

Subject Code	Subject Name	Credits
26CS511	BLOCK CHAIN TECHNOLOGY	04

Course Objectives

1. To introduce to the basic concepts of Blockchain
2. To look into to the evolution of Blockchain
3. To understand the working of Blockchain
4. To understand some of the advanced concepts of Blockchain

Learning Outcomes

1. To learn the functioning of the Block Chain Technology
2. Demonstrate knowledge of smart contracts and cryptocurrency transactions.

Unit 1 - Introduction to Blockchain (12 Hrs.)

Introduction to Blockchain – Centralized and Decentralized system – Layers of Blockchain Components– Blockchain Importance

Unit 2 - Blockchain Architecture and Working (12 Hrs.)

Blockchain Architecture and Working–Structure of a Block–Blockchain Network Architecture–Peer-to-Peer Networks–Mining Process–Consensus Mechanisms (Proof of Work, Proof of Stake) –Blockchain Platforms

Unit 3 – Block-chain 1.0 (12 Hrs.)

Blockchain 1.0 - Currency - Blockchain Technology Stack – Computing Problems –Workings of Cryptocurrency–Role of Cryptography in Transaction Verification– Blockchain 2.0: Contracts

Unit 4 – Block-chain 3.0 (12 Hrs.)

Blockchain 3.0 - Justice Applications Beyond Currency, Economics and Markets – Efficiency and Coordination Applications beyond Currency, Economics and Markets

Unit 5 - Advanced Concepts (12 Hrs.)

Advanced Concepts - Terminology and Concepts – Currency, Token, Tokenization and Non-Fungible Tokens (NFTs) – Currency Multiplicity – Scalability Solutions (Sharding, Sidechains) –Security issues, Challenges and Limitations

References:

1. Singhal, Bikramaditya, Gautam Dhameja, and Priyansu Sekhar Panda. Beginning Blockchain: A Beginner's Guide to Building Blockchain Solutions. Apress, 2018.
2. Kube, Nicolas. "Daniel Drescher: Blockchain basics: a non-technical introduction in 25 steps." (2018): 3212-331.
3. Judmayer, Aljosha, et al. "Blocks and chains: introduction to bitcoin, cryptocurrencies, and their consensus mechanisms." Synthesis Lectures on Information Security, Privacy, & Trust 9.1 (2017)
4. Swan, Melanie. Blockchain: Blueprint for a new economy. " O'Reilly Media, Inc.", 2015.

