

Gyanmanjari College of Computer Application
Semester-3 (MCA)

Subject: Internet of Things - MCAXX13515

Type of course: Major (Core)

Prerequisite: Knowledge of IOT, Microprocessor, IOT and Cloud

Rationale: IOT- important role in connecting the things i.e. variety of devices through the Internet. The IoT has emerged as an 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.

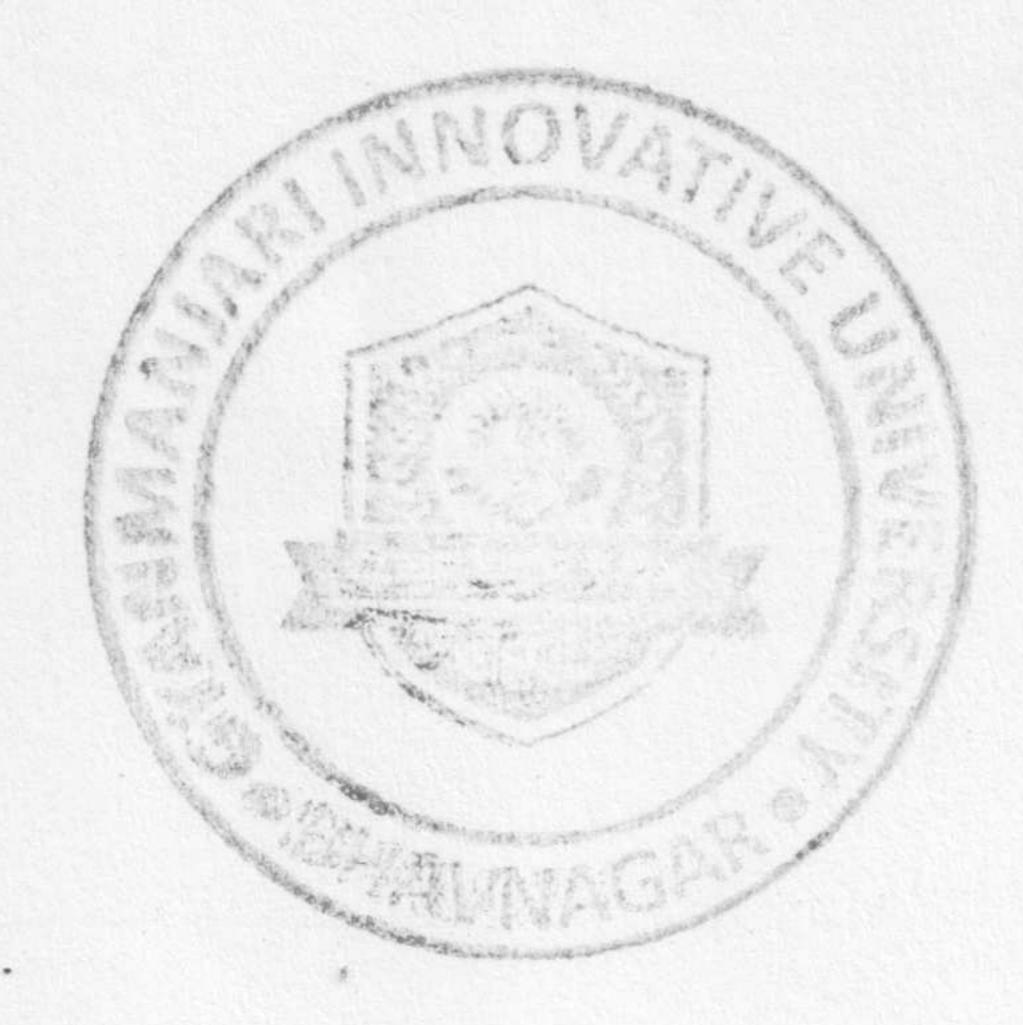
# Teaching and Examination Scheme:

Teaching Scheme			Credits		Examin	amination Marks			
CI	T	P	C	Theor	y Marks	Practical Marks		CA	Total Marks
				ESE	MSE	V	P	ALA	
3	0	2	4	60	30	10	20	30	150

Legends: CI-Class Room Instructions; T – Tutorial; P - Practical; C – Credit; ESE - End Semester Examination; MSE- Mid Semester Examination; V – Viva; CA - Continuous Assessment; ALA- Active Learning Activities.

