2 Years Full Stack Development Curriculum:

1st Semester :

1. Fundamental of Computer: Basic

- Introduction to Computers
- Computer Hardware and Software
- Operating Systems Basics
- File Management
- Internet Basics
- Introduction to Algorithms and Problem Solving
- MS Office

2. HTML

- Introduction to HTML
- HTML Tags and Attributes
- Semantic HTML
- HTML Forms
- HTML5 Features

3.CSS

- Introduction to CSS
- CSS Selectors
- Box Model and Layout
- CSS Flexbox
- CSS Grid

2nd Semester :

1. **Python or C Programming**

- Introduction to programming languages

- Data Types and Variables
- Control Flow and Loops
- Functions and Modules
- File Handling

2. **Bootstrap**

- Introduction to Bootstrap
- Bootstrap Grid System
- Bootstrap Components (Navbar, Cards, Forms, etc.)
- Customizing Bootstrap
- Responsive Design with Bootstrap

3. **Basic Mathematics**

- Algebraic Expressions
- Functions and Graphs
- Differential and Integral Calculus Basics
- Matrix Algebra
- Set Theory

3rd Semester :

1. **JavaScript**

- Introduction to JavaScript
- JavaScript Syntax and Data Types
- DOM Manipulation
- Events and Event Handling
- JavaScript Functions and Scope
- ES6+ Features

2. **Data Structures and Algorithms (DSA)**

- Introduction to Data Structures (Arrays, Linked Lists, Stacks, Queues, Trees, Graphs, etc.)
- Algorithm Analysis
- Searching and Sorting Algorithms

- Recursion
- Dynamic Programming
- Introduction to Big O Notation

3. **Personal Development**

- Time Management
- Communication Skills
- Problem-Solving
- Critical Thinking
- Teamwork and Collaboration
- Presentation Skills
- Resume Creation
- Drafting mail

4th Semester :

1. **Frontend Framework**

React JS ● Introduction to React JS ● Components and Props ● State and Lifecycle ● Handling Events ● React Router ● Redux Basics	Or	**React Native (Mobile App Development)** ● Introduction to React Native ● Components and Props ● State and Lifecycle ● Handling Events ● Navigation ● Async Storage and Data persistence ● Building APKs

2. **Blockchain Development**

Module 1: Introduction to Blockchain Technology (2 weeks)

- Overview of Blockchain Technology
- History and Evolution of Blockchain

- Understanding Distributed Ledger Technology (DLT)
- Types of Blockchains: Public, Private, Consortium
- Consensus Mechanisms: Proof of Work, Proof of Stake, etc.
- Cryptography Fundamentals in Blockchain
- Use Cases and Applications of Blockchain Technology

Module 2: Ethereum Blockchain and Smart Contracts (4 weeks)

- Introduction to Ethereum Blockchain
- Ethereum Virtual Machine (EVM) and Gas
- Solidity Programming Language Basics
- Writing and Deploying Smart Contracts
- Interacting with Smart Contracts using Web3.js
- Truffle Framework for Smart Contract Development
- Project: Building and Deploying Smart Contracts on Ethereum Testnet

Module 3: Decentralized Application Development (4 weeks)

- Understanding Decentralized Applications (DApps)
- Web3.js Integration for Frontend Development
- Designing User Interfaces for DApps
- Working with Ethereum APIs and Infura
- Integrating MetaMask for Wallet Interaction
- Security Best Practices for DApp Development
- Project: Building a Decentralized Application (DApp) on Ethereum

Module 4: Hyperledger Fabric and Enterprise Blockchain (4 weeks)

- Introduction to Hyperledger Fabric
- Components and Architecture of Hyperledger Fabric
- Chaincode (Smart Contract) Development in Go Lang
- Fabric SDK for Application Development
- Setting up a Hyperledger Fabric Network
- Permissioned Blockchains and Identity Management
- Project: Developing a Supply Chain Application on Hyperledger Fabric

Module 5: Blockchain Security and Auditing (2 weeks)

- Security Threats and Vulnerabilities in Blockchain
- Secure Coding Practices for Smart Contracts
- Auditing Smart Contracts for Security Flaws
- Implementing Multi-Signature Wallets and Escrow Contracts
- Overview of Blockchain Security Tools and Services
- Compliance and Legal Considerations in Blockchain Development

Module 6: Advanced Topics and Future Trends (2 weeks)

- Advanced Blockchain Concepts: Sharding, Interoperability, Scalability Solutions
- Non-Fungible Tokens (NFTs) and Token Standards (ERC-721, ERC-1155)
- Decentralized Finance (DeFi) and Decentralized Autonomous Organizations (DAOs)
- Integration of Oracles and External Data Feeds
- Industry Applications and Case Studies
- Emerging Trends and Future Directions in Blockchain Technology