Program Name- **INTRODUCTION TO AI & ML WITH IOT**
Program Code - **IT1**
Program Hours - **50**
Tentative Credit- **4**

OBJECTIVES

- To learn the Fundamentals of AI.
- To learn the Fundamentals of Machine Learning.
- To learn the concepts of IOT.
- To identify the different technologies.
- To learn different applications in IoT.
- To learn different protocols used in IOT.
- To learn the concepts of smart systems with development in IoT.
- To learn how to visualize real-time data in IoT.

OUTCOMES

- Project-oriented learning with real-time applications.
- Data Preprocessing.
- Developing a machine learning model.
- Developing AI Applications using the Weka tool.
- End–to–end learning & development with different technologies of IOT Systems.
- Application and analysis of protocols used in IoT.
- Analysis and evaluation of the data received through sensors in IOT using different visualization techniques.

SCOPE

- Data Analyst
- ML Engineer
- IIOT Designer
- IIOT Developer
- IIOT Analyst
- IIOT Tester
- Entrepreneurship

PROJECTS

- Smart Waste Management System
- Smart Healthcare Monitoring
- Home Security and Surveillance system
- Smart City Infrastructure
- Intelligent Traffic Management System
- Water Leakage Detection and Prevention System
- Plant Health Monitoring System
- Autonomous Drone System

INTRODUCTION TO AIOT FOUNDATION

Module 1:

Chapter1: Fundamentals of AI: Introduction of AI, Introduction to Machine learning, Types of Machine learning, Tools and Software used for AI, Introduction to Teachable Machine, Image and Text classification using machine learning, Introduction to Weka platform, Data Pre-processing, Supervised and Un-supervised machine learning.

Chapter2: Basic Hardware in IOT: Glowing of an LED, Controlling LED through the switch, Controlling the brightness of led using resisters & potentiometer, Series and parallel connection of led Buzzer, Capacitor, Relay, Transistor, Sensors, and Actuators.

Chapter3: Fundamentals of Micro-controller: Architecture of Micro-controller, Analog and Digital Sensors Introduction to Arduino, Introduction to Arduino IDE and basic Sketch

Module 2:

Chapter1: The controller in IOT: Arduino Activity- digital sensors, Arduino Activity- Actuators Introduction toNode MCU & HTTP, Node MCU Activity- actuator, Node MCU Activity- digital & analog sensors, Interfacing Ultrasonic Sensors, Interfacing Temperature Sensor, Interfacing PIR Sensors, Interfacing MQSensors, Interfacing Servo Motor, Interfacing Soil Moisture Sensor, Interfacing Photo Sensor.

Chapter2: Hardware Communication Protocols: UART Communication Protocols, I2C Communication Protocols,SPI Communication Protocol