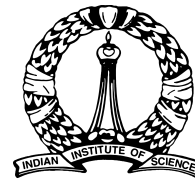# Internet of Things

A two days workshop for Engineering & Science Students

Content Outline

SESSION 1: Starting with IoT

Internet of Things
1. Definition
2. Requirements
3. Usage & Applicability

Basics of Cloud Computing

Integration with Smart City Development

Preferred Models for Implementation
1. AVR Framework
2. Arduino Framework
3. Raspberry Pi Framework

SESSION 2: Introduction to Basic Electronics

Basic Electronics Components
Fundamental of Electronics Components
Resistors
Transistors
Capacitors
Diodes

SESSION 3: Basics of Electronics to Electricals

TRIAC
Voltage Regulators
Analog to Digital Convertors
Digital to Analog Convertors
Relays
Operation of Relays
Circuit Designing

SESSION 4: Introduction to Microcontrollers

What is microcontroller?
Difference Between microcontroller & microprocessor?
Introduction to Atmega 8 /16 microcontroller

Architecture of the AVR Microcontroller
How can we use an own microcontroller in our own circuit?
Pin description of the microcontroller
How to use I/O of the microcontroller
IR Sensors

SESSION 5: Introduction to Embedded C Programming
Embedded C Programming for the Microcontroller
Introduction to AVR Studio and Win AVR
Introduction to C , Flow Control and function
Program structure and debugging
How to program a microcontroller?

SESSION 6: Practical Session-1
Simple LED Blinking Program
Integrating Sensors & Reading Environmental Physical Values
Processing of gathered data obtained from sensors as per requirement.
PDA (Phones/Tabs etc) - Project Board Connecting Process

SESSION 7: Practical Session-2
Localhost Webserver
Localhost Webserver for Home Automation
Ethernet Module & Testing of Data Transmission
Creating Platform for controlling of devices

SESSION 8: Practical Session-3
Sending of Analog Data on Cloud Server
Communicating with Cloud using Web Services
Receive Automatic Call Notification on Mobile Phone for Burglar Alarm using IoT
Platform.
Controlling of Electronic Devices using Internet & Application.

SESSION 9: Practical Session-43
Sharing Sensor Data on Social Networks.
Twitter – Facebook Connection App
Updation of Sensor Data on Website / Blog