



ALTALUNE TECHNOLOGY

BLOCKCHAIN

MODULE 1

- Introduction to Cryptocurrency and Networking Concepts.

GOAL

- In this module, you will learn the concept of cryptocurrencies and networking structure.

OBJECTIVES

- At the end of this module, you should be able to:
- Explain cryptography and cryptocurrency
- Infer hash functions
- Distinguish the various network structures
- Explain why decentralized systems are efficient

TOPICS

- Transformation in trading units
- Cryptography and Crypto-currency
- Anonymity and Pseudonymity in cryptocurrencies
- Digital Signatures
- Cryptocurrency Hash codes
- Peer to peer networks (structured and unstructured)

HANDS ON:

- Demonstrating hash codes
- Create your own cryptocurrency

MODULE 2

- Overview of Blockchain

GOAL

- In this module, you will learn blockchain technology and its architecture.

OBJECTIVES

- At the end of this module, you should be able to:
- Explain blockchain and its uses
- Understand the structure and mechanisms of a 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



ALTALUNE TECHNOLOGY

- Permissioned and permission-less blockchain

Hands On:

- Demonstrating valid and invalid transaction
- Demonstrating Blockchain

MODULE 3

- Bitcoin and Blockchain

GOAL

- In this module, you will learn about bitcoins. You will understand why transactions with bitcoins is secure and efficient. Also, you will learn how bitcoin network works.

OBJECTIVES

- At the end of this module, you should be able to:
- Explain bitcoin and its uses
- Setup your own bitcoin wallet
- Explain the working of bitcoin transaction system.
- Perceive the scripting language of bitcoin
- Deduce nodes and network of bitcoin
- Comprehend various roles a person can play in Bitcoin ecosystem

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
- Nodes and network of bitcoin
- Various roles you can play in Bitcoin Ecosystem

HANDS ON:

- Setting up bitcoin wallet
- Creating a paper wallet
- Transaction tracking of bitcoin

MODULE 4

- Bitcoin mining



ALTALUNE TECHNOLOGY

GOAL

- In this module, you will learn more about bitcoins and its mechanisms. You will understand why transactions with bitcoins is secure and efficient. Also, you will learn how bitcoin mining works. You will also be taught, how to mine bitcoin from your own personal computer.

OBJECTIVES

- At the end of this module, you should be able to:
 - Comprehend bitcoin mining
 - Infer bitcoin security

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
- Security and Centralizations Hands On:
 - Installing bitcoin mining software
 - Mining bitcoin on your PC

MODULE 5

- Ethereum

GOAL

- In this module, you will learn Ethereum (Another Blockchain platform). You will also learn Solidity: An Ethereum programming language.

OBJECTIVES

- At the end of this module, you should be able to:
 - Apprehend another blockchain platform: Ethereum
 - Learn Solidity: all aspects from value types and inheritance to more exotic features and optimization

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



ALTALUNE TECHNOLOGY

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

MODULE 6

- Setting up Private Blockchain Environment using Ethereum Platform

GOAL

In this module, you will learn about public and private blockchain. You will be able to setup your private blockchain environment. Also, you will be developing a smart contract on Ethereum and will be deploying it on web and console.

OBJECTIVES

- At the end of this module, you should be able to:
 - Explain the steps required to build a block-chain solution
 - Setup your private blockchain environment
 - Analyse 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?

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

MODULE 7

- Prospects of the blockchain



ALTALUNE TECHNOLOGY

GOAL

- In this module, you will understand how blockchain is essentially shaping the future economics. Discussions on various use cases of blockchain will clear the missing segment of the picture.

OBJECTIVES

- At the end of this module, you should be able to:
 - Understand various practical uses of blockchain
 - Infer the Impact of blockchain on our world
 - Explain blockchain using real case scenarios
 - Infer a blockchain application platform

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 Govt.
- Summary of the course

PROJECT:

Building A private banking system using blockchain with various nodes and accounts

ALTALUNE
TECHNOLOGY