Gramin (Arts, Comm. & Sci.) Mahavidyalaya, Vasantnagar

Kotgyal, Tq. Mukhed Dist. Nanded

Department of Computer Science

Certificate Course in IoT (Internet of Things)

(2021 – 2022)

Admission List

Sr. No.	Name of the Student	Class	Signature
1	Dasarwad Omkar Balaji	B. Sc. S. Y.	Omkar
2	Devkate Amol Narayan	B. Sc. S. Y.	Amol
3	Rapanwad Ganesh Venkat	B. Sc. S. Y.	Ganesh
4	Pawar Vaishali Chandrakant	B. Sc. S. Y.	Pawar
5	Kore Sushilkumar Narsingrao	B. Sc. S. Y.	Sushil
6	Bhosale Riya Yeshwantrao	B. Sc. S. Y.	Riya
7	Bhosale Rohit Yeshwantrao	B. Sc. S. Y.	Rohit
8	Mangnale Siddheshwar Parmeshwar	B. Sc. S. Y.	mangnale
9	Bansode Geetanjali Gangadhar	B. Sc. S. Y.	Geetanjali
10	Shivmore Pragati Sadhu	B. Sc. S. Y.	Pragati
11	Gutte Vaishnavi Suryakant	B. Sc. S. Y.	Vaishnavi
12	Kamble Sanjivani Mahadev	B. Sc. S. Y.	Sanjivani
13	Mujawar Tanvir Atik	B. Sc. T. Y.	Tanvir
14	Pachkawade Poonam Santosh	B. Sc. T. Y.	Poonam
15	Ranbhidkar Pralekha Prabhakar	B. Sc. T. Y.	Viraj
16	Tate Priyanka Sambhaji	B. Sc. T. Y.	Tate
17	Chavan Neha Vyankatrao	B. Sc. T. Y.	chavan
18	Jagave Pooja Maroti	B. Sc. T. Y.	Pooja
19	Tompe Aarti Prakashrao	B. Sc. T. Y.	Tompe
20	Chavan Priyadarshana Govindrao	B. Sc. T. Y.	Chavan

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Department of Computer Science

Certificate Course in Internet of Things (IOT)

Objective of the Course

This Course focuses on hands-on IoT concepts such as sensing, actuation and communication. It covers the development of Internet of Things (IoT) prototypes- including devices for sensing, actuation, processing, and communication-to help you develop skills and experiences. The Internet of Things (IOT) is the next wave, world is going to witness. Today we live in an era of connected devices the future is of connected things.

Learning Outcome

After the completion of the course, the students will be able design some IOT based prototypes.

Duration of the Course

30 Hours (Three Months)

Minimum Eligibility Criteria

Pursuing/Passed BCA/B. Sc.

COURSE OUTLINE

Sr. No.	Modules to be Covered
1	Introduction to IOT
2	Arduino Simulation Environment
3	Sensor & Actuators with Arduino
4	Basic Networking with ESP8266 Wi-Fi module
5	IoT Protocols
6	Cloud Platforms for IOT

Detailed Course Syllabus

1. Introduction to IOT
- Understanding IoT fundamentals
- IOT Architecture and protocols
- Various Platforms for IoT
- Real time Examples of IoT
- Overview of IoT components and IoT Communication Technologies
- Challenges in IOT

2. Arduino Simulation Environment
- Arduino Uno Architecture
- Setup the IDE, Writing Arduino Software
- Arduino Libraries
- Basics of Embedded C programming for Arduino
- Interfacing LED, push button and buzzer with Arduino
- Interfacing Arduino with LCD

3. Sensor & Actuators with Arduino
- Overview of Sensors working
- Analog and Digital Sensors
- Interfacing of Temperature, Humidity, Motion, Light and Gas Sensor with Arduino
- Interfacing of Actuators with Arduino.
- Interfacing of Relay Switch and Servo Motor with Arduino

