Internet of Things Lab

Major Equipments:

- ▪ WSN based IoT Development System
  - • Coordinator Intelligent Nodes
  - • Air Quality Sensor
  - • PIR Sensor
  - • Proximity Sensor
  - • Smoke Sensor
  - • Magnetic Sensor
  - • Temperature Sensor
- ▪ Wi-Fi based IoT Development System
- ▪ Universal Development Board
- ▪ ARM7 2148 Board
- ▪ Raspberry-pi Development Board
- ▪ Arduino Uno Development Board
- ▪ Automatic Weather Monitoring System
  - • Wind speed & Direction Sensor
  - • Temperature & Humidity Sensor
  - • Barometric Pressure Sensor
  - • Solar radiation Sensor
- ▪ Interactive Panel and Accessories

In Charge

Prof. Punit K. Johari
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Physical in Charge:

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STANDARD OPERATING PROCEDURE TO BE FOLLOWED IN LABORATORY:

- Students are not allowed to touch any equipment, chemicals or other materials in the laboratory area until you are instructed by Teacher or Technician.
- Before starting Laboratory work follow all written and verbal instructions carefully. If you do not understand a direction or part of a procedure, ASK YOUR CONCERN TEACHER BEFORE PROCEEDING WITH THE ACTIVITY.
- Before use equipment must be read carefully Labels and instructions. Set up and use the equipment as directed by your teacher.
- If you do not understand how to use a piece of equipment, ASK THE TEACHER FOR HELP!
- Perform only those experiments authorized by your teacher. Carefully follow all instructions, both written and oral.
- Unauthorized experiments are not allowed in the Laboratory.
- Students are not allowed to work in Laboratory alone or without presence of the teacher.
- Any failure / break-down of equipment must be reported to the teacher.
- Protect yourself from getting electric shock.

DO's

- Be on time, at the start of the lab period,there will be a short introduction to the experiment you will perform that day.
- Make proper entry in Lab Register.
- Conduct yourself in a responsible manner at all times in the laboratory.
- Maintain silence and clean environment in The lab.

DON't

- Don't leave the Lab without making proper shut down of desktop and keeping the chairs properly.
- Don't leave the Lab without verification by Lab instructor.
- Do not eat or drink in the Lab at any time.
- Don't leave the lab without the permission of the Lecturer In-Charge.
- Do not wander around the room, distract other students, startle other students or interfere with the laboratory experiments of others.

LIST OF EXPERIMENTS:

1. Introduction to Arduino Board and Arduino IDE (Installation and Setup)

2. Write a Program to Blink LED (Turn an LED on and off).

3. Write a Program to demonstrate the use of analog output to fade an LED.

4. Write a Program to read an analog input and prints the voltage to the serial monitor.

5. Write a Program to count the number of button pushes.

6. Write a Program to Control an LED using Button.

7. Write a program to detect object using IR Obstacle Sensor.

8. Write a program to detect presence of Gas using GAS Sensor.

9. Write a Program to Control Electronic Appliances using RELAY SHIELD Sensor.

10. Write a Program to measure Temperature and Humidity using DHT11 Sensor.

11. Write a program to detect motion using Motion Sensor (PIR sensor).

12. Write a Program to detect presence of smoke using Smoke Sensor.

13. Write a Program to play melody with a Piezo speaker.

COURSE OUTCOMES :-

CO1. Define the basic concept of Embedded System.

CO2. Describe the basic principles of Arduino programming and IDE.

CO3. Familiarize with different types of sensors and related systems.

CO4. Design, implement, debug and test programs/ system.

CO5. Design and develop Smart systems applications.

CO6. Build Arduino board using different sensors.

LIST OF SKILL BASED MINI PROJECT :-

1. Intelligent home locking system.

2. Intelligent water level management system.

3. Home automation using RFID.

4. Real time clock-based home automation.

5. Intelligent Automatic Irrigation System