

GANPAT UNIVERSITY									
FACULTY OF ENGINEERING & TECHNOLOGY									
Programme	Bachelor of Technology				Branch/Spec.	Electronics and Communication Engineering			
Semester	VII				Version	1.0.0.0			
Effective from Academic Year	2026-27			Effective for the Batch admitted in	July 2023				
Course Code	2EC7102	Course Name			IoT Architecture and Protocols				
Teaching Scheme					Examination Scheme (Marks)				
(Per week)	Lecture (DT)		Practical (Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	3	0	1	0	4	Theory	40	60	100
Hours	3	0	2	0	5	Practical	30	20	50
Pre-requisites									
Basic knowledge of Digital Electronics, Fundamentals of Communication Systems, Basic Programming Concepts (C/Python), Computer Networks basics									
Course Outcomes									
On successful completion of the course, the students will be able to:									
CO1	Understand IoT concepts, architecture, and applications.								
CO2	Analyze IoT hardware components and interfacing techniques.								
CO3	Explain and compare IoT communication protocols.								
CO4	Design IoT solutions using network and application layer protocols.								
CO5	Identify data management and security issues in IoT systems.								
Theory Syllabus									
Unit	Content								Hrs.
1	Introduction to IoT Definition, Characteristics, IoT Ecosystem, IoT Architecture (3-layer, 5-layer), Applications of IoT								9
2	IoT Devices and Hardware Sensors, Actuators, Embedded Platforms, Arduino, Raspberry Pi, Interfacing Techniques								9
3	IoT Communication Protocols Physical & MAC Layer protocols, IEEE 802.15.4, Bluetooth, ZigBee, LoRaWAN								9
4	Network & Application Layer Protocols IPv6, 6LoWPAN, RPL, MQTT, CoAP, HTTP, RESTful Services								9
5	IoT Data Management & Security Cloud Platforms, Data Analytics Basics, Security Challenges, Authentication, Case Studies								9
Practical Content									
Practical assignments and tutorials are based on the above syllabus.									
Text Books									
1	Internet of Things: Architecture and Design Principles, Raj Kamal, McGraw Hill Education, 2017.								
Reference Books									
1	Internet of Things: A Hands-On Approach, Arshdeep Bahga, Vijay Madisetti, Universities Press, 2015.								
2	IoT Fundamentals: Networking Technologies, Protocols, and Use Cases, David Hanes et al., Cisco Press, 2017.								
ICT/MOOCs Reference									
1	https://onlinecourses.nptel.ac.in/noc22_cs53/preview								
2	https://nptel.ac.in/courses/106105166								

Mapping of CO with PO and PSO:

	P O 1	P O 2	P O 3	P O 4	P O 5	P O 6	P O 7	P O 8	P O 9	P O 10	P O 11	P O 12	P S O 1	P S O 2	P S O 3
CO1	3	3	2	1	1	2	1	2	1	1	2	1	2	3	2
CO2	3	2	3	2	1	2	2	3	2	1	2	2	1	2	1
CO3	3	3	2	2	1	3	1	2	1	1	1	3	2	1	1
CO4	3	3	3	2	2	1	1	1	1	1	2	2	3	2	2
CO5	2	2	2	1	3	2	1	1	1	1	3	1	1	2	3