# Netaji Subhas Institute of Technology

Approved by AICTE and Affiliated to AKU, Patna

## Workshop

ON

# IOT
## INTERNET OF THINGS

**22nd July to 31st July, 2021**

Organized by
**Department of ECE**

## Coordinators

Mr. Kundan Singh, NSIT Patna
Miss. Neha Kumari, NSIT Patna

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## ABOUT NSIT PATNA

Netaji Subhas Institute of Technology established in 2007, with first batch started in 2008 has its magnificent campus at Amhara in the district of Patna, Bihar, The nearest railway station is Bihta about 2 kilometres from the institute campus and about 25 KM from Patna A railway junction the state capital and major business and Educational hub of the state. Bihta is the industrial hub and blessings nerve centre of the entire state of Bihar. NSIT, A Degree level Engineering institute has become a "An effective source of Technocrats to the nation", with its unique infrastructural facilities of 4,00,000 Sq.Ft. of built up area on approximately 18 acres of green lustre land at Amhara, Bihta, Patna, Ambience at the campus serve and Ashram like. The college offers 4 years B.Tech courses in CSE, ECE, EEE, ME and CE.

## ABOUT DEPARTMENT OF ECE

The Department of ECE has a team of well qualified, experienced and dedicated faculty members with rich academic, industrial and research background. The department is fully equipped with modern electronics equipment systems with latest software. The ECE has the intake of 60 students and approved by AICTE and affiliated to AKU, Patna

## DEPARTMENT VISION

The Vision of ECE department is to become pioneer in higher learning and research to produce creative solution to social needs & developing graduate engineers with the skills, knowledge and imagination that will help to shape our world

## DEPARTMENT MISSION

- To provide excellence in education, research in the domain of Electronics and Communication Engineering.
- To provide quality and contemporary education in the domain of Electronics & Communication Engineering through periodically updated curriculum, best of breed laboratory facilities, collaborative ventures with the industries and effective teaching learning process and to make the students entrepreneur and employable.

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## OBJECTIVE

The aim of this workshop is to explore the state-of-art technologies in the area of Internet of Things (IoT) through a series of lectures delivered by eminent persons working in this field and to provide some hands on experiences in setting up IoT platform with open source software.

## WORKSHOP CONTENTS

- Introduction to the Internet of Things
- The Basics of Sensors & Actuators
- Basic IOT Architecture
- The IOT Platforms Available
- Arduino Programming
- Interfacing sensors with Arduino
- Embedded System Processors

- ## Registration Fee

The participation fees Rs 500/- only
Mode of registration :- Spot
*For More Information Contact us on :-*
7781020364,9102403261,9102403272

### RESOURCE PERSON

Ankit kumar
Scientist 'C'
HOD Electronics Division ,NIELIT, Patna

### PATRONS

Mr. M. M. Singh, Founder Secretary, NSIT
Mr. Krishna Murari, Registrar, NSIT
Prof. M. P. Tripathi, Chairman, BOG, NSIT
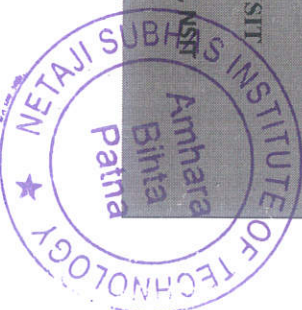
### EVENT CHAIR

Dr. S. Singh, Director., NSIT

### CONVENOR

Mr. Rajani Ranjan, HOD,ECE, NSIT

### CO-CONVENOR

Mr. Amarjeet Kumar, Asst.Prof, EEE, NSIT

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Director
Netaji Subhas Institute of Technology
Amhara, Bihta, Patna, Bihar
PIN-801106

# NETAJI SUBHAS INSTITUTE OF TECHNOLOGY

**APPROVED BY AICTE, NEW DELHI AND DEPT OF SCIENCE & TECHNOLOGY, GOVT. OF BIHAR**
**AFFILIATED TO ARYABHATTA KNOWLEDGE UNIVERSITY, PATNA**
**AMHARA, BIHTA, PATNA-801118, BIHAR**

Session 2020-2021

Date: 15-07-2021

## Notice

The interested students of $4^{th}$ , $6^{th}$ & $8^{th}$ Semester of ECE and EEE branches are here by informed that **"Workshop on IOT"** is going to be organized by Electronics and Communication department. The details of registration for the workshop are available on notice board.
The details are as follows:-

