INTERNET OF THINGS TECHNOLOGY [As per Choice Based Credit System (CBCS) scheme] (Effective from the academic year 2016 -2017) SEMESTER – VIII

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Subject Code	15CS81	IA Marks	20
Number of Lecture Hours/Week	04	Exam Marks	80
Total Number of Lecture Hours	50	Exam Hours	03
	CREDITS –	04	
Course Objectives: This course will	enable students to		
Assess the genesis and impact	t of IoT application	ns, architectures in real world.	
Illustrate diverse methods of	deploying smart ob	jects and connect them to netwo	rk.
Compare different Application	on protocols for lo'l	•	
• Infer the role of Data Analyti	ics and Security in I		
 Identifysensor technologies f various domains of Industry. 	or sensing real wor	Id entities and understand the ro	e of lo1 in
Module – 1			
			Hours
What is IoT, Genesis of IoT, IoT and Digitization, IoT Impact, Convergence of IT and IoT, IoT Challenges, IoT Network Architecture and Design, Drivers Behind New Network Architectures, Comparing IoT Architectures, A Simplified IoT Architecture, The Core IoT Functional Stack, IoT Data Management and Compute Stack.			
Module – 2			
Smart Objects: The "Things" in IoT, Sensors, Actuat ors, and Smart Objects, Sensor Networks, Connecting Smart Objects, Communications Criteria, IoT Access Technologies.			
Module – 3			
IP as the IoT Network Layer, The Business Case for IP, The need for Optimization, Optimizing IP for IoT, Profiles and Compliances, Application Protocols for IoT, The Transport Layer, IoT Application Transport Methods.			
Module – 4			
Data and Analytics for IoT, An Ir Learning, Big Data Analytics Tool Network Analytics, Securing IoT, A in OT Security, How IT and OT Secu Analysis Structures: OCTAVE and F Operational Environment	ntroduction to Data s and Technology Brief History of OT urity Practices and S AIR, The Phased A	a Analytics for IoT, Machine , Edge Streaming Analytics, 7 Security, Common Challenges Systems Vary, Formal Risk ,pplication of Security in an	10 Hours
Module – 5			<u> </u>
IoT Physical Devices and Endpoints UNO, Installing the Software, Fundar Physical Devices and Endpoints - Rat RaspberryPi Board: Hardware Layou RaspberryPi, Programming Raspberry System Using Pi, DS18B20 Tempera Accessing Temperature from DS18B and Connected Cities, An IoT Strateg	- Arduino UNO: Ir mentals of Arduino spberryPi: Introduc t, Operating Systen yPi with Python, W ture Sensor, Conne 20 sensors, Remote gy for Smarter Citie	troduction to Arduino, Arduino Programming. Io tion to RaspberryPi, About the as on RaspberryPi, Configuring Tireless Temperature Monitoring cting Raspberry Pi via SSH, access to RaspberryPi, Smart s, Smart City IoT Architecture,	Γ 10 Hours

Smart City Security Architecture, Smart City Use-Case Examples.	
Course Outcomes: After studying this course, students will be able to	
• Interpret the impact and challenges posed by IoT networks leading to new architectu models.	ral
 Compare and contrast the deployment of smart objects and the technologies to conne to network. 	ect them
• Appraise the role of IoT protocols for efficient network communication.	
• Elaborate the need for Data Analytics and Security in IoT.	
• Illustrate different sensor technologies for sensing real world entities and identify the applications of IoT in Industry.	2
Question paper pattern:	
The question paper will have ten questions.	
There will be 2 questions from each module.	
Each question will have questions covering all the topics under a module.	
The students will have to answer 5 full questions, selecting one full question from each modu	ıle.
Text Books:	
1. David Hanes, Gonzalo Salgueiro, Patrick Grossetete, Robert Barton, Jerome Henry,	"IoT
Fundamentals: Networking Technologies, Protocols, and Use Cases for the Inter	rnet of
Things", 1 st Edition, Pearson Education (Cisco Press Indian Reprint). (ISBN: 978-	
9386873743)	
2. Srinivasa K G, "Internet of Things", CENGAGE Leaning India, 2017	
Reference Rooks.	
Kerence Dooks.	
1. Vijay Madisetti and ArshdeepBahga, "Internet of Things (A Hands -on-Approach	ı)",
1° Edition, VP1, 2014. (ISBN: 9/8-81/3/1954/)	T 1

2. Raj Kamal, "Internet of Things: Architecture and Design Princi ples", 1st Edition, McGraw Hill Education, 2017. (ISBN: 978-9352605224)