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Electronics & Robotics

Module 1: Basics Of Electricity

Session 1: Introduction to Energy

- Understand electric energy, voltage, current, and safety rules.
- Make a paper circuit using copper tape.

Session 2: Understanding Circuits

- Explore open and closed circuits and build a basic LED + battery circuit.

Session 3: Resistors, Switches & Buzzer

- Identify resistors, buzzers, and switches.
- Assemble a complete LED circuit using these components.

Session 4: Mini Project- Water Level Indicator

- Apply basic circuit knowledge to design a working water level indicator system.

Session 5: Introduction to Multimeter and Potentiometer

- Measure voltage, current, and resistance with a multimeter
- Learn how to control LED brightness with a potentiometer.

Session 6: Diode & Transistor Applications

- Learn diode and transistor functions by building a doorbell and an automatic light lamp circuit.

Session 7: Breadboard & Circuit Connections

- Understand breadboard wiring, power rails, and demonstrate series and parallel circuits.

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Module 2: Logic Gates & Applications

Session 8: Basics of Logic

- Learn digital vs. analog logic and the concept of binary ON/OFF states.

Session 9: Introduction to Logic Gates

- Study AND, OR, and NOT gates - their symbols, truth tables, and real-life applications.

Session 10: Implementing Logic Gates

- Create circuits using pushbuttons to demonstrate AND, OR, and NOT gate operations.

Module 3: Introduction to Robotics & Arduino

Session 11: Understanding Robotics

- Explore what robots are, their types, applications, and input-process-output subsystems.

Session 12: Getting Started with Arduino

- Learn Arduino UNO pin diagram, its features, and install Arduino IDE and Tinkercad software.

Session 13: Arduino Coding Basics

- Understand C++ structure, setup() and loop() functions; build a blinking LED circuit using Arduino.

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Session 14: Variables & Traffic Light Project

- Learn variables and data types; build traffic light and Diwali light pattern projects using Arduino.

Module 4: Sensors & Actuators

Session 15: Introduction to Sensors

- Learn about different sensors (LDR, temperature) and their applications in automation.

Session 16: Working with LDR Sensor

- Measure LDR sensor resistance and build an automatic street light circuit.

Session 17: Introduction to Actuators & Motors

- Understand actuators and motor types; control motor direction (forward, backward, stop) using Arduino.

Module 5: Final Project Development

Session 18: Project Orientation & Planning

- Brainstorm project ideas, prepare objectives, diagrams, and flowcharts for implementation.

Session 19: Hardware & Code Integration - I

- Build and test project hardware , upload code.

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Session 20: Hardware & Code Integration - II

- Integrate components and troubleshoot errors.

Session 21: Project Presentation & Demonstration

- Present final project with explanation, working demo, and report.

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Contact Us

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