INDUSTRIAL AND MEDICAL IoT

Course Code	20EC5602	**Year**	III	**Semester**	II
Course Category	Minor	**Branch**	ECE	**Course Type**	Theory
Credits	4	**L-T-P**	3-1-0	**Prerequisites**	IOT
Continuous Internal Evaluation:	30	**Semester End Evaluation:**	70	**Total Marks:**	100

Course Outcomes	
CO1	Understand the basics of Industrial IOT and Medical IOT (L2)
CO2	Identify the technical and industrial requirement procedures for IIOT applications (L3)
CO3	Develop various applications using IIOT architectures (L3)
CO4	Choose selected IOT devices for understanding the system architecture of medical IOT (L3)
CO5	Analyze privacy and security measures for industry and medical standard solutions (L4).

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	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PSO 1**	**PSO 2**
CO1	2													
CO2	3													
CO3	3		3										3	3
CO4	3													
CO5		3												
Average* (Rounded to nearest integer)	**3**	**3**	**3**										**3**	**3**

Syllabus		
Unit No.	**Contents**	**Mapped CO**
I	**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, Industry environments and scenarios covered by I-IoT.	CO1,CO2
II	**Understanding the Industrial Process and Devices Technical requirements:** The industrial process-Automation in the industrial process, Control and measurement systems, Types of industrial processes.	CO1,CO2
III	**Industrial Data Flow and Devices** : Technical requirements, The I-IoT data flow in the factory , Measurements and the actuator chain .Sensors , The converters - Digital to analogical , Analog to digital, Actuators, Controllers - Microcontrollers, Embedded microcontrollers , Microcontrollers with external memory, DSP's. Industrial protocols -Automation networks, The fieldbus, Developing Industrial IoT and Architecture-Introduction to the I-IoT platform and architectures, OSGi, micro service, containers, and server less computing, The standard I-IoT flow.	CO1,CO3
IV	**Internet of Medical Things Introduction and system architecture**: Introduction, IoMT Devices-On-Body Devices, In-Home Devices, Community Devices, In-Clinic Devices, In-Hospital Devices ,IoMT System Architecture-Data Collection Layer, Data Management Layer, Medical Server Layer.	CO1-CO4
V	**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.	CO1-CO5

Learning Resources
Text Books
1. Veneri, Giacomo, and Antonio Capasso- Hands-on Industrial Internet of Things: Create a Powerful Industrial IoT Infrastructure Using Industry 4.0, 1st Ed., Packt Publishing Ltd, 2018. 2. D. Jude Hemanth and J. Anitha George A. Tsihrintzis- Internet of Medical Things Remote Healthcare Systems and Applications, covered by Scopus.
Reference Books
1. Alasdair Gilchrist- Industry 4.0: The Industrial Internet of Things, 1st Ed., Apress, 2017. 2. Reis, Catarina I., and Marisa da Silva Maximiano, eds.- Internet of Things and advanced application in Healthcare, 1st Ed., IGI Global, 2016.
e- Resources & other digital material
1. https://www.coursera.org/specializations/developing-industrial-iot#courses 2. https://www.coursera.org/learn/industrial-internet-of-things. 3. https://www.coursera.org/learn/internet-of-things-sensing-actuation