

Course: Blockchain Development on TRON Network

Duration: 6-8 Weeks

Level: Beginner to Advanced

Prerequisites: Basic programming knowledge (JavaScript, Python, or Solidity preferred), familiarity with blockchain fundamentals.

Module 1: Introduction to Blockchain & TRON

- Overview of Blockchain Technology
- Introduction to TRON Blockchain
- TRON vs. Ethereum: Key Differences
- Understanding TRON Virtual Machine (TVM)

Module 2: Setting Up the Development Environment

- Installing TRON Development Tools
- TRON Studio & TRON IDE
- Using TronLink Wallet for Development
- TRON Blockchain Explorer

Module 3: TRC-20 & TRC-721 Tokens

- Understanding Token Standards (TRC-10, TRC-20, TRC-721)
- Creating and Deploying a TRC-20 Token
- Creating and Deploying a TRC-721 (NFT) Token
- Token Management & Transactions

Module 4: Smart Contracts on TRON

- Introduction to Solidity for TRON
- Writing Smart Contracts using Solidity
- Deploying Smart Contracts on TRON Network
- Smart Contract Security Best Practices

Module 5: TRON dApp Development

- Building Decentralized Applications (dApps) on TRON
- Connecting dApps to TRON using TronWeb
- Interacting with Smart Contracts from a Frontend
- Implementing Wallet Authentication with TronLink

Module 6: TRON DeFi & Staking

- Overview of TRON DeFi Ecosystem
- Implementing Staking & Voting in TRON
- Understanding TRON Energy & Bandwidth
- TRON Transaction Fees & Optimization Techniques

Module 7: Interacting with TRON API & SDK

- Using TRON JavaScript SDK (TronWeb)
- Making API Calls to TRON Nodes
- Automating Transactions & Smart Contract Calls
- Handling Events & Logs

Module 8: TRON-based NFT Marketplace (Project)

- Planning & Designing an NFT Marketplace
- Smart Contract Development for NFT Trading
- Implementing Buy/Sell Features in a TRON-based NFT Marketplace
- Deploying the NFT Marketplace on TRON Mainnet

Module 9: Security, Testing & Deployment

- Testing Smart Contracts with TronGrid
- Security Best Practices for TRON dApps
- Deploying dApps & Smart Contracts on the TRON Mainnet
- Troubleshooting & Debugging

Module 10: Final Project & Certification

- Developing a Complete TRON-based dApp
- Code Review & Optimization
- Deployment & Presentation
- Certification & Career Guidance