



Fundamentals of Blockchain Technology

Nature of the Course: Theory + Practical

Total Hours per Day: 2 Hours

Course Duration: 40 Hours

Course Summary

Blockchain technology is a decentralized and distributed ledger system that enables secure and transparent record-keeping of transactions across a network of computers. The fundamental concept of blockchain is to create a chain of blocks, where each block contains a list of transactions. These blocks are linked together using cryptographic hashes, forming a chain of chronological and unchangeable records.

Module I

Introduction to Blockchain

- Overview of Blockchain
- Definition and basic concepts
- Importance and applications
- How Blockchain Works
- Blocks and transactions
- Decentralization and consensus

Module II

Types of Blockchains

- Public vs. Private Blockchains
- Explanation of public and private blockchain models
- Popular Blockchains
- Brief overview of Bitcoin and Ethereum

Module III

Cryptography in Blockchain

- Basic Cryptographic Concepts
- Hash functions
- Public and private keys
- Securing Transactions
- Cryptographic signatures

Module IV

Smart Contracts

- Introduction to Smart Contracts
- Definition and use cases
- Basic examples
- Smart Contract Platforms
- Overview of platforms like Ethereum

Module V

Blockchain Transactions

- Making Transactions
- How transactions are initiated and processed
- Transaction Verification
- Understanding the consensus mechanism

Module VI

Blockchain Development Tools

- Introduction to Development Environments
- Tools for blockchain development
- Setting up a simple development environment

Module VII

Blockchain Use Cases

- Real-world Applications
- Overview of blockchain use cases in various industries
- Potential benefits and challenges

Module VIII

Security in Blockchain

- Blockchain Security Fundamentals
- Securing private keys
- Preventing common attacks

Module IX

Future Trends

- Emerging Trends in Blockchain
- Scalability solutions
- Interoperability

Module X

Course Wrap-up and Q&A

- Review of Key Concepts
- Recap of important topics covered in the course
- Question and Answer Session
- Open discussion for clarifications and further insights
- Assessment and Evaluation
- Short Quizzes
- Basic Coding Exercises (if applicable)
- Participation in Class Discussions
- Final Knowledge Assessment

This basic course provides a foundational understanding of blockchain technology without delving too deeply into technical details. It serves as a stepping stone for those who may later choose to explore more advanced topics in blockchain development or business applications.