MCPE2010 BLOCKCHAIN TECHNOLOGY (3-0-0)

Course Objectives

This course is designed to:

- Understand how block chain systems (mainly Bit coin and Ethereum) work and to securely interact with them,
- Illustrate how to setup Ethereum tools.
- Explain the key vocabulary and concepts used in Blockchain for Business,
- Design, build, and deploy smart contracts and distributed applications.
- Integrate ideas from block chain technology into their own projects.

Module-I

Introduction to Blockchain, Concept of blockchain, History, Fundamentals of Blockchain, Characteristics of blockchain, Architecture of blockchain, transactions & chaining blocks, Public, private and Hybrid Blockchains, Distributed ledger Technologies, DLT decentralized applications and databases.

Module-II

Distributed decentralized databases, Decentralization, Hashing, Message authentication code & Secure hash Algorithms (SHA-1 & version 3), Distributed hash tables, hashing in blockchain mining, consensus approach, consensus algorithms & Byzantine agreement methods,

Module-III

Ethereum History, Ethereum virtual machine(EVM), Ethereum clients, addresses, key pairs, transaction, languages and wallets, Smart contact characteristics, Absolute and immutable, Contractual confidentiality, Cryptography primitives, Symmetric & Asymmetric cryptography.

Module-IV

Working with bitcoin, Merkle trees, Bitcoin block structure, Addresses, transactions, networks, clients, wallets and payments, Bitcoin supply, Mining Bitcoin blockchain, blocks validation and identification, blocks creation, Ming Hardware & Software, Bitcoin management and swarm. Blockchain in insurance, healthcare, blockchain in cloud computing, Artificial intelligence

Course Outcomes(CO):

After successful completion of the course student will be able to

CO1: Understand how blockchain systems (mainly Bitcoin and Ethereum)
CO2: Develop familiarity of smart contracts and decentralized application
CO3: Applications and implementation strategies
CO4: Blockchain vertical solutions, Use cases & Allied technologies

Text Books:

1. Blockchain Technology concepts and application, Wiley Publication.

Reference Books:

1. Blockchain for Enterprise Application Developers, Wiley Publication.
2. Bitcoin and Cryptocurrency Technologies, Arvind Narayanan, Princeton Publication.