### Continuous Assessment:

Sr. No	Active Learning Activities	Marks
1	IOT scope: List out the names of leading companies in the field of IoT, discuss the future trends of IoT, and highlight the top developers in the IoT industry, make a presentation with relevant images and upload on GMIU web portal.	10
2	IoT Case Study Analysis: students have performed case study on different type of IOT Sensor and upload on GMIU web portal	10
3	Circuits Board on simulate Challenges: Students Will build and simulate circuit and sensor components on given definition. students have to upload the solution on GMIU web portal	10
	30	



CO4	Implement IoT Microcontroller.	
CO5	Create application of IoT.	

#### List of Practical

Sr.No	Title				
1.	List out and describe various components with microcontroller circuit board.	2			
2.	Implementation LED on Circuit board to turn ON LED every 2 sec.	4			
3.	Implementation of the gas sensor on circuit board	4			
4.	Implementation of the LDR sensor on circuit board	4			
5.	Implementation of buzzer sensor play the buzzer on circuit board	4			
6.	Implementation of ultrasonic sensor and implement on circuit	2			
7.	Implementation of soil moisture sensor to measure or estimate the amount of water in the soil.	2			
8.	Implementation of obstacle avoidance sensor on circuit board	4			
9.	Implement Touch Sensor on microcontroller circuit board	2			
10.	Implement LED and obstacle avoidance sensor on microcontroller circuit board	2			

#### Instructional Method:

The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by black board, may also use any of tools such as demonstration, role play, Quiz, brainstorming, MOOCs etc.

From the content 10% topics are suggested for flipped mode instruction.

Students will use supplementary resources such as online videos, NPTEL/SWAYAM videos, ecourses, Virtual Laboratory.

The internal evaluation will be done on the basis of Active Learning Assignment.

Practical/Viva examination will be conducted at the end of semester for evaluation of performance of students in laboratory.

#### Reference Books:

- [1] ArshdeepBahga, Vijay Madisetti, "Internet of Things A hands-on approach"
- [2] Dieter Uckelmann, Mark Harrison, Michahelles, Florian (Eds), "Architecting the Internet of Things",



## Course Content:

Sr.	Course content	Hrs	% Weightage
1	Introduction to Internet of Things: Introduction: IOT - Internet of Things and it's importance, Things in IoT, Internet of Things stack, Enabling technologies, Internet of Things challenges, IoT levels, Internet of Things and cyber physical system, Internet of Things and Wireless Sensor Network(WSN)	9	20
	Sensors With Microcontrollers Internet of Things Sensor interfacing, Types of sensors, Controlling sensors, Microcontrollers, Advanced RISC Machine: ARM	10	20
3	IoT- Protocols & Cloud for IoT:  Messaging protocols, Transport protocols, IPv4: Internet Protocol version 4, IPv6: Internet Protocol version, URI: Uniform Resource Identifier, Internet of Things and cloud, Fog computing, Security in cloud	10	20
4	Microcontroller: Arduino: Architecture, Programming and Application Raspberry Pi: Architecture, Programming and Application	8	20
	IOT Application Building: Food, Healthcare, Water quality, Warehouse, Retail, Driver Assistance, Collision impact	8	20

# Suggested Specification table with Marks (Theory):60

		Distribution of	Theory Mark	S		
		(Revised Bloom	's Taxonomy)			
T 01701	Remembrance	Understanding	Application	Analyze	Evaluate	Create
Level	(R)	(U)	(A)	(N)	(E)	(C)
Weightage	30%	25%	25%	10%	10%	0

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

### Course Outcome:

After learning the course students should be able to:						
CO1	Understand the concept of IOT, cyber physical system, IoT and WSN					
CO2	Use Sensor interfacing.					
CO3	Understand IOT protocols and cloud.					



[3] The Silent Intelligence: Daniel Kellmereit and Daniel Obodovski

- [4] Internet of Things: Samuel Greengard
- [5] Securing the Internet of Things: Shancang Li

