Blockchain Development Program

Course Overview :-

The **Blockchain Development Program** is a comprehensive training experience designed to equip learners with the **technical skills and real-world knowledge** to become proficient blockchain developers. As industries adopt **Web3 and decentralized technologies**, the demand for skilled professionals capable of building smart contracts, decentralized applications (dApps), and blockchain infrastructure has skyrocketed.

This course provides a structured pathway from **blockchain fundamentals** to advanced development topics including **Ethereum, Solidity, smart contract security, DeFi, NFTs, Layer 2 scaling**, and **multi-chain deployment**. It blends academic foundations with practical, project-based learning to ensure you're job-ready in the evolving blockchain landscape.

Prerequisites :-

- Basic understanding of programming (preferably JavaScript or Python)
- Familiarity with web development (HTML/CSS/JavaScript)
- No prior blockchain experience required

Course Modules:-

Module 1: Fundamentals of Blockchain & Web3

This module lays the foundation of blockchain technology. You'll understand how decentralized systems differ from traditional ones and explore key concepts like blocks, consensus mechanisms, wallets, and cryptography.

Topics Covered:

- What is Blockchain?
- How decentralized systems work
- Public vs Private blockchains
- Consensus mechanisms (PoW, PoS)
- Blockchain wallets and key pairs
- Real-world use cases: Crypto, DeFi, NFTs

Module 2: Smart Contracts & Solidity Programming

Learn to write and deploy smart contracts using Solidity on the Ethereum blockchain. You'll start with simple contracts and gradually build more complex logic, using real blockchain development environments.

Topics Covered:

- Introduction to Ethereum and EVM
- Setting up a development environment (Remix, Hardhat)
- Solidity syntax and structure
- Writing functions, modifiers, and events
- Deploying contracts to testnet

Module 3: Building dApps with Web3.js or Ethers.js

Once you've built your smart contracts, it's time to connect them to a frontend. This module teaches how to develop decentralized applications (dApps) using JavaScript libraries that interact with the blockchain.

Topics Covered:

- What is a dApp?
- Web3.js vs Ethers.js
- Connecting MetaMask to dApps
- Reading/writing contract data from the frontend
- Event listeners and transaction feedback
- UI design basics for blockchain apps

Module 4: Tokens, NFTs & Decentralized Storage

This module focuses on creating your own tokens and NFTs, and storing data on decentralized networks. You'll learn the major token standards and how to work with media, metadata, and decentralized file systems like IPFS.

Topics Covered:

- ERC-20 (fungible tokens) and ERC-721 (NFTs)
- Token creation and minting
- Working with OpenZeppelin libraries
- IPFS and Filecoin for decentralized storage
- Uploading images and metadata for NFTs

Module 5: Final Project & Deployment

Put everything together by building a complete blockchain application. You'll work on a guided or custom mini project — such as a crypto wallet, NFT marketplace, or token-based voting system — and deploy it to a public testnet.

Topics Covered:

- End-to-end dApp development
- Smart contract integration
- Hosting frontend (using Vercel or Netlify)
- Deploying contracts to Goerli or Polygon testnet
- Final presentation and walkthrough

Outcome :-

By the end of the course, you'll be able to:

- Build and deploy smart contracts
- Create your own tokens and NFTs
- Develop dApps with real blockchain integration
- Launch projects on testnets and connect with wallets like MetaMask
- Start your journey as a Web3 Developer, Smart Contract Engineer, or Blockchain App Builder