



BLOCKCHAIN COURSE

Prepared By (CTO) SYNTHOQUEST

45 Days Duration

Duration: 45 days × 2 hrs/day = 90 hrs

Goal: Equip learners with knowledge and practical skills in blockchain technology, cryptocurrency, smart contracts, and decentralized applications (DApps).

Core Domains

1. Introduction to Blockchain (5%)

- Blockchain definition, history, and evolution
- Types: public, private, consortium, hybrid
- Applications beyond cryptocurrency

2. Blockchain Architecture & Cryptography (10%)

- Blocks, chains, nodes, ledger
- Hash functions, digital signatures, public/private keys
- Consensus mechanisms: PoW, PoS, PBFT

3. Cryptocurrency Fundamentals (10%)

- Bitcoin, Ethereum, and other major coins
- Wallets, addresses, keys, transactions
- Mining and staking basics

4. Smart Contracts & Solidity (15%)

- Concept and use cases of smart contracts
- Introduction to Ethereum and Solidity
- Writing, compiling, and deploying simple contracts
- Gas fees, contract execution, and security best practices

5. Decentralized Applications (DApps) (10%)

- Architecture of DApps
- Frontend-backend integration with blockchain
- Web3.js, Ethers.js, and connecting to smart contracts

6. Blockchain Platforms & Tools (15%)

- Ethereum, Hyperledger Fabric, Binance Smart Chain
- Ganache, Remix IDE, Truffle, Hardhat
- Nodes, testnets, and mainnets

7. Blockchain Security (10%)

- Security challenges: 51% attacks, replay attacks
- Wallet security, private key management
- Smart contract vulnerabilities and auditing

8. Blockchain Use Cases & Industry Applications (10%)

- Supply chain, finance, healthcare, identity management
- NFTs, DeFi, tokenization, DAOs
- Regulatory and compliance aspects

9. Project & Deployment (15%)

- End-to-end DApp development: smart contract → frontend → deployment
- Using testnets for deployment
- Documentation, best practices, and Git version control

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