



GUJARAT TECHNOLOGICAL UNIVERSITY
Syllabus for Bachelor of Vocation (B.Voc), 5th Semester
Branch: Software Development
Subject Name: Internet of Things Lab
Subject Code: 21150206

Type of course: Core

Prerequisite: C Programming, Microprocessor, Networking

Rationale: Internet of Things plays an important role in connecting the things i.e. variety of devices through the Internet. The IoT has emerged as a cutting-edge technology with applications in manufacturing, healthcare, Agriculture, transport, mining, smart cities and many more. This subject covers the fundamentals of IoT with its architecture, protocols and Applications. It also covers the overview and programming of two widely used IoT platforms Arduino and Raspberry Pi.

Teaching and Examination Scheme:

Teaching Scheme	Credits	Examination Marks						Total Marks
		P	C	Theory Marks		Practical Marks		
				ESE (E)	PA (M)	ESE (V)	PA (I)	
L	T							
0	0	2	2	0	0	30	20	50

L- Lectures; T- Tutorial/Teacher Guided Student Activity; P- Practical; C- Credit; ESE- End Semester Examination; PA- Progressive Assessment Experiments to be covered based on the theory covered in class

Content:

Sr. No.	Content	Teaching Hrs.	% Weightage
1	Excercise on Eclipse IoT Project.	4	10
2	Experiments on few Eclipse IoT Projects.	4	10
3	Any Experiment on architecture of Iot Toolkit.	2	10
4	Exercise on smart object API Gateway service reference implementation in IoT Toolkit.	4	10
5	Experiment on HTTP-to-CoAP semantic mapping Proxy in IoT Toolkit.	2	10
6	Experiment on Gate way as a service deployment in IoT Toolkit.	2	10
7	Experiment on application framework and embedded software agents for IoT Toolkit.	4	10
8	Exercise on working principle of Rasberry Pi.	2	10
9	Experiment on connectivity of Rasberry Pi with existing system components	4	20
	Total	28	100

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 Outcomes:



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Sr. No.	CO Statement	Marks % Weightage
CO-1	Demonstrate the architecture and functioning of IoT systems including the sensors and microcontrollers with their interfacing and software need considering application areas.	20
CO-2	Diagnose the various IoT protocols with detailing of their elements and overall functioning within IoT systems for efficient communication.	20
CO-3	Design an IoT system to take the benefit of the Clouds for computing and storage considering security issues.	20
CO-4	Leverage the benefits of IoT technologies for automating the various real-life challenges in various application areas.	20
CO-5	Develop the software components of IoT system using Arduino/Raspberry Pi Programming.	20

List of Open Source Software/learning website:

Students must refer to following sites to enhance their learning ability.

- https://www.tutorialspoint.com/internet_of_things/index.htm
- <https://www.iotworldtoday.com/>
- <https://aws.amazon.com/iot/>
- https://www.cisco.com/c/en_in/solutions/internet-of-things/overview.html
- https://www.cisco.com/c/en_in/solutions/internet-of-things/iot-network-connectivity.html