Course Code	Course Name	Course Type	Cd	L	T	P	Marks		
							Sessional	Final Exam	Total
COM-802(C)	Foundations of Internet of things and Industry 4.0	PEC	3	3	0	0	50	100	150

COURSE OUTCOMES

At the end of the course the student will be able to: -	
CO1	Describe the importance of Industry 4.0 for meeting future societal needs.
CO2	Develop critical understanding on cyber-physical systems amalgamating sensors, AI, Big Data analytics and cybersecurity and their applications.
CO3	Explain the architecture of Industrial Internet-of-Things.
CO4	Evaluate the structure operations of Industrial Internet-of-Things through supporting technologies such as SDNs and Big Data Analytics.
CO5	Appraise the diverse application of Industry 4.0 and related management concepts.

Detailed Syllabus
Section-A

Unit 1: Introduction: Sensing & actuation, Industry 4.0: Globalization and Emerging Issues, The Fourth Revolution, LEAN Production Systems, Smart and Connected Business Perspective, Smart Factories. **(9 Hrs.)**

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Unit 2: Industry 4.0: Cyber Physical Systems and Next Generation Sensors, Collaborative Platform and Product Lifecycle Management, Augmented Reality and Virtual Reality, Artificial Intelligence, Big Data and Advanced Analysis. Cybersecurity in Industry 4.0, Basics of Industrial IoT: Industrial Processes, Industrial Sensing & Actuation, Industrial Internet Systems.

(9 Hrs.)

Unit 3: Industrial IoT: Business Model and Reference Architecture: IIoT-Business Models, IIoT Reference Architecture, Industrial IoT- Layers: IIoT Sensing, IIoT Processing, IIoT Communication, Industrial IoT- Layers: IIoT Communication, IIoT Networking. **(9 Hrs.)**

Section B

Unit 4: Industrial IoT: Big Data Analytics and Software Defined Networks: IIoT Analytics - Introduction, Machine Learning and Data Science, Data Management with Hadoop, Industrial IoT: Big Data Analytics, Software Defined Networks: SDN in IIoT, Data Center Networks, Industrial IoT: Security and Fog Computing: Cloud Computing, Security in IIoT, Industrial IoT- Application Domains: Factories and Assembly Line, Food Industry. **(9 Hrs.)**

Unit 5: Industrial IoT- Application Domains: Healthcare, Power Plants, Inventory Management & Quality Control, Plant Safety and Security (Including AR and VR safety applications), Facility Management, Oil, chemical and pharmaceutical industry, Applications of UAVs in Industries, Real case studies like Milk Processing and Packaging Industries, Manufacturing Industries. **(9 Hrs.)**

Textbooks

S. No.	Name of the Books	Author	Publisher	Edition (Pub. Yr.)
1	Introduction to Industrial Internet of Things and Industry 4.0	S. Misra, C. Roy, and A. Mukherjee	CRC Press	1st (2020)
2	Industry 4.0: The Industrial Internet of Things	Alasdair Gilchrist	Apress	1st (2019)

Reference Books

S. No.	Name of the Books	Author	Publisher	Edition (Pub. Yr.)
1	Introduction to IoT	S. Misra, A. Mukherjee, and A. Roy	Cambridge University Press	1st (2020)