GUJARAT TECHNOLOGICAL UNIVERSITY

Minor Degree : Internet of Things
Subject Code: 116AI02

Semester – VI
Subject Name: Introduction to Industrial IoT

Prerequisite:
The students should be having knowledge of Basics of IOT, Networking and Cyber Security.

Rationale:
Industrial IOT integrate modern technologies such as I-IOT, IoMT, Big Data, Cloud Computing and Cryptography. Students will also learn about how to modify the various existing industrial system.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks				Total Marks
L	T	P	C	Theory Marks		Practical Marks		
				ESE (E)	PA (M)	ESE (V)	PA (I)	
3	0	2	4	70	0	30	0	100

Content:

Sr. No	Content	Total Hrs
1.	INTRODUCTION TO INDUSTRIAL IOT: Technical requirements, IoT background, History and definition, IoT enabling factors, IoT applications, IoT key Technologies, I-IoT, IoT and I-IoT–similarities and differences.	08
2.	TECHNICAL AND BUSINESS INNOVATORS OF INDUSTRIAL INTERNET: Miniaturization, Cyber Physical Systems, Wireless technology, IP Mobility Network Functionality Virtualization, Cloud and Fog, Big Data.	10
3.	BASICS OF NETWORKING & BASICS OF NETWORK SECURITY: Network Types, Layered Network Models, Addressing , Internet of Things TCP/IP Transport layer, Security, Network Confidentiality, Cryptography, Message Integrity and Authenticity, Digital signatures, Key Management, Internet Security & Firewall.	14
4.	INTERNET OF MEDICAL THINGS SECURITY THREATS, SECURITY CHALLENGES AND POTENTIAL SOLUTIONS: IoMT Attack Types, Challenges in IoMT Security Schemes, Current Security Plans for IoMT, Potential Solutions for Security Vulnerabilities.	10

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Suggested Specification table (Theory):

Distribution of Theory Marks (%)					
R Level	**U Level**	**A Level**	**N Level**	**E Level**	**C Level**
10	35	35	10	5	**5**

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above Levels (Revised Bloom's Taxonomy)

Reference Books:

1. Sudip Misra, Chandana Roy and AnandarupMukherjee, "Introduction to Industrial Internet of Things and Industry 4.0", CRC Press
2. G Veneri Antonio, "Hands-on Industrial Internet of Things", Packt Publication.
3. Hands-On Industrial Internet of Things: Create a powerful Industrial IoT infrastructure using Industry 4.0, Giacomo Veneri Antonio Capasso
4. Industrial Internet of Things (IIoT), R. Anandan, Suseendran Gopalakrishnan, Souvik Pal, Noor Zaman
5. Industry 4.0: Industrial Revolution of the 21st Century, Elena G. Popkova & Yulia V. Ragulina
6. Industry 4.0: The Industrial Internet of Things, Alasdair Gilchrist
7. Industrial Sensors and Controls in Communication Networks: From Wired Technologies to Cloud Computing and the Internet of Things
8. Industrial Sensors and Controls in Communication Networks, Dong-Seong Kim & Hoa Tran-Dang

Course Outcomes:

Upon completion of this course students should be able to:

No	Course Outcomes	% weightage
01	To understand the application areas of IOT and realize the revolution of Internet in Mobile Devices, Cloud & Sensor Networks.	35
02	To determine the Industry perspective of IoT and IoMT.	25
03	To study IIoT security and various IIoT application domains.	40

List of Open Source Software/learning website:

- https://www.coursera.org/learn/iot
- https://www.javatpoint.com/iot-internet-of-things
- https://www.machinemetrics.com/blog/industrial-internet-of-things-iiot
- https://www.tutorialspoint.com/internet_of_things/index.htm
- https://nptel.ac.in/courses/106105195
- https://www.coursera.org/specializations/iot