



Course 1 : Electronics for Beginners

Chapter4 : Digital Electronics Basics

1/ Binary Numbers:

- Basics of binary (0 and 1).
- Conversions between binary, decimal, and hexadecimal.

2/ Logic Gates:

- AND, OR, NOT, NAND, NOR, XOR.
- Truth tables and basic combinational logic circuits.

3/ Practical Circuit:

- Build a logic gate circuit using transistors or ICs.

4/ Sensors and Actuators

- **Sensors:**

- Temperature sensors (e.g., LM35).
- Light sensors (LDR, photodiodes).
- Motion sensors (PIR, ultrasonic).

- **Actuators:**

- DC motors, stepper motors, and solenoids.
- Control a small DC motor using a transistor.

5/ Basic Power Electronics

1. Power Supplies:

1. Linear regulators (e.g., LM7805).
2. Switch-mode power supplies (SMPS).

2. AC to DC Conversion:

1. Bridge rectifier: Convert AC to DC using diodes.
2. Adding capacitors to smooth the output voltage.