# Blockchain Architecture Training

**Module 1: Introduction to Blockchain Architecture**

- Overview of Blockchain Technology and Use Cases

- Blockchain Network Components and Structure

- Types of Blockchains: Public, Private, and Consortium

**Module 2: Distributed Ledger Technology (DLT)**

- Basics of Distributed Ledgers

- Blockchain Data Structures: Blocks, Transactions, and Hashes

- Role of Cryptography in Blockchain

**Module 3: Consensus Mechanisms**

- Understanding Consensus Algorithms

- Proof of Work (PoW) and Proof of Stake (PoS)

- Practical Byzantine Fault Tolerance (PBFT) and Delegated Proof of Stake (DPoS)

- Comparing Consensus Mechanisms

**Module 4: Blockchain Platforms and Frameworks**

- Deep Dive into Ethereum Architecture

- Hyperledger Fabric: Features and Architecture

- Differences Between Public and Private Blockchain Frameworks

**Module 5: Smart Contracts and Decentralized Applications (dApps)**

- Introduction to Smart Contracts and Their Role in Blockchain

- Building and Deploying dApps

- Ensuring Security in Smart Contract Development

**Module 6: Blockchain Network Design and Scalability**

- Designing a Blockchain Network for Real-World Applications

- Layer-2 Solutions and Sharding for Scalability

- Blockchain Interoperability Challenges

**Module 7: Blockchain Security**

- Identifying Security Risks in Blockchain Systems

- Implementing Security Protocols and Best Practices

- Case Studies of Blockchain Vulnerabilities

## Module 8: Blockchain Integration and Deployment

- Integrating Blockchain with Existing Systems

- Deployment Best Practices for Blockchain Networks

- Tools for Monitoring and Managing Blockchain Performance

## Module 9: Industry-Specific Use Cases

- Blockchain in Supply Chain and Logistics

- Blockchain in Financial Services and Payments

- Blockchain in Healthcare and Identity Management

## Module 10: Certification Preparation and Capstone Project

- Review of Key Blockchain Architecture Concepts

- Mock Tests and Exam Preparation

- Capstone Project: Designing a Blockchain Architecture for a Real-World Problem

## Key Features of the Blockchain Architecture Training

- **Comprehensive Coverage**: Covers blockchain fundamentals, platforms, and advanced design principles.

- **Hands-On Practice**: Practical labs on Ethereum, Hyperledger, and other leading blockchain technologies.

- **Capstone Project**: Design a blockchain architecture tailored to a specific use case.

- **Expert-Led Sessions**: Learn from industry professionals with extensive blockchain experience.

- **Certification Readiness**: Prepare for blockchain architecture certifications and real-world roles.