



Block Chain Development Course Curriculum

ELECTIVE 1

Module # 1: Bitcoin:

- **Objective:**
 - Apprehend another blockchain platform: Bitcoin
 - Understand how mining works in Bitcoin
- **Topics:**
 - What is Bitcoin?
 - What is Bits?
 - How to use Bitcoin?
 - How Bitcoin mining works?
 - Bitcoin consensus mechanism.
 - Parameters that invalidate the transactions
 - Nodes and network of bitcoin
 - Various roles you can play in bitcoin ecosystem

Module # 2: Setting up Bitcoin network for:

- **Objective:**
 - Explain the steps required to build a blockchain solution
 - Setup your blockchain environment
 - Analyze the blockchain environment.
- **Topics:**
 - Private and public blockchain
 - Various blockchain setup platforms
 - Setup Bitcoin blockchain and connect to testnet
 - Steps to build a blockchain solution
- **Skills:**
 - Implementing Blockchain using bitcoin
- **Hands On:**
 - Installing bitcoin software
 - Setting up servers

ELECTIVE 2

Module # 1: Ethereum:

- **Objective:**
 - Apprehend another blockchain platform: Ethereum
 - Perceive the Ethereum Ecosystem
 - Understand how mining works in Ethereum
 - Learn Solidity programming language
- **Topics:**
 - What is Ethereum?
 - What is Ether?
 - How to use Ethereum?

- The Ethereum ecosystem, DApps and DAOs
 - How Ethereum mining works
 - Learning Solidity * Contract classes, Functions and conditionals * Inheritance & abstract contracts o Libraries * Types & Optimization * Global Variables o Debugging * Future of Ethereum
- **Skills:**
- Cryptocurrencies (Ethereum) • Developing Smart Contracts

Module # 2: Setting up Private Blockchain Environment using Ethereum Platform:

- **Objective:**
- Explain the steps required to build a blockchain solution
 - Setup your private blockchain environment
 - Analyze the blockchain environment.
 - Develop smart contract on Ethereum
 - Deploy the contract on Web and console
- **Topics:**
- Private and public blockchain
 - Various blockchain setup platforms
 - Using Ethereum to setup private blockchain
 - Steps to build a blockchain solution
 - Smart contract on Ethereum
 - Compile, deploy and instantiate contracts
 - Configuring, running and working with the go-Ethereum client
 - Account management and mining
 - Understand the different stages of a contract deployment
 - How to interact with a contract once deployed?
- **Skills:**
- Implementing Blockchain using Ethereum
 - Developing Smart Contracts
- **Hands On:**
- Installing Ethereum software
 - Setting up servers
 - Creating blockchain environment
 - Mining of Ether & Sending of Ether
 - Tracking information using hash
 - Viewing Information about blocks in blockchain
 - Developing smart contract on private blockchain
 - Deploying contract from web and console

ELECTIVE 3

Module # 1: Hyperledger:

- **Objective:**

- Apprehend Hyperledger project
- Infer the Hyperledger architecture
- Explore the consensus mechanism in Hyperledger
- Landscape- Four major Hyperledger frameworks
- **Topics:**
 - Introduction to Hyperledger
 - Hyperledger architecture
 - Membership, Blockchain, Chaincode & Consensus
 - Consensus & its interaction with architectural layers
 - Application programming interface
 - Application model & Network topology
 - Exploring Hyperledger frameworks
 - Hyperledger Fabric & Hyperledger Indy
 - Hyperledger Iroha & Hyperledger Sawtooth
- **Skills:**
 - Blockchain Platforms (HyperLedger)
- **Hands on:**
 - Creating and Deploying a Business Network on Hyperledger Composer Playground
 - Testing the business network definition
 - Transferring the commodity between the participants

Module # 2: Setting up development environment using Hyperledger Composer:

- **Objective:**
 - Develop & deploy business networks
 - Interact with Hyperledger Fabric Blockchain using Hyperledger Composer
 - Infer Hyperledger Fabric
- **Topics:**
 - Setting up development environment using Composer
 - Developing business networks
 - Testing business networks
 - Introduction to Hyperledger Fabric
 - Hyperledger Fabric Model
 - Various ways to create Hyperledger Fabric Blockchain network
- **Skills:**
 - Implementing Blockchain using HyperLedger Fabric
- **Hands On:**
 - Setting up Hyperledger Fabric blockchain using Hyperledger Composer locally
 - Developing business network
 - Deploying & testing business networks