

MLR Institute of Technology (Autonomous)

IOT ARCHITECTURE AND PROTOCOL								
Course Code	Category	Hours / Week			Credits	Maximum Marks		
A6EC44	PCC	L	T	P	C	CIA	SEE	Total
		3	0	0	3	40	60	100
Course Objectives:								
<ol style="list-style-type: none"> 1. Understand IoT applications and IoT Architectures. 2. Learn about IoT devices and event driven analysis 3. Understand and analyze IIoT. 4. Understand safety and security testing of IoT systems 								
Course Outcome:								
<ol style="list-style-type: none"> 1. Demonstrate the revolution of internet in mobile and cloud. 2. Examine the architecture and operation of IoT. 3. Explore various tools and programming paradigms for IoT applications. 4. Develop an IoT prototype for real time scenario. 5. Use IoT Data Link Layer, Network Layer IoT, Transport & Session Layer Protocols 								
UNIT-I	The IoT Landscape						Classes:8	
Definition of IoT, Applications, Architectures, Wireless Networks, Devices, Security and Privacy, Event-Driven Systems. IoT System Architectures: Introduction, Protocols Concepts, IoT oriented Protocols, Databases, Time Bases, Security.								
UNIT-II	IoT-An Architectural Overview & Architecture-State of the Art						Classes:10	
IoT-An Architectural Overview: Building architecture, Main design principles and needed capabilities, An IoT architecture outline, standards considerations. IoT Architecture-State of the Art: Introduction, State of the art, Reference Model and architecture, IoT reference Model - IoT Reference Architecture Introduction, Functional View, Information View, Deployment and Operational View, Other Relevant architectural views.								
UNIT-III	Industrial Internet of Things & Security and Safety						Classes: 8	
Introduction, Industry 4.0, Industrial Internet of Things (IIoT), IIoT Architecture, Basic Technologies, Applications and Challenges. Security and Safety: Introduction, Systems Security, Network Security, Generic Application Security, Application Process Security and Safety.								
UNIT-IV	IoT Data Link Layer						Classes:8	
IoT Data Link Layer: PHY/MAC Layer (3GPP MTC, IEEE 802.11, IEEE 802.15), Wireless HART, ZWave, Bluetooth Low Energy, Zigbee Smart Energy, DASH7								
UNIT-V	Network Layer Protocols & IOT Transport & Session Layer Protocols						Classes: 8	
Network Layer Protocols: Network Layer-IPv4, IPv6, 6LoWPAN, 6TiSCH, ND, DHCP, ICMP IOT Transport & Session Layer Protocols: Transport Layer (TCP, MPTCP, UDP, DCCP, SCTP)- (TLS, DTLS) – Session Layer-HTTP, CoAP								
Text Books:								
<ol style="list-style-type: none"> 1. Dimitrios Serpanos, Marilyn Wol, Internet-of-Things (IoT) Systems Architectures, Algorithms, Methodologies, ISBN 978-3-319-69714-7. 2. Danial Minoli, “Building the Internet of Things with IPv6 and MIPv6: The Evolving World of M2M Communications”, ISBN: 978-1-118-47347-4, Willy Publications ,2016 3. Jan Holler, Vlasios Tsiatsis, Catherine Mulligan, Stefan Avesand, Stamatias Karnouskos, David Boyle, “From Machine-to-Machine to the Internet of Things: Introduction to a New Age of Intelligence”, 1st Edition, Academic Press, 2015. 								
Reference Books:								
<ol style="list-style-type: none"> 1. Bernd Scholz-Reiter, Florian Michahelles, “Architecting the Internet of Things”, ISBN 978-3-642-19156-5 e-ISBN 978-3-642-19157-2, Springer, 2016. 2. N. Ida, Sensors, Actuators and Their Interfaces, Scitech Publishers, 2014. 3. Internet of Things – A hands-on approach, Arshdeep Bahga, Vijay Madiseti, Universities Press, 2015. 2. The Internet of Things – Key applications and Protocols, Olivier Hersent, David Boswarthick, Omar Elloumi and Wiley, 2012 								

E-Resources:

1. https://sist.sathyabama.ac.in/sist_coursematerial/uploads/SCSA1408.pdf
2. <https://www.studocu.com/in/document/jawaharlal-nehru-technological-university-anantapur/iot-communication-protocols/unit-iii-iot-notes/65078702>