

# Basic electronics

**Duration: 2 weeks[ 5 days a week, 2 hours a day, total 20 hours]**

- Analog circuits : Introduction to basic components and characteristics:
  1. Resistance
  2. Capacitance
  3. Inductance
  4. Diodes
  5. Transistors
  
- Basic circuits:
  1. half wave/ full wave rectifier
  2. Voltage regulator circuits,
  3. Frequency response, and bandwidth, filters
  
- Integrated circuits:
  1. operational amplifiers
  2. symbol
  3. Inverting, non-inverting inputs
  4. off set adjustment
  5. characteristics of an ideal Op-Amp.
  6. Applications of Op Amp
  7. IC 555 timer and its use as astable / monostable / bistable operations.
  8. pulse width modulation using 555
  
- ADC- DAC concepts and circuits

# Digital electronics

- Number Systems and conversion
  1. Binary
  2. Octal
  3. decimal
  4. Hexadecimal
  
- Combinational digital circuits:
  1. logic gates
  2. half adder - full adder
  3. multiplexer - demultiplexer
  4. decoder – encoder
  5. tri state buffer - bidirectional buffer
  6. working of seven segment display
  7. ALU
  
- Sequential digital circuits:
  1. Latches and flip flops
  2. Registers
  3. counters
  4. shift registers
  
- TTL and CMOS families and input output parameters.