4. Basic Networking with ESP8266
- WiFi module Basics of Wireless Networking
- Introduction to ESP8266 Wi-Fi Module
- Various Wi-Fi library
- Web server- introduction, installation, configuration
- Posting sensor(s) data to web server

5. IoT Protocols
- M2M vs. IOT
- Communication Protocols

6. Cloud Platforms for IOT

- Virtualization concepts and Cloud Architecture
- Cloud computing, benefits
- Cloud services -- SaaS, PaaS, IaaS
- Cloud providers & offerings
- Study of IOT Cloud platforms
- ThingSpeak API and MQTT
- Interfacing ESP8266 with Web services

Reference Books & Links :

- Getting Started with the Internet of Things by Cuno Pfister
- The Internet of Things" by Samuel Greengard
- Precision: Principles, Practices and Solutions for the Internet of Things" by Timothy Chou
- Building the Internet of Things by Maciej Kranz
- Everyware: The Dawning Age of Ubiquitous Computing" by Adam Greenfield
- https://mrcet.com/downloads/digital_notes/EEE/IoT%20&%20Applications%20Digital%20Notes.pdf
- https://www.tutorialspoint.com/internet_of_things/internet_of_things_tutorial.pdf
- https://freecomputerbooks.com/Internet-of-Things-in-5-days.html

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Time : 2 Hrs

Marks : 40

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1. What is IoT?

a) network of physical objects embedded with sensors

b) network of virtual objects

c) network of objects in the ring structure

d) network of sensors

2. Which of the following is false about IoT devices?

a) IoT devices use the internet for collecting and sharing data

b) IoT devices need microcontrollers

c) IoT devices use wireless technology

d) IoT devices are completely safe

3. Which of the following is not an IoT platform?

a) Amazon Web Services   b) Microsoft Azure

c) Salesforce   d) Flipkart

4. Which of the following is not an application of IoT?

a) BMP280   b) Smart home

c) Smart city   d) Self-driven cars

5. Which of the following is not a fundamental component of an IoT system?

a) Sensors   b) Connectivity and data processing

c) User interface   d) Transformer

6. Which layer is used for wireless connection in IoT devices?

a) Application layer   b) Network layer

c) Data link layer   d) Transport layer

7. Which of the following is used to capture data from the physical world in IoT devices?
a) Sensors
b) Actuators
c) Microprocessors
d) Microcontrollers

8. Which of the following is not a sensor in IoT?
a) BMP280
b) DHT11
c) Photoresistor
d) LED

9. Which of the following is true about Arduino IoT devices?
a) They are open-source software
b) They can only read analog inputs
c) They have their own operating systems
d) They don't have pre-programmed firmware

10. Which of the following is not related to Arduino IDE IoT software?
a) Serial monitor
b) Verify
c) Upload
d) Terminate

11. IoT gateway must provide _____
a) Protocol abstraction
b) Data storage
c) Security with hardware
d) Simple and fast installation

12. What IoT collects?
a) Device data
b) Machine generated data
c) Sensor data
d) Human generated data

13. Which of the following protocol is used to link all the devices in the IoT?
a) HTTP
b) UDP
c) Network
d) TCP/IP

14. Which service permits the changes to the IoT services?
a) Update
b) Registered service status
c) Enable from suspension
d) Enable

15. What is the component of an IoT system that executes a program?
a) A sensor
b) A microcontroller
c) An actuator
d) A digital to analog converter

16. Which programming language is used by Arduino IDE IoT software for writing codes?

a) Python
b) Java
c) C/C++
d) JavaScript

17. What is the full form of IDE in Arduino IDE IoT software?

a) Intra Defence Environment
b) Intra Development Environment
c) Integrated Development Environment
d) Integrated Deployed Environment

18. If the device is programmed with a bootloader, the application image is loaded in _____ interface.

a) UART
b) USB
c) SPI
d) I2C .

19. Bootstrap is used for _____

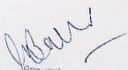a) Web applications
b) IoT
c) Bigdata
d) Data

20. Bootstrap is a front end development only.

a) True
b) False

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