INTERNET OF THINGS

Course Code	19ES1501	**Year**	III	**Semester**	I
Course Category	ES	**Branch**	All Branches	**Course Type**	Theory
Credits	2	**L-T-P**	2-0-0	**Prerequisites**	Nil
Continuous Internal Evaluation:	30	**Semester End Evaluation:**	70	**Total Marks:**	100

Course Outcomes	
Upon successful completion of the course, the student will be able to	
CO1	Summarize the genesis and impact of IoT applications, architectures in real world. (L2).
CO2	Illustrate diverse methods of deploying smart objects and connect them to network (L3).
CO3	Construct simple applications using Arduino. (L3).
CO4	Interpret different protocols and select which protocol can be used for a specific application (L2).
CO5	Identify and develop a solution for a given application using APIs (L3).

Mapping of course outcomes with Program outcomes (CO/ PO/PSO Matrix)
Note: 1- Weak correlation 2-Medium correlation 3-Strong correlation
*** - Average value indicates course correlation strength with mapped PO**

COs	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	**2**		**2**	**2**	**2**	**3**	**3**					**2**	**3**	**3**
CO2	**2**		**2**	**2**	**2**	**3**	**3**					**2**	**3**	**3**
CO3	**2**	**3**	**2**	**2**	**3**	**3**	**3**					**2**	**3**	**3**
CO4	**3**	**3**	**3**	**3**			**2**					**2**	**3**	**3**
CO5	**3**	**3**	**3**	**3**	**3**	**3**	**2**	**2**			**3**	**3**	**3**	**3**

Syllabus		
Unit No.	**Contents**	**Mapped CO**
I	Genesis of IoT, IoT and Digitization, IoT Impact, Convergence of IT and IoT, IoT Challenges, IoT Network Architecture and Design, Drivers Behind New Network Architectures, Comparing IoT Architectures, A Simplified IoT Architecture, The Core IoT Functional Stack, IoT Data Management and Compute Stack.	**CO1**
II	Smart Objects: The Things in IoT, Sensors, Actuators, and Smart Objects, Sensor Networks, Connecting Smart Objects, Communications Criteria, IoT Access Technologies.	**CO2**

III	Embedded Computing Basics, Microcontrollers, System-on-Chips, Choosing Your Platform, Arduino, Developing on the Arduino, Some Notes on the Hardware, Openness	**CO3**
IV	Communication in the IoT: Internet Principles, Internet Communications: An Overview, IP, TCP, The IP Protocol Suite (TCP/IP), UDP, IP Addresses, DNS, Static IP Address Assignment, Dynamic IP Address Assignment, IPv6, MAC Addresses, TCP and UDP Ports, An Example: HTTP Ports, Other Common Ports, Application Layer Protocols HTTP, HTTPS: Encrypted HTTP, Other Application Layer Protocols.	**CO4**
V	Prototyping Online Components: Getting Started with an API, Mashing Up APIs, Scraping, Legalities, Writing a New API, Clockodillo, Security, Implementing the API, Using Curl to Test, Going Further, Real-Time Reactions, Polling, Comet, Other Protocols, MQ Telemetry Transport, Extensible Messaging and Presence Protocol, Constrained Application Protocol.	**CO5**

Learning Resources

Text Books

1. Adrian McEwen, Hakim Cassimally - Designing the Internet of Thing Wiley Publications, 2012.
2. David Hanes, Gonzalo Salgueiro, Patrick Grossetete, Robert Barton, Jerome Henry,"IoT Fundamentals: Networking Technologies, Protocols, and Use Cases for the Internet of Things, 1stEdition, Pearson Education (Cisco Press Indian Reprint). (ISBN: 978-9386873743)

Reference Books

1. ArshdeepBahga, Vijay Madisetti - Internet of Things: A Hands-On Approach, Universities Press, 2014
2. Srinivasa K G, Internet of Things,CENGAGE Leaning India, 2017