Module No.	Unit No.	Topics	Hrs.
1		**Introduction to IoT**	**04**
	1.1	**Introduction -** Defining IoT, Characteristics of IoT, Physical design of IoT, Logical design of IoT, Functional blocks of IoT, Sources of IoT, **IoT and M2M -** IoT/M2M System layers and Design standardization, Difference between IoT and M2M	
	1.2	**Defining Specifications About -** Purpose & requirements, process, domain model, information model, service, IoT level, Functional view, Operational view, Device and Component Integration, Application Development, Case Study	
2		**Network & Communication aspects**	**08**
	2.1	**Design Principles & Web Connectivity -** Web Communication Protocols for connected devices, Web connectivity using Gateway, SOAP, REST, HTTP, RESTful and Web Sockets (Publish —Subscribe), MQTT, AMQP, CoAP Protocols	
	2.2	**Internet Connectivity: -** Internet connectivity, Internet based communication, IP addressing in IoT, Media Access Control, Application Layer Protocols. LPWAN Fundamentals: LORA, NBIoT, CAT LTE Ml, SIGFOX, Case Study	
3		**Data Management and Analytics for IoT**	**08**
	3.1	Introduction, Apache Hadoop, Using Hadoop MapReduce for Batch Data Analysis, Apache Oozie, Apache Spark, ApacheStorm, Using Apache Storm for Real-time Data Analysis	
	3.2	Analysis, Structural Health Monitoring Case Study, Tools for IoT:- Chef, Chef Case Studies, Puppet, Puppet Case Study- Multi-tier Deployment, NETCONF-YANG Case Studies, IoT Code Generator	
4.0		**Introduction to Industry 4.0**	**08**
	4.1	Industry 4.0: Managing the Digital Transformation, Conceptual framework for Industry 4.0, Industrial IoT (IIoT) - Introduction, Business Model and Reference Architecture, Industrial IoT-Layers, Sensing, Processing, Communication.	
	4.2	Cyber Physical Systems and Next Generation Sensors, Collaborative Platform and Product Lifecycle Management, Augmented Reality and Virtual Reality	
5.0		**Introduction to Industrial IoT (IIoT)**	**06**
	5.1	Industrial IoT- Application Domains: Healthcare, Power Plants, Inventory Management & Quality Control, Plant Safety and Security, Facility Management.	
	5.2	Artificial Intelligence, Cybersecurity in Industry 4.0, Internet of Things for Industry 4.0 Design, Challenges and Solutions	
6.0		**Industry 4.0 Technologies and Applications**	**05**
	6.1	Internet of Things and New Value Proposition.: Examples for IoTs Value Creation in Different Industries., IoTs Value Creation Barriers: Standards, Security and Provacy Concerns	
	6.2	Introduction to Industry 5.0, Human Machine Interaction, cognitive computing with human intelligence, Case study on AI based solutions	
Total			**39**