Capital University of Science & Technology

Department of Electrical and Computer Engineering

Project Title	**12v Variable Power Supply**	
Course Title	**Workshop Practice – CPEG 1021**	
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Project Idea

12v Variable Power Supply

Project Objectives

Adjustable Output Voltage: Provides a variable voltage range from 0V to 12V, allowing precise adjustments to meet different application requirements.

Adjustment Knob: Provides precise voltage tuning through a single control mechanism, allowing the user to easily adjust the output voltage within the 0V to 12V range.

Overload Protection: Includes built-in overload, overcurrent, and short-circuit protection mechanisms to ensure the safety of connected devices and the power supply unit.

Power Indicator: Incorporates an LED indicator to signal the power-on status of the device.

Durable Build: Enclosed in a robust casing to protect against physical damage and ensure long-term reliability.

Universal Input Voltage: Supports a wide input voltage range (e.g., 100-240V AC) for compatibility with various power sources.

Ease of Use: Plug-and-play functionality with intuitive controls, suitable for beginners and professionals alike.

Applications

Electronics Testing and Prototyping: Used by electronics enthusiasts and engineers to test, troubleshoot, and prototype circuits and devices.

Educational Labs: Ideal for students and educators in electronics and physics labs for practical demonstrations and experiments.

Repair Workshops: Useful in servicing and repairing electronic devices requiring adjustable power input.

DIY Projects: Provides flexible power options for hobbyists working on small-scale electronic projects.

Battery Charging: Can be used to charge low-capacity batteries by setting specific voltage levels.

LED and Motor Testing: Suitable for testing components such as LEDs, small DC motors, and sensors requiring specific voltage.

Home Automation Projects: Powers low-voltage home automation devices and systems.

Embedded Systems Development: Serves as a power source for microcontroller and embedded system boards like Arduino and Raspberry Pi.

Block Diagram