Programme: MCA
Course Code: CSO-7 **Title of Course:** IoT architecture and protocols
Number of Credits: 4 (4L-0T-0P) **C ontact Hours:** 48 hours (48L-0T-0P)
Effective from AY: 2021-22

Prerequisites for the course	Program Prerequisites, Operating Systems(CSC-103),Internet Technology(CSC-104).	
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.	2 hours
	Fundamentals: IoT Devices - Sensors, Actuators, and gateways, Basics of the wireless sensor network.	4 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	10 hours
	IoT Network Layer: IP as IoT network layer, IPv6, 6LoWPAN, 6TiSCH, RPL, CORPL, CARP	8 hours
	IoT Transport and Application protocols: Transport Layer: TCP, UDP, DCCP, SCTP, TLS, DTLS IoT application transport methods, HTTP, CoAP, XMPP, MQTT, AMQP, DDS	12 hours
	Security in IoT: MAC802.15.4, 6LoWPAN, RPL, Application Layer security.	3 hours
	IoT Application case study: Discuss any 3 applications of IoT	3 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.	
Learning 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 protocols.	