**Name:** Internet of Things

**Date:** 22th July to $31^{st}$ July, 2021
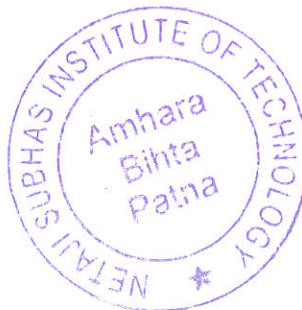**Venue:** Computer Lab

**Coordinators:**
1. Mr. Kundan Singh , Asst. Professor, ECE,NSIT
2. Miss. Neha Kumari, Asst. Professor, ECE,NSIT

Dean, NSIT

**Dean**
Netaji Subhas Institute of Technology
Amhara, Bihta, Patna

Copy to:
1. Director, NSIT
2. All HODs , NSIT
3. Notice Board
4. College website

**Director**
Netaji Subhas Institute of Technology
Amhara, Bihta, Patna, Bihar
PIN-801106

# NETAJI SUBHAS INSTITUTE OF TECHNOLOGY, BIHTA
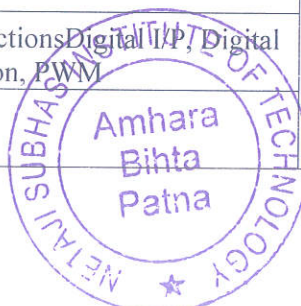## DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
### Session 2020-2021
### Add on Course on "Internet of Things"
### Course Content

| UNIT I: Internet of Things | | | |
|---|---|---|---|
| **Sr. No** | **Topic** | **Sub Topic** | **Duration (in Hrs)** |
| 1 | IoT Introduction | IoT Evolution | |
| | | IoT Terminologies | |
| | | IoT Building Blocks | |
| | | IoT Architecture | |
| 2 | IoT Introduction | IoT Applications, Scope and Case Studies | 7 Hrs |
| 3 | Sensor and Actuator | Basic Electronics for IoT | |
| | | Introduction to Sensors, Working Principle | |
| 4 | Sensor and Actuator | Types of Sensors | |
| | | Sensors for IoT | |
| 5 | Arduino | History, Types of boards and Architecture | |
| | | Components of Arduino Board | |
| | | Arduino UNO | |

| UNIT II : Internet of Things | | | |
|---|---|---|---|
| **Sr. No** | **Topic** | **Sub Topic** | **Duration (in Min.)** |
| 1 | Embedded Serial Protocols | UART | |
| | | I2C | |
| | | SPI | |
| 2 | Arduino Programming | Fundamentals of C Programming | |
| | | Arduino IDE, Arduino Programming | |
| 3 | Arduino Programming | Data Types, Operators and Expressions | 8 Hrs |
| | | Conditional statements | |
| 4 | Arduino Programming | Object Oriented Programming | |
| | | Interrupts | |
| 5 | Arduino Programming | Built in Arduino Functions Digital I/P, Digital O/P, Analog Operation, PWM | |
| | | Lab session | |

| UNIT III: Internet of Things | | | |
|---|---|---|---|
| **Sr. No** | **Topic** | **Sub Topic** | **Duration (in Min.)** |
| 1 | Interfacing | Digital I/P | 8 Hrs |
| | | Digital O/P | |
| | | Analog Operation | |
| | | PWM | |
| 2 | Sensor Interfacing | Interfacing LDR, Ultrasonic Sensor, DHT11, Touch Sensor, GAS Sensor etc | |
| 3 | Display and peripheral interfacing | Interfacing LCD,KeyPad, RTC, Buzzer | |
| 4 | Wireless for IoT | Wireless Protocols for IoT | |
| | | PAN,IEEE 802.15 | |
| | | WiFi, Bluetooth | |
| 5 | ESP32 | Introduction to ESP32 | |
| | | ESP32 Dev kit | |
| | | GPIOs, Communication, Digital I/O | |

| UNIT IV: Embedded System Processors | | | |
|---|---|---|---|
| **Sr. No** | **Topic** | **Sub Topic** | **Duration (in Min.)** |
| 1 | Interfacing | Analog input, Interrupts | 9 Hrs |
| | | PWM, DAC | |
| | | Sensors Interfacing | |
| 2 | Web Server | WiFi module configuration Client Server Model | |
| | | Web Server Development, HTTP Client | |
| | | Device control and Monitoring | |
| 3 | Bluetooth | Introduction to Bluetooth | |
| | | Classic Bluetooth, Interfacing with Smartphone | |
| | | Interfacing LED, Sensors and Display | |
| 4 | BLE Server | BLE Server | |
| | | Configuration | |
| | | Interfacing LED, LCD | |
| 5 | Cloud | Cloud platforms for IoT | |
| | | Interfacing to Cloud | |
| | | Updating sensor data to using, Controlling devices through cloud | |
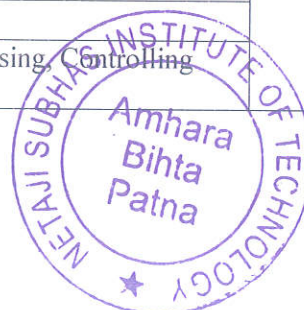
# NETAJI SUBHAS INSTITUTE OF TECHNOLOGY, BIHTA

