21IOT15	MOBILE APPLICATION DEVELOPMENT FOR IOT	L	T	P	C
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Course Objectives

Students can able to

- Learn mobile application development for Internet of Things (IoT) devices
- Learn various components of mobile devices and essential sensors for various application
- Learn analytics and security aspects of mobile applications in IoT platforms

UNIT I	INTRODUCTION TO IOT ECOSYSTEM	9 Hours

IoT ecosystem; Industry 4.0; Application development platforms for IoT; IoT Data sources

UNIT II	SENSOR FOR MOBILE AND HANDHELD DEVICES	9 Hours

Temperature sensors, Proximity sensor, IR sensors, Image sensors, Motion detection sensors, Accelerometer sensors, Gyroscope sensors, Optical sensors

UNIT III	SENSOR DATA PROCESSING	9 Hours

Sensor Data-Gathering and Data-Dissemination Mechanisms; Sensor Database system architecture; Sensor data-fusion mechanisms; Data-fusion Architectures and models

UNIT IV	PROGRAMMING FRAMEWORKS FOR INTERNET OF THINGS	9 Hours

IoT Programming Approaches: Node-Centric Programming - Database approach - Model-Driven Development - IoT Programming Frameworks: Android Things - ThingSpeak - IoTivity - Node-RED - DeviceHive - Contiki and Cooja – Zetta.

UNIT V	COMMUNICATION TECHNOLOGIES FOR LOW POWER WIRELESS INTERACTIONS	9 Hours

Wireless communications in product development – Bluetooth LE - Near Field Communications (NFC) – WiFi; Prototyping Bluetooth LE with Arduino Nano; Power management strategies and practices

UNIT VI	CASE STUDY	

Case Study on recent Frameworks

TOTAL PERIODS: 45

Course Outcomes:

At the end of the course, Students can able to

- Outlines a fundamental full stack architecture for IoT
- Describes various development technologies in each IoT layer
- Develops IoT applications using standardized hardware and software platforms.
- Creates prototype using low power communication technologies.
- Explains IoT solution development from Product management perspective

Text books:

1. Kale, Vivek. Parallel Computing Architectures and APIs: IoT Big Data Stream Processing1 st edition, CRC Press, 2019.
2. Lea, Perry. Internet of Things for Architects: Architecting IoT solutions by implementing sensors, communication infrastructure, edge computing, analytics, and security, 1st edition, Packt Publishing Ltd, 2018.

Reference Books:
1. Fadi Al-Turjman, Intelligence in IoT-enabled Smart Cities, 1st edition, CRC Press,2019
2. Giacomo Veneri, and Antonio Capasso, Hands-on Industrial Internet of Things: Create a powerful industrial IoT infrastructure using Industry 4.0, 1 st edition, Packt Publishing,2018