

# Blockchain Certification Training

## Duration: 35 hours

### Module 1: *Decentralization of Money*

#### Topics:

- Transformation in trading units
- Cryptography and Crypto-currency
- Anonymity and Pseudonymity in cryptocurrencies
- Digital Signatures
- Cryptocurrency Hash codes
- Distributed networks

### Module 2: *Exploring Blockchain*

#### Topics:

- Introduction to Blockchain
- Why Blockchain is crucial?
- Key vocabulary while discussing Blockchain
- Distinction between databases and blockchain
- Explaining Distributed Ledger
- Blockchain ecosystem
- Blockchain structure
- Working of blockchain technology
- Permissioned and permission-less blockchain

### Module 3: *Bitcoin and Blockchain*

#### Topics:

- Bitcoin and its History
- Why use bitcoins?
- Where and how to buy bitcoins
- How to store bitcoins?
- How and where to spend bitcoins?
- Selling bitcoins
- Bitcoin transactions
  - How bitcoin transactions work
  - What happens in case of invalid transactions
  - Parameters that invalidate the transactions
- Scripting language in bitcoin
- Applications of bitcoin script

#### **Module 4: Bitcoin mining**

##### **Topics:**

- Purpose of Mining
- Algorithm used in mining
- Mining hardware
- How bitcoin mining works?
- Bitcoin mining pools
- How cloud mining of bitcoin works?
- Mining Incentives

#### **Module 5: Ethereum**

##### **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
  - Libraries
  - Types & Optimization
  - Global Variables
  - Debugging
- Future of Ethereum

#### **Module 6: Setting up Private Blockchain Environment using Ethereum Platform 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?

#### **Module 7: Hyperledger**

##### **Topics:**

- Introduction to Hyperledger
- Hyperledger architecture

- Membership
- Blockchain
- Chaincode
- Consensus
  - Consensus & its interaction with architectural layers
- Application programming interface
- Application model
- Network topology

### **Module 8: *Setting up development environment using Hyperledger***

#### **Composer 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

### **Module 9: *Prospects of Blockchain***

#### **Topics:**

- Blockchain prospering our world
- Blockchain transforming business and professionalism
- Discussing practical use-cases of blockchain
  - How can we take Aadhaar Card on blockchain?
  - How blockchain can be used to remove corruption
- Real case scenarios of Blockchain
  - Blockchain in Banking System
  - Blockchain in Land Registry
  - Blockchain in Capital Market
- Use cases for government
- Summary of the course