



Electronics and Robots - ER101

Eligibility	9-20 years	Class Time	Flexible
Course Duration	12 sessions	Course Fee	Rs. 3000 (Tax Incl.)

Course Contents

Module1

- Introduction to Electronics and Applications
- Identification of Various electronic components
- Reading and Drawing circuit Diagrams
- Demonstration of Circuits
- Using Multimeters and Oscilloscopes
- Building a simple circuit

Module2

- Switching Circuits
- Use of various switches – On/Off, Pushbutton and Transistors
- Use of Relays to turn on lights and buzzers
- Drawing Circuits with Relays, LEDs and buzzers
- Building lighting circuits with LEDs, switches and batteries

Module 3

- Introduction to DC motors
- Application of DC motors
- Drawing circuit diagrams with motors
- Control of DC motors – Forward, backward, ON-OFF
- Applications in Battery powered vehicles, robots
- Building circuit with DC motor

Module 4

- Introduction to Sensors and instruments
- Various types of Sensors – Temperature, Light
- Instruments to measure temperature, light, wind speed
- Measuring wind speed, temperature, light intensity

Module 5

- Introduction to microcontrollers
- Circuit Diagram for microcontroller based DC motor control
- Introduction to Programming microcontrollers
- Writing program to control LEDs



Module 6

- Programming the wheels of a robot
- Writing program to turn on DC motor, turn off DC motor, Moving forward, backward

All classes will involve handling electronic components, laboratories including building or assembling circuits, understanding instruments, watching videos and student presentations and demonstrations. Students will be requested to participate in group activities and discussions. No prior preparation or qualification is necessary. A passion to learn and build circuits will be encouraged. Students will also be connected to an email group that will get interesting ideas to build simple circuits and learn.

Course Director: Dr. Ramani Kalpathi (94440 34160)