Session 2020-2021
Workshop on "IOT"
Attendance Sheet

| Sr.No | Name of Student | 22-Sep | 23-Sep | 26-Sep | 27-Sep | 28-Sep | 29-Sep | 30-Sep | 31 Sep |
|---|---|---|---|---|---|---|---|---|---|
| 1 | SATYAM KUMAR SINHA | P | P | P | P | P | P | A | P |
| 2 | AMRIT KUMAR SAURAV | P | P | A | P | P | P | P | P |
| 3 | HIMANSHU KUMAR | P | P | P | P | P | P | P | P |
| 4 | RITESH KUMAR SINGH | P | P | P | A | P | P | P | P |
| 5 | NITISH KUMAR | P | P | P | P | A | P | P | P |
| 6 | ABHISHEK SINGH | P | P | P | P | P | P | P | P |
| 7 | SURYANSH VERMA | P | P | P | P | A | P | P | P |
| 8 | GAURAV KUMAR | P | P | P | P | P | P | P | P |
| 9 | SHIVAM KUMAR | A | P | P | A | P | P | A | P |
| 10 | HIMANSHU KUMAR | P | P | P | P | P | P | P | P |
| 11 | KUMARI AKANKSHA | P | P | P | P | P | P | P | P |
| 12 | MD TAUSIF MALLICK | P | P | P | P | P | A | P | P |
| 13 | LAVANYA SINGH | P | P | P | P | P | P | P | P |
| 14 | RISHI PRAKASH PANDEY | P | P | A | P | P | P | P | P |
| 15 | RAHUL KUMAR | A | P | P | P | P | P | P | P |
| 16 | LAKSHMI MINJ | P | P | P | A | P | P | P | P |
| 17 | KUMAR ADITYA | P | P | A | P | P | P | P | P |
| 18 | BHASKAR KUMAR | P | P | P | P | P | P | P | P |
| 19 | PRINCE | P | P | P | P | P | P | P | P |
| 20 | ABHISHEK KUMAR | P | P | P | A | P | P | P | P |
| 21 | PRINCE KUMAR | P | P | P | P | P | P | P | P |
| 22 | MANISH KUMAR | P | P | P | P | P | P | P | P |
| 23 | MD FAISAL IQBAL | P | P | A | P | A | P | A | P |
| 24 | KUMAR RISHABH | P | P | P | P | P | P | P | P |

| S.No | Name | | | | | | |
|---|---|---|---|---|---|---|---|
| 25 | NIKHIL TIWARY | P | P | P | P | P | P |
| 26 | ABHISHEK RAJ | P | P | P | P | A | P |
| 27 | JASON PAUL | P | P | P | P | P | P |
| 28 | CHITRASEN PRASAD RAJ | P | P | P | P | P | P |
| 29 | ANKIT KUMAR JHA | P | P | P | A | P | P |
| 30 | RAVI RANJAN | P | P | P | P | P | P |
| 31 | SUMIT KUMAR | P | P | P | P | P | P |
| 32 | PRACHI KUMARI | P | P | P | P | A | P |
| 33 | VISHAL KUMAR | P | A | P | P | P | P |
| 34 | RANJIT KUMAR | P | P | P | P | P | P |
| 35 | NEHA KUMARI | A | P | P | P | P | P |
| 36 | SURAJ KUMAR | P | P | P | P | A | P |
| 37 | MANSI KUMARI | P | P | P | P | P | P |
| 38 | SHUBHAM SHASHWAT | P | P | P | P | P | P |
| 39 | ANKIT KUMAR | P | P | P | A | P | P |
| 40 | SATYAM KUMAR | P | P | P | P | P | P |
| 41 | MANISH KUMAR | P | P | P | P | P | P |
| 42 | BINANJAY KUMAR | A | P | P | P | P | P |
| 43 | ROHIT RANJAN | P | A | P | P | P | P |
| 44 | ABHISHEK KUMAR | P | P | A | P | P | P |
| 45 | NISHANT KUMAR | P | P | P | A | P | P |
| 46 | ABHISHEK GIRI | P | P | P | P | P | P |
| 47 | MADHUWALA KUMARI | P | P | P | P | P | A |
| 48 | NUSRAT NAZ | P | P | P | P | P | P |
| 49 | SONU KUMAR | P | P | P | P | P | P |
| 50 | MOHIT KUMAR | P | P | P | P | P | P |
| 51 | MADHU KUMARI | P | P | P | P | P | P |
| 52 | ANISH KUMAR | P | P | P | P | P | P |
| 53 | VIKASH KUMAR | P | A | P | A | P | P |
| 54 | AMRITA CHANDRA | P | P | P | P | A | A |