuit analysis.



8. A **multiple-output regulated DC power supply** used to provide stable and adjustable voltages for electronic circuits. It offers variable and fixed outputs such as 0–30 V, 5 V, and ± 15 V with current limiting and digital display. The unit is essential in electronics laboratories for safely powering and testing analog and digital circuits.

