New Enhanced Syllabus
PROJECT BASED TRAINING IN EMBEDDED SYSTEM DESIGN

Introduction to Embedded Systems
Introduction & Market Demands
Component of Embedded systems
Hardware Fundamentals
Basic Electronic
Digital Electronic
Introduction to Microcontroller
Brief introduction of Microcontroller
INTEL, Philips, AVR, Microchip
Binary Number systems
The 8051 Architecture
Hardware Details
8051 Registers
Memory Organization
Port Organization
On Chip Peripherals
8051 Interrupts
Instruction Set
Addressing Modes
Programming Languages
Programming The 8051
Programming Tools and Techniques

Software tools
Assembler: 8051 IDE (Editor Assembler Simulator)
Writing program using the IDE

Hardware Tools
Trainer Kit: Highly New Advanced ISP kit developed by TICO

Faculty Members
All faculties' members are from TICO R&D lab. They are enriched in their industrial experience.

Course material
Each students will be given a copy, Microcontroller reference manual, lab manual,
A CD containing valuable resources.

Training Methodology
Theory Practical ratio 30% : 7 0%
Main focus is given on fundamental understanding

Learning Modules (hands on Practical)
Theoretical aspect of each module
Practical implementation

Interfacing of Input Devices
Linear Keys
What is the type of switches?
Their types & function
Matrix Keypads
How they work
How to interface with microcontroller
Opto Couplers
What are opto coupler?
Interfacing Opto-Isolators

Interfacing of Output Devices
Led
Different types of led.
How it works
How LEDS will rotate
How to connect with microcontroller
What is sourcing & sinking?
Seven Segment Display
What are the types of display?
Difference between Common Anode and Cathode
Driving circuits
LCD (Liquid Crystal Display)
What is LCD?
How to give LCD commands
How to interface LCD with Micro
Relays
What are the different types of Relay?
How it connect with microcontroller.
Piezo buzzer (Alarm unit)
How does a buzzer sound?
Stepper motor
How a stepper motor works
How to drive stepper motor
DC Motor
How a dc motor works
Motor drivers IC
On Chip Timer
What is a timer?
How does a 51timer works?
How to make accurate delay using timer
Timer Interrupts
How to write code for timer?
On Chip Counter
Counter Interrupts
How does it work?
What are the different modes of counter?
How to write code?
External Interrupt
What is an interrupt?
How does it work?

How to write code?

Additional Interfaces
Sensors:
Temperature Sensor LM 35
Light Intensity sensors
Voltage sensors
Current sensors
IR sensors
Photo diode

Analog to Digital Converter
ADC 0809
How it works
Interfacing with microcontroller
How to write the code

PROJECT WORKS

After successful completion of training, you can make following types of minor/
Major industrial projects (Only One)
Robotics:
Line Follower
Light Follower
Anti collision robot
Home Automation:
Electrical energy Saver
Home security system
Smart kitchen
Industrial Automation:
Data logger
Temperature indicator
Temperature controller
Multi channel monitoring system
Telecom
DTMF based remote home appliances control
RF based controlling
Office security/Automation
Smart Card Access Control System with RFID cards (125 khz)
Time Attendance Monitoring system
Electronic voting machine

SMART BENEFITS:-

Multi time boost in Confidence level and understanding of Embedded world
A certificate will be awarded to each student. This will be recognized as a
Industrial training certificate in engineering colleges.
You will be able to do your minor and major projects of academic value on your own
Professional Industrial environment for project work.
This will be a gateway for Embedded Technology
A fast emerging technology for Electronics professionals.

An Investment in Knowledge Pays Best Returns. Benjamin Franklin

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