NARASIMHA REDDY ENGINEERING COLLEGE

(Autonomous)

Approved by AICTE, New Delhi & Affiliated to JNTUH, Hyderabad
Accredited by NAAC with A Grade, Accredited by NBA

SYLLABUS:

FUNDAMENTALS OF INTERNET OF THINGS
(Open Elective- I)

B.Tech. III Year II Semester								
Course Code	**Category**	**Hours / Week**			**Credits**	**Maxumum Marks**		
		L	**T**	**P**	**C**	**CIA**	**SEE**	**Total**
EC3211OE	**Elective**	**3**	**0**	**0**	**3**	**25**	**75**	**100**
Contact classes: 60	**Tutorial Classes : NIL**	**Practical classes : NIL**				**Total Classes :60**		
Prerequisites: No Prerequisites								

Course Objectives:

1. Understand the concepts of Internet of Things and able to build IoT applications
2. Learn the programming and use of Arduino and Raspberry Pi boards.
3. To study the design methodology and different IoT hardware platforms.
4. Understand about data handling and analytics in SDN.
5. To study about various IoT case studies and industrial applications.

Course Outcomes: Upon completing this course,the student will be able to

1. Known basic protocols in sensor networks.
2. Program and configure Arduino boards for various designs.
3. Python programming and interfacingforRaspberryPi.
4. Design IoT applications in different domains.

5. Compare IOT Applications in Industrial & real world.

COURSE SYLLABUS

UNIT – I

Introduction to Internet of Things, Characteristics of IoT, Physical design of IoT, Functional blocks of IoT, Sensing, Actuation, Basics of Networking, Communication Protocols, Sensor Networks.

UNIT - II

Machine-to-Machine Communications, Difference between IoT and M2M, Interoperability in IoT, Introduction to Arduino Programming, Integration of Sensors and Actuators with Arduino.

UNIT – III

Introduction toPython programming, Introduction to Raspberry Pi, Interfacing Raspberry Pi with basic peripherals, Implementation of IoT with Raspberry Pi.

UNIT - IV

Implementation of IoT with Raspberry Pi, Introduction to Software defined Network (SDN), SDN for IoT, Data Handling and Analytics.

UNIT - V

Cloud Computing, Sensor-Cloud, Smart Cities and SmartHomes,Connected Vehicles, SmartGrid, Industrial IoT,Case Study: Agriculture, Healthcare, Activity Monitoring.

TEXT BOOKS:

1. "The Internet'ofThings: Enabling Technologies, Platforms, and Use Cases",by Pethuru Raj and Anupama C. Raman (CRC Press)
2. “Make sensors”: Terokarvinen, kemo, karvinen and villey valtokari, 1st edition, maker media, 2014.

3. "Internet of Things: A Hands-on Approach", by Arshdeep Bahgaand Vijay Madisetti

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"
3. Beginning Sensor networks with Arduino and Raspberry Pi– Charles Bell, Apress, 2013

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