Department of Computer Science and Engineering

Industry certified Value Added Course
on
"Building IoT Solutions with MQTT"
14.02.2025, 15.02.2025 and 19.02.2025 to 22.02.2025

45 HOURS

Objectives

- To understand the overview of architecture in IoT.

- To gain knowledge about Building IoT With Arduino .

- To identify the various protocols used in IoT applications.

- To acquire knowledge about IoT application with cloud.

- To learn about online security, smart grid and smart parking.

UNIT I   Introduction to IoT   9 Hours

Introduction to Computer Networks and IP- Introduction to IoT technology and applications-Over view of IoT architecture and protocols- Setting up development environment and tools for IoT- Arduino environment setup- Basic programming concepts for IoT devices

UNIT II   Building IoT With Arduino   9 Hours

Understanding the Microcontroller NodeMCU- Understanding different types of sensors and actuators and Interfacing with microcontrollers- IoT architecture: Sensors, actuators, communication, and cloud- Tools Overview: Arduino- Basic programming concepts for IoT devices

UNIT III   IoT Protocols   9 Hours

Introduction to IoT communication protocols -MQTT - Publisher, subscriber, and broker model- Complete understanding of MQTT protocol- Hand's on Challenges based on MQTT protocol

UNIT IV   **IoT Applications with Cloud**   **9 Hours**

Developing IoT applications - Introduction to App inventor tool- Creating our own mobile application- Integrating IoT devices with mobile applications- Testing and evaluating IoT applications- Overview of IoT cloud platforms - Importance of data analytics and visualization in IoT- Security considerations in IoT- Connecting NodeMCU with Wi-Fi network.

UNIT-V   **CASE Studies and Real world applications**   **9 Hours**

IoT Cloud Storage Models and Communication APIs - Cloud for IoT – Smart Agriculture - Power Utility Industry - Smart Grid - Smart and Connected Cities: Smart Lighting, Smart Parking, Smart Traffic Control and Commercial building automation.

COURSE OUTCOMES (COs):

On successful completion of this course, the students will be able to:

CO	Course Outcome	Knowledge Level
CO1	Apply the IoT architecture and sensor fundamentals.	K3
CO2	Build IoT Systems using Arduino, Esp8266 and Jetson Nano Developer kit.	K3
CO3	Identify the various protocols used in IoT applications	K3
CO4	Develop IoT applications with Cloud.	K3
CO5	Construct real time smart IoT Application using embedded	K3

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO1: Professional Skills: The ability to understand, analyze and develop computer programs in the areas related to algorithms, system software, multimedia, web design, big data analytics, and networking for efficient design of computer-based systems of varying complexity.

PSO2: Problem - Solving Skills: The ability to apply standard practices and strategies in software project development using open-ended programming environments to deliver a quality product for business success.

CO - PO - PSO MAPPING

Course Name	CO. No.	POs												PSOs	
		1	2	3	4	5	6	7	8	9	10	11	12	1	2
IOT	CO1	M	M	M	-	L	L	-	M	-	M	M	L	M	M
	CO2	M	M	M	-	L	L	-	M	-	M	M	L	M	M
	CO3	M	M	M	-	L	L	-	M	-	M	M	L	M	M
	CO4	M	M	M	-	L	L	-	M	-	M	M	L	M	M
	CO5	M	M	M	-	L	L	-	M	-	M	M	L	M	M

Trainer	**Course Coordinator**	**VAC Coordinators**	**HOD-CSE**
Mr.M.Rajesh Kannan , Co-Founder -CEO	**Mrs.T.Divya AP-CSE**	**Mrs.S.Athilakshmi AP-CSE**	**Dr.A.Meenakshi Prof .& HOD-CSE**
Mr.Aravind Baskar Co-Founder -CTO	**Mrs.G.Rohini Priya AP-CSE**	**Mrs.S.ArchanaDevi AP-CSE**	