Subject Code: 01ME0822
Subject Name: IoT for Manufacturing
B. Tech. Year - IIII (Semester - 8)

Type of course : Programme Elective

Prerequisite : NA

Rationale : The course is prepared to provide the detailed understating of IoT in manufacturing

Course Outcome :

After learning the course, the students will be competent

1. Understanding the basic concept of industry 4.0
2. Application of various technology in industry 4.0
3. Implementation of various production philosophy in industry 4.0
4. Analysis of various processes to implement the industry 4.0

Teaching and Examination Scheme :

Teaching Scheme			Credits	Examination Marks					Total Marks
				Theory Marks			Practical Marks		
Theory	Tutorial	Practical	C	ESE(E)	IA	CSE	Viva (V)	Term Work (TW)	
4	0	2	5	50	30	20	25	25	150

Content :

Sr. No.	Content	Total Hrs
1	**Introduction of Industries 4.0** Introduction to First, second and third industrial revolution, challenges in third revolution, Opportunity and challenges in Industry 4.0 characteristic of industry 4.0, Industry 4.0 environment, Advantage and disadvantage of industry 4.0	**06**
2	**Technologies in Industry 4.0** The vision of ubiquitous Computing, Cyber physical system, Internet of Things and Service (IoTS), Intelligent object, Intelligent system, Automatic identification and localization, Machine to Machine communication , Sensing and actuating, Data and information processing, Human machine interaction, Artificial Intelligence, Autonomy of action ,Digital integration platform	**8**
3	**Sensor ,Actuators and Connectivity in Industry 4.0** Definition, Classification, Principle, Selection Criteria, Signal Conditioning, Calibration , Static and Dynamic characteristics, Introduction of communication protocols i.e. IEEE 802.15.4, Zigbee, 6LoWPAN, Wireless HART, Z- Wave, ISA-100, Bluetooth, NFC, RFID	**10**
4	**Production Systems in Industry 4.0** Sustainability assessment of manufacturing, Lean Production system, Just in Time production system, Agile Manufacturing, Smart and Business perspective, collaboration platform and product life cycle	**8**

5	**IIoT Application** Machining, Casting, and Fabrication industries Factories and assembly line, Food industry, Healthcare, Power plant, Production planning and control Inventory management and quality control, Plant security and safety, facility management	**10**

Distribution of Theory Marks

R Level	**U** Level	**A** Level	**N** Level	**E`** Level	**C** Level
10	**20**	**25**	**25**	**10**	**10**

Legends: R: Remember**; U:** Understand**; A:** Apply**; N:** Analyze**; E:** Evaluate**; C**: Create

List of experiments :

1. Case study on application of IoT in casting industry
2. Case study on application of IoT in fabrication industry
3. Case study on application of IoT in machining industry
4. Case study on application of IoT in forming industry
5. Case study on application of IoT in quality control
6. Case study on application of IoT in production planning
7. Case study on application of IoT in maintenance

Reference Books :

1. Bahga and V. Madisetti, Internet of Things, A hands-on approach, CreateSpace Independent Publishing Platform, 1st edition, 2014, ISBN: 978-09960255
2. D. Boswarthick, O. Elloumi, and O. Hersent, M2M communications: A systems approach, Wiley, 1 st edition, 2012, ISBN: 978-1119994756
3. K. Laudon and J. Laudon, Management Information Systems, 14th edition, Pearson Higher Education, 2016, ISBN: 9780136093688.
4. Rajaraman, J. Leskovec, J. Ullmann, Mining of Massive Data sets, Cambridge University Press, 2011, ISBN: 1107015359.

List of Open Source Software/learning website :

1. nptel.ac.in
2. https://www.tinkercad.com