Name of the Programme: MCA
Course Code:CSA-605
Title of Course: IoT architecture and protocols
Number of Credits: 4 (3L-1T-0P)
Effective from AY: 2022-23

Prerequisites for the course	Internet Technologies, Computer Organization and architecture, Operating Systems.	
Objectives	To understand the fundamentals of Internet of Things and the protocols and standards designed for IoT	
Content		
	Introduction to IoT: Introduction, IoT ecosystem, Applications, Challenges.	4 hours
	Fundamentals: IoT Devices - Sensors, Actuators, and gateways, Basics of the wireless sensor network.	6 hours
	IoT Architecture & Design: oneM2M, IoTWF, Additional Reference Models, Core functional stack, Data Management and compute stack.	6 hours
	Communicating smart objects: Communication criteria, communication models, IoT access technologies – 3GPP MTC, IEEE 802.11, IEEE 802.15, WirelessHART, ZWave, Bluetooth Low Energy, Zigbee Smart Energy, DASH7	8 hours
	IoT Network Layer: IP as IoT network layer, IPv6, 6LoWPAN, 6TiSCH, RPL, CORPL, CARP	7 hours
	IoT Transport and Application protocols: Transport Layer: TCP, UDP, DCCP, SCTP, TLS, DTLS IoT application transport methods, HTTP, CoAP, XMPP, MQTT, AMQP, DDS	10 hours
	Security in IoT: MAC802.15.4, 6LoWPAN, RPL, Application Layer security.	4 hours
	Tutorial Slots -	
	IoT Application Case Studies: Discuss minimum 3 Applications in detail of IoT	15 hours
Pedagogy	lectures/ tutorials/Hands-on assignments/self-study	
References/ Readings	1. David Hanes, Gonzalo Salgueiro, Patrick Grossetete, Robert Barton, Jerome Henry, "IoT Fundamentals: Networking Technologies, Protocols, and Use Cases for the Internet of Things", CISCO Press, 2017 2. Hersent, Olivier, David Boswarthick, and Omar Elloumi, The internet of things: Key applications and protocols. John Wiley & Sons, 2011. 3. Buyya, Rajkumar, and Amir Vahid Dastjerdi, eds. Internet of Things: Principles and Paradigms. Elsevier, 2016.	
Course Outcomes	After completing the course, students will be able to: ● Understand the concepts of the IoT Architecture Reference model ● Identify the IoT networking components and ● Identify protocols.	

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