BLOCK CHAIN TECHNOLOGY

CREDITS:	3

OBJECTIVE:
- ➢ To understand Blockchain and its main application.
- ➢ Learners will learn how this system works.

UNIT I - INTRODUCTION   9

Distributed Database, Two General Problem, Byzantine General problem and Fault Tolerance, Hadoop Distributed File System, Distributed Hash Table, ASIC resistance, Turing Complete. Cryptography: Hash function, Digital Signature - ECDSA, Memory Hard Algorithm, Zero Knowledge Proof.

UNIT II - BLOCKCHAIN & APPLICATIONS   9

Introduction to Blockchain, Gartner's Hype Curve and Evolution of Blockchain Technology, Blockchain Need & Genesis, Key Characteristics of Blockchain, Blockchain Structure, Blockchain types and Network, Mining and Consensus, How Blockchain Works, Bitcoin Whitepaper, Understanding Bitcoin, Components of a Block, Forks: soft & hard forks, Ummer blocks, Different forks from Bitcoin, Wallets, Transactions, Public & Private keys, Blockchain Applications : Internet of Things, Medical Record Management System, Do-main Name Service and future of Blockchain.

UNIT III - CRYPTOCURRENCY   9

History, Distributed Ledger, Bitcoin protocols - Mining strategy and rewards, Ethereum - Construction, DAO, Smart Contract, GHOST, Vulnerability, Attacks, Sidechain, Namecoin. Cryptocurrency Regulation: Stakeholders, Roots of Bitcoin, Legal Aspects - Cryptocurrency Exchange, Black Market and Global Economy.

UNIT IV - ETHEREU   9

Need of Ethereum, Ethereum Foundation, Ethereum Whitepaper, How Ethereum Works, Ethereum network, Ethereum Virtual Machine, Transactions and Types, Mining & Consensus, Smart Contracts.

UNIT V - HYPERLEDGER FABRIC   9

Hyperledger, Hyperledger Fabric, Comparison between Fabric & Other Technologies, Fabric Architecture, Components of Hyperledger Fabric, Advantages of Hyperledger Fabric Blockchain, How Hyperledger Fabric Works.

TOTAL: 45 PERIODS

OUTCOME:
- ➢ Understand key features, different types of platforms & Languages of Blockchain Technology.

REFERENCES:
1. Imran Bashir, Mastering Blockchain, Packt Publishing, March 2017
2. DebajaniMohanty, BlockChain : From Concept to Execution, BPB Publications, 2nd edition, 2018
3. Artemis Caro, Blockchain: Bitcoin, Ethereum&Blockchain: The Beginners Guide to Understanding the Technology Behind Bitcoin & Cryptocurrency, 2017
4. Andreas M. Antonopoulos, Gavin Wood, Mastering Ethereum: Building Smart Contracts and DApps, O'REILLY, 2018
5. Nitin Gaur, Luc Desrosiers, Venkatraman Ramakrishna, Petr Novotny, Dr. Salman A. Baset and Anthony O'Dowd, Hands-on Blockchain with Hyperledger, Packt Publishing, 2018.