



# UTTARANCHAL UNIVERSITY

(Established vide Uttaranchal University Act, 2012)

(Uttarakhand Act No. 11 of 2013)

Arcadia Grant, P.O. Chandanwari, Premnagar, Dehradun, Uttarakhand

Programme Name	<b>Pre-Ph.D. Course Work</b>	Programme Code	23-
Course Code	IOT704	Credit	3
Year/Sem	1/1	L-T-P	3-0-0
Course Name	Industrial Internet of Things		

## Objectives of the Course:

1. Its objectives to provide knowledge about Basics of IoT and its applications in different domains

## UNIT I (Total Topics- 8 and Hrs- 8)

### Introduction to Internet of Things

1. Introduction to embedded system, Challenges and design issues in embedded systems
2. Types of microcontrollers, General introduction of Arduino, NodeMCU, Raspberry Pi
3. Selection of microcontrollers
4. Definition of IoT, Components of IoT
5. Levels of IoT
6. Evolution of IoT, Challenges in IoT Design challenges
7. Introduction to Python
8. Introduction to AI & ML

## UNIT II (Total Topics- 7 and Hrs- 7 )

### Communication Protocol

1. Machine to Machine, Difference between IoT and M2M
2. Software define Network Communication Protocols : ZigBee, RFID, Wi-Fi, Bluetooth
3. LoRA, CAN, Cellular network
4. NFC, SPI protocol, I2C protocol
5. Communication with Bluetooth devices: Bluetooth standard, AT commands, Setting Bluetooth in command mode
6. Cloud platforms : Overview of cots cloud platforms
7. Cloud services business models: SaaS, PaaS, IaaS.

## UNIT- III (Total Topics- 6 and Hrs- 7 )

### Introduction to Computing Platform

1. Getting Started with Arduino : Setting up Arduino board
2. Using the Integrated Development Environment (IDE) to prepare an Arduino Sketch