GUJARAT TECHNOLOGICAL UNIVERSITY
Syllabus for Integrated MSc, 7th Semester
Branch: Information Technology
Subject Name: IOT and its Applications
Subject Code: 1370504

Teaching and Examination Scheme

Teaching Scheme			Credits	Examination Marks				Total Marks
				Theory Marks		Practical Marks		
L	T	P	C	ESE(E)	PA (M)	PA (I)	ESE(V)	
3	0	2	4	70	30	20	30	150

Content:

Sr. No.	Content	Teaching Hours	Module Weightage (%)
1.	**Introduction to Internet of Things:** Application areas of IoT, Characteristics of IoT, Things in IoT, IoT stack, Enabling technologies, IoT challenges, IoT levels, IoT and cyber physical system, IoT and WSN	07	15
2.	**Sensors, Microcontrollers, and Their Interfacing:** Sensor interfacing, Types of sensors, Controlling sensors, Microcontrollers, ARM	09	15
3.	**Protocols for IoT :** Messaging protocols, Transport protocols, IPv4, IPv6, URI IoT Security: Various security issues and need, architecture, requirement, challenges and algorithms	09	25
4.	**Cloud for IoT:** IoT and cloud, Fog computing, Security in cloud, Case study Application Building with IoT: Various application of IoT : Food, Healthcare, Lavatory maintenance, Water quality, Warehouse, Retail, Driver Assistance, Collision impact	11	25
5.	**Arduino and Raspberry Pi:** Arduino: Architecture, Programming and Application Raspberry Pi : Architecture, Programming and Application	09	20

Reference Books:

1. Internet of Things, Vasudevan, Nagrajan and Sundaram, Wiley India
2. IoT Fundamentals, David Hence at el, Cisco Press
3. 21 IoT Experiments, Yashavant Kanetkar, Shrirang Korde, BPB
4. IoT Based Projects, Rajesh Singh at el, BPB
5. Internet of Things with ARDUINO and BOLT, Ashwin Pajankar, BPB
6. Star Expert IoT Specialist, STAR CERTIFICATION

Course Outcome:

After learning the course, the students should be able to:

No.	CO statement
CO-1	Demonstrate the architecture and functioning of IoT systems including the sensors and microcontrollers with their interfacing and software need considering application areas.
CO-2	Diagnose the various IoT protocols with detailing of their elements and overall functioning within IoT systems for efficient communication.
CO-3	Design an IoT system to take the benefit of the Clouds for computing and storage considering security issues. Leverage the benefits of IoT technologies for automating the various real-life challenges in various application areas.
CO-4	Develop the software components of IoT system using Arduino/Raspberry Pi Programming.