Embedded Systems

Content Outline

SESSION 1: Introduction to Basic Electronics
- Basic Electronics Components
- Fundamental of Electronics Components
- Resistors
- Transistors
- Capacitors
- Diodes

SESSION 2: Introduction to Microcontrollers
- What is microcontroller?
- Difference Between microcontroller & microprocessor?
- Introduction to Arduino & Atmega Microcontrollers
- Architecture of the Arduino UNO board
- How can we use an own microcontroller board in our project?
- Pin description of Arduino UNO R3

SESSION 3: Introduction to Arduino Programming
- Installation of Software
- Introduction of major elements of Arduino compatible software
- Arduino Programming basics & hardware interfacing.
- Program structure and debugging
- Breadboards & applied circuitry
- First Program.

Experiment 1: Simple LED Blinking Program.
Experiment 2: LED Pattern Showcasing Program.

SESSION 4 # Working with Sensors – Part 1
Infrared Sensors
- What is a Infrared Sensor?
- Working of Infrared Sensor
- Practical Demonstration of IR Sensor
- Code Optimisation

SESSION 5 # Working with Sensors – Part 2
Ultrasonic Sensors
- What is a Ultrasonic Sensor?

• Working of Ultrasonic Sensor
• Practical Demonstration of IR Sensor
• Code Optimisation

SESSION 6 # Display Devices
Display Devices
• Working of Display Devices
• 16X2 LCD & its working
• Practical Demonstration of 16X2 LCD
• Code Optimisation & related experiments

SESSION 7 # DTMF Technology Session
• Talk about Railway IVRS System & its usage.
• DTMF Technology
• DTMF Encoders & Decoders
• Interfacing of DTMF ICs
• Practical Demonstration of DTMF Technology

SESSION 8 # Electical Systems Interfacing
Electrical Systems Interfacing
• How Electrical-Electronics System works?
• Use of Relay Module
• Relay Module & its working
• Operating Electrical Bulb using input electronically.

Number of Team Members: 4