

Blockchain Technology

Module 1: Introduction to Blockchain

- **What is Blockchain?**
- **History of Blockchain**
- **Explaining Distributed Ledger**
- **Blockchain ecosystem**
- **Explaining Distributed Ledger**

TYPES OF BLOCK CHAIN

- **Private/Consortium/Permission-less**
- **Public/Permissioned**
- **What Block chain has to offer across Industry?**
- **Companies currently using Block chain**
- **Overview of what we are going to study in this course.**

Module 2: Block chain Usages

- **Payment systems**
- **Cryptocurrencies (Bitcons, Ethereum, Dash)**
- **Royalty collection**
- **Management of copyrights**
- **Insurance**

Development

- **Private Ethereum Network**
- **Smart contracts (e.g. Ethereum)**
- **dApps**
- **Hyperledger(Hyperledger Fabric)**

Module 3: How Bitcoin Works

Crypto and Cryptocurrencies

- **Cryptographic Hash Functions**
- **Hash Pointers and Data Structures**
- **Digital Signatures**
- **Public Keys as Identities**
- **A Simple Cryptocurrency**



Decentralization

- Introduction to cloud computing.
- Centralization vs. Decentralization
- Distributed Consensus
- Consensus without Identity: the Block Chain
- Incentives and Proof of Work

Bitcoin Transactions

- Bitcoin Scripts
- Transaction Forms
- Constructing a Transaction
- Bitcoin Blocks
- Mining Transactions in Blocks
- Bitcoin Network
- Forking and SegWit

**Module 4: Bitcoin Wallets, Exchanges and Mining
How to Store and Use Bitcoins**

- Hot and Cold Storage
- Splitting and Sharing Keys
- Online Wallets
- Bitcoin Exchanges
- Currency Exchange Markets
- The Task of Bitcoin Miners Mining Hardware
- Energy Consumption & Ecology
- Mining Incentives and Strategies

Module 5: Ethereum and Hyperledger

- What is Ethereum?
- What is Ether?
- Smart Contracts
- How to use Ethereum?
- The Ethereum ecosystem, DApps and DAOs
- How Ethereum mining works
- Learning Solidity
- Config Management with Puppet
- Contract classes, Functions and conditionals
- Inheritance & abstract contracts



- Libraries
- Types & Optimization
- Global Variables
- Debugging
- Future of Ethereum
- Hyperledger

Module 6: Setting up private Blockchain using Ethereum

