## **Course Title: Web3 Programming Language**

## **Course Description**

| Course Title              | Duration                |                 |
|---------------------------|-------------------------|-----------------|
| Web3 Programming Language | Total Classes: 54       | 3 Days per week |
|                           | Total Hours : 162 Hours | 3 Hours per day |

## **Course Module Outline**

| Topic Name                           | Class No:   | Session Coverage/Description  |
|--------------------------------------|-------------|---|
|                                      | HTML (Hyper | Text Markup language)   |
| Introduction to HTML                 | Class 1     | <ul> <li>Basic structure of an HTML document (head, body, DOCTYPE).</li> <li>Common tags: headings, paragraphs, links, images.</li> <li>Creating a simple webpage.</li> </ul>               |
| Forms and Table                      | Class 2     | <ul> <li>Creating forms (input types, form attributes).</li> <li>Working with tables (table, tr, td, th).</li> <li>Building a contact form and a data table.</li> </ul>                     |
|                                      | Class 3     | <ul><li>Review All About HTML</li><li>Project Build</li></ul>   |
|                                      | CSS (Caso   | ading Style Sheets)   |
| Introduction to CSS                  | Class 4     | <ul> <li>What is CSS? Basic syntax, including selectors, properties, values</li> <li>Inline, internal, and external CSS</li> <li>Styling text (color, font, size) and background</li> </ul> |
|                                      | Class 5     | <ul> <li>Understanding the box model (content, padding, border, margin).</li> <li>CSS positioning (static, relative, absolute, fixed).</li> <li>Floats and clears for layout.</li> </ul>    |
| CSS Box Model & Layout               | Class 6     | <ul> <li>Understanding the box model (content, padding, border, margin).</li> <li>CSS positioning (static, relative, absolute, fixed).</li> <li>Floats and clears for layout.</li> </ul>    |
| Flexbox Layout                       | Class 7     | <ul> <li>Introduction to Flexbox (container, items, properties).</li> <li>Aligning items, justifying content.</li> <li>Building a responsive layout with Flexbox.</li> </ul>                |
| Grid Layout                          | Class 8     | <ul> <li>Basics of CSS Grid (defining columns and rows).</li> <li>Placing items on the grid.</li> <li>Creating a grid-based layout for a webpage.</li> </ul>                                |
| Responsive Design with Media Queries | Class 9     | <ul> <li>Introduction to responsive design.</li> <li>Media queries for different devices.</li> <li>Building a fully responsive web page.</li> </ul>   |
| Project                              | Class 10    | <ul> <li>Build a small project combining HTML and CSS,<br/>e.g., a personal portfolio website.</li> </ul>   |

| Topic Name                             | Class No: | Session Coverage/Description   |  |
|--|-----------|--|--|
|  | Bootstrap | and Tailwind CSS   |  |
| Introduction to Bootstrap              | Class 11  | <ul> <li>Setting up Bootstrap, understanding the grid system.</li> <li>Common Bootstrap components (Navbar, cards, buttons).</li> <li>Customizing Bootstrap with your own CSS.</li> </ul>              |  |
| Introduction to Tailwind CSS           | Class 12  | <ul> <li>Setting up Tailwind, basic utility-first approach.</li> <li>Tailwind classes for layout, typography, spacing.</li> <li>Building a simple web page with Tailwind.</li> </ul>                   |  |
| Project By Tailwind CSS or             | Class 13  | Project 1.   |  |
| Bootstrap                              | Class 14  | <ul> <li>Project 2 (Overview and Presentation)</li> </ul>  |  |
|  | J         | avaScript  |  |
| JavaScript Basics                      | Class 15  | <ul> <li>Introduction to JavaScript (variables, data types).</li> <li>Operators, conditionals (if, else, switch).</li> <li>Writing basic JS scripts and linking to HTML.</li> </ul>                    |  |
| Functions and Loops                    | Class 16  | <ul> <li>Functions (declaration, parameters, return values).</li> <li>For, while, and do-while loops.</li> <li>Building small programs with loops and functions.</li> </ul>                            |  |
| JavaScript Arrays and<br>Objects       | Class 17  | <ul> <li>Introduction to arrays (methods like push, pop, shift).</li> <li>Introduction to objects (key-value pairs, accessing values).</li> <li>Practical examples with arrays and objects.</li> </ul> |  |
| DOM Manipulation                       | Class 18  | <ul> <li>Introduction to the Document Object Model (DOM).</li> <li>Selecting and modifying HTML elements with JS.</li> <li>Adding interactivity (click events, input handling).</li> </ul>             |  |
| JavaScript Events                      | Class 19  | <ul> <li>Understanding events (click, input, submit).</li> <li>Event listeners and event handling in<br/>JavaScript.</li> <li>Practical: Building a simple interactive form.</li> </ul>                |  |
| JavaScript Asynchronous<br>Programming | Class 20  | <ul> <li>Introduction to asynchronous programming<br/>(callbacks).</li> <li>Promises and async/await.</li> <li>Fetching data from an API using fetch().</li> </ul>                                     |  |
| JavaScript Project                     | Class 21  | <ul> <li>Build a simple app (e.g., a to-do list) combining<br/>DOM manipulation, event handling,</li> <li>and basic API usage</li> </ul>   |  |
|  | ReactJS   |  |  |
| Introduction to React                  | Class 22  | <ul> <li>What is React? Setting up a React project<br/>(using Create React App).</li> <li>Understanding JSX and components.</li> </ul>   |  |

