

Linear Integrated Circuit (LIC) Laboratory

The Linear Integrated Circuit Lab provides students with an enriching educational experience focused on understanding and applying the principles of linear integrated circuits. This laboratory offers hands-on exploration of various components, including operational amplifiers (op-amps), operational transconductance amplifiers (OTAs) such as OTA 13600, OTA 13700, and OTA 3080, as well as IC555 and IC565 timer and voltage-controlled oscillator (VCO) chips. The laboratory is outfitted with cutting-edge tools, including the NI Elvis II+ platform, enhancing the learning process by allowing students to conduct experiments in a controlled and interactive environment.

A Digital Storage Oscilloscope (70MHz) that enables the visualization and analysis of waveforms in both time and frequency domains. A Function Generator (25MHz, 250MS/s) is available to produce a wide array of waveform signals for comprehensive testing and characterization. The Digital Multimeter ensures accurate measurement of voltage, current, resistance, and other key parameters. The LCR Meter aids in determining values of inductance, capacitance, and resistance for passive components, while the DC Power Supply ($\pm 30V$) furnishes regulated DC voltage to power circuits. Student's comprehension and abilities are assessed through various stages of op-amp circuit development, including design, simulation, construction, and analysis. They are expected to present their work through comprehensive lab reports, highlighting their grasp of theoretical concepts, practical implementation, and experimental outcomes.

Moreover, student's proficiency in troubleshooting and optimizing circuits, as well as their aptitude in interpreting oscilloscope readings and other test equipment data, may also be evaluated.

The Linear Integrated Circuit Lab is equipped with advanced tools and resources, providing students with valuable hands-on experience in working with op-amp circuits. This practical exposure effectively readies them for careers in electronics, instrumentation, and related fields, empowering them to adeptly address real-world complexities in designing and troubleshooting analog electronic circuits. The LIC Lab offers an immersive learning environment that bridges the gap between theoretical knowledge and its practical application. By engaging with op-amp circuits and utilizing sophisticated laboratory equipment, students develop the necessary skills and confidence to create and analyze integrated circuits, establishing a strong foundation for their future endeavors in electronics and analog circuit design. Through interactions with operational amplifiers, operational transconductance amplifiers, IC555, and IC565, students gain a thorough grasp of linear integrated circuits and their applications in analog electronics. This lab experience fosters the acquisition of practical skills in designing, constructing, and evaluating diverse analog circuits, effectively preparing students to navigate real-world analog

circuit design challenges, and equipping them with vital skills for further exploration in the realm of electronics.



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