Subject Name: Internet of Things

Subject Code: CE 704-4 / IT 704-4

Teaching Scheme (Credits and Hours)

Teaching scheme				Total Credit	Evaluation Scheme					
L	T	P	Total		Theory		Mid Sem Exam	CIA	Pract.	Total
Hrs	Hrs	Hrs	Hrs		Hrs	Marks	Marks	Marks	Marks	Marks
04	00	02	06	5	3	70	30	20	30	150

Learning Objectives:

Students will understand the concepts of Internet of Things and can able to build IoT applications.

Outline of the Course:

Sr. No	Title of the Unit	Minimum Hours
1	Introduction to IoT	6
2	IoT & M2M	6
3	Network & Communication aspects	16
4	Challenges in IoT	10
5	Domain specific applications of IoT	6
6	Developing IoTs	16

Total hours (Theory): 60

Total hours (Practical): 30

Total hours: 90

Detailed Syllabus:

Sr. No	Topic	Lecture Hours	Weightage(%)
1	**Introduction to IoT** Defining IoT, Characteristics of IoT, Physical design of IoT, Logical design of IoT, Functional blocks of IoT, Communication models & APIs	6	10
2	**IoT & M2M** Machine to Machine, Difference between IoT and M2M, Software define Network	6	10
3	**Network & Communication aspects** Wireless medium access issues, MAC protocol survey, Survey routing protocols, Sensor deployment & Node discovery, Data aggregation & dissemination	16	30
4	**Challenges in IoT** Design challenges, Development challenges, Security challenges, Other challenges	10	15
5	**Domain specific applications of IoT** Home automation, Industry applications, Surveillance applications, Other IoT applications	6	10
6	**Developing IoTs** Introduction to Python, Introduction to different IoT tools, Developing applications through IoT tools, Developing sensor based application through embedded system platform, Implementing IoT concepts with python	16	25
		60	100

Instructional Method and Pedagogy:

- At the start of course, the course delivery pattern, prerequisite of the subject will be discussed.
- Lectures will be conducted with the aid of multi-media projector, black board, OHP etc.
- Attendance is compulsory in lecture and laboratory which carries 10 marks in overall evaluation.
- One internal exam will be conducted as a part of internal theory evaluation.
- Assignments based on the course content will be given to the students for each unit and will be evaluated at regular interval evaluation.
- Surprise tests/Quizzes/Seminar/tutorial will be conducted having a share of five marks in the overall internal evaluation.
- The course includes a laboratory, where students have an opportunity to build an appreciation for the concepts being taught in lectures.
- Experiments shall be performed in the laboratory related to course contents.

STUDENTS LEARNING OUTCOMES:

On successful completion of the course, the student will:

- Understand the concepts of Internet of Things
- Analyze basic protocols in wireless sensor network
- Design IoT applications in different domain and be able to analyze their performance
- Implement basic IoT applications on embedded platform

Reference Books:

1. Vijay Madisetti, Arshdeep Bahga, “Internet of Things: A Hands-On Approach”
2. Waltenegus Dargie,Christian Poellabauer, "Fundamentals of Wireless Sensor Networks: Theory and Practice"