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|--|-----------|--|
|  |           | Creating functional components.  |
|  |           | Managing state with useState.  |
| React State and Props                  | Class 23  | <ul> <li>Passing data with props.</li> </ul>                                       |
|  |           | Practical: Building a simple counter app.  |
|  |           | Handling events in React (onClick, onChange).                                      |
|  |           | Conditional rendering (if-else, ternary  |
| React Events and                       | Class 24  | operators).  |
| Conditional Rendering                  |           | Practical: Display different content based on                                      |
|  |           | state.   |
| React Forms and Input                  | Class 25  | Creating forms in React.   |
| Handling                               |           | <ul> <li>Handling form input and submissions.</li> </ul>                           |
| панинн                                 |           | <ul> <li>Practical: Build a registration form.</li> </ul>                          |
| React Effect Hook                      |           | <ul> <li>Introduction to useEffect for side effects.</li> </ul>                    |
| (useEffect)                            | Class 26  | <ul> <li>Using useEffect for fetching data from APIs.</li> </ul>                   |
| (useemect)                             |           | <ul> <li>Practical: Display data from an API.</li> </ul>                           |
|  |           | Introduction to React Router for navigation.                                       |
| React Router                           | Class 27  | <ul> <li>Creating routes and navigation links.</li> </ul>                          |
|  |           | Building a multi-page app with React Router.                                       |
|  |           | Introduction to React Router for navigation.                                       |
| React Router                           | Class 28  | <ul> <li>Creating routes and navigation links.</li> </ul>                          |
|  |           | Building a multi-page app with React Router.                                       |
| Boast Broinst                          | Class 20  | Build a simple React project (movie search app                                     |
| React Project                          | Class 29  | or e-commerce).  |
|  |           | Python   |
|  |           | <ul> <li>What is Python? Setting up Python on your</li> </ul>                      |
| Introduction to Python                 | Class 30  | computer.  |
| introduction to 1 yenon                |           | <ul> <li>Variables, data types, and basic operations.</li> </ul>                   |
|  |           | Writing your first Python script.  |
|  |           | <ul> <li>Conditional statements (if, elif, else).</li> </ul>                       |
| Python Control Structures              | Class 31  | • Loops (for, while).  |
|  |           | Practical: Simple number guessing game.  |
| Data Types                             | Class 32  | Data Types, Functions  |
| Data Types                             | Class 32  | Error Handling, Modifiers  |
| Project                                | Class 33  | Small Project Overview and Presentation  |
|  |           | Blockchain   |
|  |           | Understanding Blockchain: Transactions,  |
|  | Class 34  | Nodes, and Wallets   |
| Introduction to Blockchain and Web3.js | Cluss 54  | Introduction to Web3.js: A JavaScript Library                                      |
|  |           | for Blockchain Interaction   |
|  | Class 35  | Connecting Your Web Page to Ethereum Using   |
|  |           | Web3.js  |
|  |           | Hands-on: Fetching and Displaying Blockchain  Pata in Your Web Page Using Web 3 is |
|  |           | Data in Your Web Page Using Web3.js  |
|  | Class 3C  | Structure and Components     Garage Machanisms (Proof of World Broof)              |
|  | Class 36  | Consensus Mechanisms (Proof of Work, Proof     of Stake)                           |
| Ethoroum Douglasses                    | Class 27  | of Stake)  |
| Ethereum Development                   | Class 37  | Ethereum Virtual Machine   |

