GANPAT UNIVERSITY

FACULTY OF ENGINEERING & TECHNOLOGY

Programme	Diploma Engineering				Branch	COMPUTER ENGINEERING		
Semester	VI				Version	1.0.0.0		
Effective from Academic Year		2020-21			Effective for the batch Admitted in			JULY 2018
Subject code	1IT2601		Subject Name		INTERNET OF THINGS (IOT)			
Teaching scheme					Examination scheme (Marks)			
(Per week)	Lecture(DT)		Practical(Lab.)	Total		CE	SEE	Total
	L	TU	P	TW				
Credit	0	0	2	0	2	Theory	0	0	0
Hours	0	0	4	0	4	Practical	60	40	100

Pre-requisites:

- The students will be requiring participating actively in creative thinking exercises.
- IOT is futuristic and will require students to understand other technologies and current uses where IOT can be integrated to make a make a quantum jump in the in the efficiencies in application.

Course Learning Outcomes:

The course content should be taught and implemented with an aim to develop different skills leading to the achievement of the following competencies and course learning outcomes:

T1. To understand IOT architectures, characteristics and design
T2. To understand Arduino architecture and able to build devices using it
T3. To build sensing device using Arduino architecture
T4. To understand raspberry pi devices and its architecture
T5. To build device using raspberry pi interface

The practical should be carried out in such a manner that students are able to acquire different learning out comes in cognitive, psychomotor and affective domain to demonstrate course learning outcomes.

Name of UNIT	Unit Content	Unit Learning Outcomes	Hrs
UNIT – 1 Overview of IoT and High-level Architecture	1.1 introduction 1.2 IoT and its characteristics 1.3 design of IoT ysical, logical 1.4 blocks of IoT, Communication models & APIs 1.5 benefits, Risks, Privacy, and Security	1a. State what is IOT and its uses and demerits	4
UNIT – 2 Getting Started with Arduino	1.1 Introduction to Arduino 1.2 Pin configuration and architecture. 1.3 Device and platform features.	2a. build simple iot devices using Arduino hardware	8

	1.4 Concept of digital and analog ports. 1.5 Arduino Interfacing Board		
UNIT – 3 Working with Arduino Sensors	3.1 Arduino – Humidity Sensor 3.2 Arduino – Temperature Sensor 3.3 Arduino – Water Detector / Sensor 3.4 Arduino – PIR Sensor 3.5 Arduino – Ultrasonic Sensor 3.6 Arduino – Connecting Switch (Magnetic relay switches)	3a. build Iot devices using different sensors	8
UNIT – 4 Introduction to raspberry pi	4.1 Raspberry Pi Board 4.2 Raspberry Pi vs. Arduino 4.3 Operating System Benefits 4.4 Raspberry Pi IoT 4.5 Raspberry Pi Setup 4.6 Raspberry Pi Configuration	4a. state what is raspberry pi 4b. Differentiate raspberry pi vs Arduino 4c. able to configure raspberry pi	6
UNIT – 5 Interfaces in raspberry pi	5.1 General purpose IO pins 5.2 protocol pins 5.3 GPIO Access 5.4 8266 interfaces	5a. build device using raspberry pi interfaces	4

List of Practical		
No.	Unit	Name of Practical
1	2	Sensing water using water detector sensor using Arduino
2	2	Sensing temperature with temperature sensor using Arduino
3	3	Sensing humidity with humidity sensor using Arduino
4	3	Sensing ultrasonic sensor using Arduino
6	4	Setup and operate the Raspberry Pi
7	4	Program the Pi to control light emitting diodes (LEDs) attached to the GPIO pins
8	5	Program the Pi to detect room light from a photocell censor connected to the GPIO pins
9	5	Program the Pi to get the temperature from a sensor connected to the GPIO pins
10	5	Learn to interface with 8266

List of Instruments / Equipment / Trainer Board	
1	Arduino device
2	Raspberry pi device (any version)
3	Different sensors, interfaces, connectors, LEDs

List of Text Books			
No	Title of Text Books	Authors	Publication
1	Learning Internet of Things	Peter Waher	PACKT

2	Getting Started with Arduino	Massimo Banzi	PACKT
3	Getting Started with Raspberry Pi	Wallance ,Matt Richardson	

Link of Learning Web Resource	
1	https://www.guru99.com/iot-tutorial.html
2	https://www.arduino.cc/en/Tutorial/HomePage?from=Main.Tutorials
3	https://thepihut.com/blogs/raspberry-pi-tutorials