

Learning Objectives:

The student will have command over various underlying protocols and architectures of MATTER. He could be able to address the challenge by implementing the protocol or designing an architecture of low power wireless connectivity application.

Pedagogy:

After completing this course, the student will be able to design his own model for efficient wireless connectivity using the novel protocol.

Syllabus:

Unit 1-MATTER Protocol Architecture – Introduction, Overview, MATTER over IPv6, MATTER Architecture, MATTER standard

Unit 2-MATTER Network Topology – Mesh Networking, Single network Topology, Star Network Topology

Unit 3-Device Data Model – Devices and Endpoints, Node Roles, Cluster – Attributes – Commands – Events, Cluster Classification, Client and Servers

Unit 4-Interaction Model – Concept, Read Transactions, Subscription Transaction, Write Transactions, Call Transactions.

Unit 5-CSA applications for smart IoT systems- hardware requirements, software requirements, interfacing, peripherals, connectivity issues, compatibility issues, and use-case scenarios on smart IoT applications enabling connectivity protocol.

References:

1. <https://developers.home.google.com/matter/overview>
2. <https://csa-iot.org/all-solutions/matter/>
3. https://siliconlabs.github.io/matter/latest/general/FUNDAMENTALS_INTRO.html
4. <https://project-chip.github.io/connectedhomeip-doc/index.html>

Course Outcome:

CO1: To develop an understanding of CSA standards

CO2: To learn about various components of CSA protocols

CO3: Understand the concepts, and applications of CSA Protocol

CO4: Understand the security mechanisms of the CSA protocol

CO5: Having developed an understanding of the CSA standard and protocol, the candidate has to build a research project.

Evaluation Pattern:

Assignment-1	Mid-term Exam (MM: 50)	Case Study/ Literature Survey/ Research paper	Final DC Review (Project review) (MM:100)
10	25	15	50
Total = 100	Internal Assessment = 50		External=50

Employability:

Expertise in Emerging Technology: Scholars who specialize in MATTER gain expertise in a cutting-edge connectivity standard that is designed to make smart home devices more interoperable and secure. This expertise can make them highly valuable to companies working in the IoT (Internet of Things) and smart home industries.