

Details of course Plan on microcontroller

About Microcontroller. (Limitations, Scopes ... etc)

- Basic Electronics
- Programming
- Electric Machines
- Industrial Controls
- Sensors & transducers
- Number system
- Electronic, electrical and mechanical interfacing with MCU
- PCB design and fabrication
- Measurements & troubleshooting

Necessary components for working with MCU.

- Microcontroller Chip
- Microcontroller Programmer (Pickit -2)
- Compiler
- Development Board(Robo Kit 1)
- Measuring Instruments
- Power Supply

General Electronics

- | | | | |
|------------------|-----------------------|-----------------|--------|
| 1. Diode. | 2. Opto Coupler | 3.LDR | 4.IR |
| 5. Transformer | 6. Regulator Circuits | 7.Seven Segment | 8.SMPS |
| 9. Number system | 10.Gates/Flip-Flops | | |

Electric Machines

- DC motor
- AC motor
- Stepper motor
- Servo motor

Industrial Controls

- Open loop Control
- Close loop control
- Regulation of Process Control
- SCR Controls

Introduction to microcontroller

- What is a microcontroller?
- Difference between a microprocessor and microcontroller
- How did microcontroller evolve?
- Inside the PIC microcontroller
- Number Systems and conversion

Features of MCU 16f877

- Registers
- I/O ports
- Memory Unit: SFR, RAM, Program Memory, EEPROM
- Interrupt
- CPU /ALU
- Serial Communication

- SPI, I2C
- Oscillator
- Timers, Interrupts
- ADC
- PWM
- On chip EEPROM
- BOR, WDT

Programming Language

- Structure of Program
- Comments
- Data types
- Arrays, Data tables

Operators

- Arithmetic
- Relational
- Logical
- Bitwise
- Assignment
- Conditional
- Preprocessor
- Loops (while-Do, For-next, Do-Until), Statements (if-else, case-select, break.. etc)
- Ascii code