# Arduino

1. **Manipulating my electron. (1 Hour)**
   1.1. What is electricity?
   1.2. What are its magnitudes?
   1.3. How can it be converted to other forms?
2. **Why Arduino? (1 Hour)**
   2.1. Microprocessors and Controllers.
   2.2. IDE and HMI programming
   2.3. Online Simulator
3. **Inputs and Outputs (1 Hour)**
   3.1. Digital output and Analog Output
   3.2. Digital Input and Analog Input
   3.3. Software and hardware outputs
4. **Programming (1 Hour)**
   4.1. What is a program
   4.2. Conditions
   4.3. Lops
5. **Amplification and Modulation (1 Hour)**
   5.1. Transistors and Gates
   5.2. Relays and Contactors
   5.3. Motor drivers (DC and Stepper)

# Projects and Prototyping

6. **Home Automation (2 Hour)**
   - 6.1. Sensor and Motor Connections
   - 6.2. Programming interface
   - 6.3. Testing your automated Home
7. **Automatic Door/Toll Gate (2 Hour)**
   - 7.1. Servo Motor, Stepper motor Interface
   - 7.2. Ultrasonic sensor
   - 7.3. Programming Logic
8. **My First Robot Car. (2 Hour)**
   - 8.1. Assemble your Robo Car
   - 8.2. Motor and Battery Connections
   - 8.3. Program to Move
9. **Give Eyes to your Robot (Obstacle Detection) (2 Hour)**
   - 9.1. Sensor and Motor Interface
   - 9.2. Conditions and Programming logic
   - 9.3. Decision Making
10. **Self-Driving Car (2 Hour)**
    - 10.1 Sensor and Motor Interface
    - 10.2 Conditions and Programming logic
    - 10.3 Decision Making