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|---|-----------|---|
|   |           | Connecting Your Web Page to Ethereum Using  |
|   |           | Web3.js   |
|   |           | What are Smart Contracts? Overview and Use  |
|   | Class 38  | Cases   |
|   |           | Writing Simple Smart Contracts Using Solidity   |
| Smart Contract Basics                         | Class 39  | Deploying Smart Contracts on a Local  |
|   |           | Blockchain (Using Ganache and Remix IDE)  |
|   |           | <ul> <li>Hands-on: Writing a Simple Voting Smart<br/>Contract in Remix IDE</li> </ul>                             |
|   |           | Using Web3.js to Read and Write Data from   |
|   |           | Smart Contracts   |
| Interacting with Smart                        | Class 40  | Handling Blockchain Transactions and Gas Fees   |
| Contracts Using JavaScript                    |           | in JavaScript   |
|   | Class 44  | Hands-on: Creating a Web Interface to Interact  |
|   | Class 41  | with a Smart Contract   |
|   |           | Building a Responsive Dashboard for a DApp  |
|   | Class 42  | Using Bootstrap   |
| Integrating Bootstrap for                     | C1033 42  | Adding Bootstrap Forms and Components for   |
| Web3 User Interfaces                          |           | Blockchain Interactions   |
|   | Class 43  | <ul> <li>Hands-on: Creating a Responsive User</li> <li>Interface for a DApp with Bootstrap and</li> </ul>         |
|   | Class 45  | Web3.js   |
|   | Class 44  | <ul> <li>Understanding Crypto Wallets (MetaMask,</li> </ul>   |
|   |           | Trust Wallet) and Web3 Integration  |
|   |           | Connecting a Web Page to MetaMask Using   |
| Wallet Integration with                       |           | JavaScript  |
| JavaScript                                    |           | Handling Wallet Authentication in Web3  |
|   | Class 45  | Applications  |
|   |           | Hands-on: Building a Wallet Connection and  |
|   |           | Authentication Interface     Introduction to ERC-20 Tokens and Token  |
|   |           | Standards   |
|   | Class 46  | Using JavaScript to Interact with Token   |
| Tokens and Payments with                      |           | Contracts   |
| Web3.js                                       | Class 47  | Implementing Cryptocurrency Payments in a   |
|   |           | Web3 Application  |
|   |           | Hands-on: Building a Simple Token Transfer  |
|   |           | Interface   |
| Creating and Displaying NFTs Using JavaScript | Class 48  | What are NFTs (Non-Fungible Tokens)?  Understanding FBC 731 Standard  |
|   |           | Understanding ERC-721 Standard  |
|   |           | <ul> <li>Using Web3.js to Fetch and Display NFT Data</li> <li>Hands-on: Creating a Web Page to Display</li> </ul> |
|   |           | NFTs from a Wallet  |
| Decentralized Storage and                     |           | Introduction to Decentralized Storage: IPFS   |
|   |           | and Its Use in Web3   |
|   | Class 49  | Using JavaScript to Upload and Retrieve Files   |
| IPFS  |           | from IPFS   |
|   |           | Hands-on: Integrating IPFS with a Web Page to   |
|   |           | Store and Display Files   |

| Topic Name                                  | Class No: | Session Coverage/Description  |
|---|-----------|---|
| Security Best Practices in Web3 Development | Class 50  | <ul> <li>Common Security Vulnerabilities in Web3         Applications     </li> <li>Safeguarding User Data and Wallet         Connections     </li> <li>Hands-on: Implementing Basic Security         Features in a Web3 DApp     </li> </ul> |
| Security and Best Practices                 | Class 51  | <ul> <li>Common Vulnerabilities and Security Audits (4 hours)</li> </ul>  |
|   | Class 52  | Code Quality, Gas Optimization (4 hours)  |
| Final Project                               | Class 53  | <ul><li>Project Overview: Building a Full Web3 DApp</li><li>Designing a User-Friendly Interface</li></ul>   |
|   | Class 54  | <ul> <li>Integrating Smart Contracts, Wallets, and<br/>Blockchain Interactions</li> <li>Hands-on: Developing and Deploying a<br/>Complete Web3 DApp</li> </ul>  |