



GUJARAT TECHNOLOGICAL UNIVERSITY

Minor Degree : Internet of Things

Subject Code: 116AI01

Semester – VI

Subject Name: IoT Networking technologies and Security

Prerequisite:

The students should be having knowledge of Basics of IOT and IOT Embedded hardware.

Rationale:

IOT security is an umbrella term that covers the strategies, tools, processes, systems, and methods used to protect all aspects of the internet of things. This subject covers the protection of the physical components, data, and network connections to ensure the availability, integrity, and confidentiality of IOT environment.

Teaching and Examination Scheme:

Teaching and Examination Scheme.								
Teaching Scheme			Credits	Examination Marks				Total Marks
L	T	P	C	Theory Marks		Practical Marks		
				ESE (E)	PA (M)	ESE (V)	PA (I)	
3	0	2	4	70	0	30	0	100

Content:

Sr. No	Content	Total Hrs
1.	Application area of IOT, Characteristics of IOT, Things in IOT, IOT challenges, IOT and physical system, IOT and WSN	4
2.	Various security issues and need, architecture, requirement, challenges and algorithms, Messaging protocols, Transport protocols, IPv4, IPv6, URI, Security aspects in IOT	10
3.	Internet of Things Security, Security and Privacy for IoT Case Study: Smart Home, Smart Grid Network, Modern Vehicle, Wearable Computing & BYOD, Mobile HealthCare.	10
4.	Software-Defined Networks, Introduction of Software-Defined Networks, Security for Software-Defined Networks, Privacy Leakages for Software-Defined Networks, Case Studies: How to Attack Software-Defined Networks.	8
5.	Cyber-Physical Systems (CPS), CPS - Platform components, CPS implementation issues, Intelligent CPS, Secure Deployment of CPS.	8



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Suggested Specification table (Theory):

Distribution of Theory Marks (%)					
R Level	U Level	A Level	N Level	E Level	C Level
10	35	35	10	5	5

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above Levels (Revised Bloom's Taxonomy)

List of Books:

1. Architecture and Design Principles, Raj Kamal.
2. Internet of Things, Vasudevan, Nagrajan and Sundaram, Wiley India
2. Li Da Xu, Shancang Li, "Securing the Internet of Things", Syngress.
3. Alasdair Gilchrist, "IoT Security Issues", De Gruyter
4. Sean Smith, "The Internet of Risky Things", Sean Smith, Shroff Publisher/O'Reilly Publisher
5. Dr. Jeeva Jose, Internet of Things, Khanna Publishing House

Course Outcomes:

Upon completion of this course students should be able to:

No	Course Outcomes	% weightage
01	To Apply basics of security and issues related to it.	40
02	To use different protocol and algorithms for providing security mechanism.	15
03	To investigate Security issues in web and how to tackle them.	30
04	To Learn mechanisms for transport and network security	15

List of Open Source Software/learning website:

- https://onlinecourses.nptel.ac.in/noc21_cs17/preview
- <https://www.electronicshub.org/arduino-project-ideas>
- <https://playground.arduino.cc/Projects/Ideas/>
- https://www.tutorialspoint.com/internet_of_things/index.htm