

Blockchain & Web3 Technology Internship

(15 Days | Practical-Oriented | Industry Ready)

INTERNSHIP SYLLABUS

Internship Objectives

By the end of this internship, students will:

- Understand **Blockchain fundamentals & decentralization**
- Develop **Smart Contracts using Solidity**
- Build **Web3 DApps** with frontend integration
- Use **Ethereum, MetaMask & test networks**
- Deploy and test real blockchain projects
- Gain readiness for **Web3 developer roles**

DAY 1 – Blockchain Fundamentals

- What is Blockchain?
- Centralized vs Decentralized systems
- Blocks, Hash, Merkle Tree
- Public vs Private Blockchain

Practical

Visualize blockchain using online simulators

Hash generation demo

DAY 2 – Cryptocurrency & Consensus

- Bitcoin vs Ethereum
- Mining & validation
- Consensus algorithms (PoW, PoS)
- Wallets & transactions

Practical

Create crypto wallet (MetaMask)

Test transaction on testnet

DAY 3 – Ethereum Ecosystem

- Ethereum Virtual Machine (EVM)
- Gas fees & smart contracts
- Testnets vs Mainnet

Practical

Connect MetaMask to Goerli / Sepolia

Explore Etherscan

DAY 4 – Introduction to Smart Contracts

- What is a Smart Contract?
- Solidity basics
- Contract lifecycle

Practical

Write first Solidity contract (Hello Blockchain)

Compile using Remix IDE

DAY 5 – Solidity Programming – Core

- Variables, data types
- Functions & visibility
- Control structures

Practical

Create basic calculator contract

Deploy on testnet

DAY 6 – Solidity – Advanced

- Structs, mappings, arrays
- Modifiers
- Events

Practical

Create student record contract

Emit blockchain events

DAY 7 – Smart Contract Security

- Common vulnerabilities
- Reentrancy attack
- Access control

Practical

Secure smart contract coding

Test vulnerabilities in Remix

DAY 8 – Web3 & DApp Architecture

- What is Web3?
- DApp architecture
- Frontend + Blockchain interaction

Practical

Connect frontend to blockchain using Web3.js / Ethers.js

DAY 9 – Frontend Integration

- React basics for DApps
- Wallet connection logic
- Smart contract ABI

Practical

Connect MetaMask to React app

Read data from smart contract

DAY 10 – Full DApp Development

- Transaction handling
- Gas optimization
- Error handling

Practical

Build full DApp (Voting / Fund Transfer)

DAY 11 – NFT Fundamentals

- What is NFT?
- ERC-721 & ERC-1155
- NFT marketplaces

Practical

Create NFT smart contract

Mint NFT on testnet

DAY 12 – DeFi & Blockchain Use Cases

- DeFi overview
- DAO concepts
- Blockchain in healthcare, supply chain

Practical

Analyze DeFi DApps

Design own blockchain use case

DAY 13 – Project Development – Phase 1

- Project topic selection
- Architecture planning
- Smart contract coding

DAY 14 – Project Development – Phase 2

- Frontend integration
- Testing & debugging
- Deployment on testnet

DAY 15 – Final Deployment & Evaluation

- Project demo
- Viva & Q&A
- Career guidance (Web3 roadmap)

