Course Title:	**Introduction to Internet of Things (IOT)**	Semester	I/II
Course Code:	**BETCK105H/ BETCK205H**	CIE Marks	50
Course Type (Theory/Practical/Integrated)	Theory	SEE Marks	50
		Total Marks	100
Teaching Hours/Week (L:T:P:S)	3-0-0-0	Exam Hours	03
Total Hours of Pedagogy	40 hours	Credits	03

Course Learning Objectives

CLO1. Understand about the fundamentals of Internet of Things and its building blocks along with their characteristics.

CLO2. Understand the recent application domains of IoT in everyday life.

CLO3. Gain insights about the current trends of Associated IOT technologies and IOT Anlaytics.

Module-1 Introduction to Networking and Internet of Things (8 hours)

Basics of Networking: Introduction, Network Types, Layered network models
Introduction to IoT: Introduction, Evolution of IoT, Enabling IoT and the Complex Interdependence of Technologies.

Applications: Industry 4.0 Applications

Textbook 1: Chapter 1- 1.1 to 1.3 Chapter 4 – 4.1 to 4.4
(RBT Levels: L2 and L3)s

Module-2: Introduction to Sensors and Actuators (8 hours)

Introduction to Sensors and Actuators: Introduction, Sensors, Sensor Characteristics, Sensing Types, Sensing Considerations, Actuators, Actuator Types,
Applications: Environmental Sensors
Textbook 1: Chapter 5 – 5.1 to 5.9

(RBT Levels:L1, L2 and L3)

Module-3: IoT Topologies and Types (8 hours)

IoT Topologies and Types: Data Format, Importance of Processing in IoT, Processing Topologies, IoT Device Design and Selection Considerations.

Applications: On-Site and Off-Site Processing

Textbook 1: Chapter 6 – 6.1 to 6.5
(RBT Levels: L2, L3 and L4)

Module-4: Introduction to Cloud Computing (8 hours)

Introduction to Cloud Computing: Introduction, Virtualization, Cloud Models, Service-Level Agreement in Cloud Computing, Cloud Implementation.

Applications: Gmail, Face book and Twitter

Textbook 1: Chapter 10– 10.1 to 10.6

(RBT Levels: L1, L2 andL3)

Module-5: IoT Case Studies (8 hours)

Iot Case Studies And Future Trends:
Vehicular Iot – Introduction
Healthcare Iot – Introduction, Case Studies
Iot Analytics – Introduction

Textbook 1: Chapter 13– 13.1; Chapter 14- 14.1-14.2; Chapter 17- 17.1

Applications: Health care IoT, Agriculture IoT
(RBT Levels: L1, L3 and L4)

Course outcome

At the end of the course, the student will be able to:

CO 1: Comprehend the evolution of IoT, explore IoT network architecture, and apply addressing mechanisms in IoT systems.
CO 2: Evaluate various types of sensors and actuators, and analyze their functionalities and applications in IoT environments.
CO 3: Illustrate data processing workflows in IoT, including data acquisition, processing, and decision-making mechanisms.
CO 4: Understand virtualization concepts, compare cloud computing models, evaluate Service-Level Agreements (SLAs), and analyze cloud-based IoT implementations.
CO 5: Examine communication technologies, investigate IoT-specific protocols, and address interoperability challenges within IoT ecosystems.

Course Assessment and Evaluation Details (both CIE and SEE)

Continuous Internal Evaluation: 50 marks		
Theory Assessment Tool	**Marks**	**Reduced marks**
IAT-1	25	25
IAT-2	25	
Assessment-1(activity based)	25	25
Assessment-2(activity based)	25	
Semester End Examination(SEE):50 marks		
SEE	**Marks**	**Reduced marks**
Course end examination (Answer any one question from each unit – Internal choice)	100	50

Activity Based Learning/Practical Based learning

Suggested Activities are:

1. Demonstrate a sensor based application
2. Design a Program to sense the temperature using temperature sensor connected to an Arduino board

Suggested Learning Resources:

Suggested Learning Resources:

Text Book:

1. Sudip Misra, Anand arup Mukherjee, Arijit Roy, “Introduction to IoT”, Cambridge University Press 2021.

Reference Books:

1.S.Misra, C.Roy, and A. Mukherjee, 2020. Introduction to Industrial internet of Things and Industry 4.0. CRC Press.

2. Francis da Costa, “Rethinking the Internet of Things: A Scalable Approach to Connecting Everything”, 1st Edition, Apress Publications, 2013.

Web links and Video Lectures (e-Resources):

1. .https://nptel.ac.in/noc/courses/noc19/SEM1/noc19-cs31/

COs and POs Mapping (CO-PO mappings are only Indicative)

COs	Pos												Pso1	Pso2
CO1	3	2	1	1	3	1						2	3	2
CO2	3	3	2	2	2							1	3	2
CO3	3	2	3	3	3	1						2	2	3
CO4	2	2	2	3	3	2	1					2	2	3
CO5	3	3	2	2	3	1	2					2	3	3

Level 3-HighlyMapped, Level 2-Moderately Mapped, Level 1-Low Mapped, Level 0-Not Mapped