Learning Track: Front-end Web Development

Duration: **12 weeks**

Training (Hybrid): **Week 1-10**

Capstone Project (Virtually): **Week 11-12**

Week	Module	Module Contents
1-3	The first phase, Foundation, equips fellows with the fundamental concepts of web development, covering HTML, CSS, and JavaScript, as well as command line fundamentals and API consumption.	**HTML Files and tags** **CSS Concepts** ● What is CSS? ● How CSS works with HTML ● CSS syntax and selectors ● Inline, internal, and external CSS ● The cascade, inheritance, and specificity **Typography-** ● Choosing and embedding fonts (Google Fonts, custom fonts) ● Font properties: size, weight, style, and line-height ● Text alignment, spacing, and decoration ● Responsive typography using em, rem, and media queries **Box Model-** ● Understanding the box model ● Margins, borders, padding, and content ● Width, height, and box-sizing ● Display properties: block, inline, and inline-block **Preprocessors:** ● Introduction to CSS preprocessors (Sass, LESS) ● Variables, nesting, and partials ● Mixins, functions, and extends ● Compiling Sass/LESS to CSS

Responsive Design-
- Understanding responsive design principles
- Media queries: syntax and usage
- Mobile-first design approach
- Fluid layouts, viewport units (vw, vh), and responsive images

CSS Transitions and Animations
- CSS transitions: properties, timing functions, and delays
- Keyframes and animations
- Transformations: scale, rotate, skew, and translate
- Chaining animations and transitions

Introduction to JavaScript

JavaScript for Beginners:
- Introduction to JavaScript
- Alerts and console logging
- Integers
- strings
- Variables
- Undefined variables and modifying values of variables
- Boolean operators
- Comparing values
- If statements
- While loop
- for loops
- Defining functions
- Event handling
- setting an element inner HTML
- DOM
- Using JavaScript to Manipulate the DOM

		More Javascript Concepts
		- Arrays - Text areas and getting the value of inputs - Functions - parameters and return values - Multiple parameters in functions - Flexible function parameters - Classes explained - Class constructor - Instance variables, and static variables - Extending classes - Encapsulation - Abstraction - Consuming RESTful APIs, Parsing JSON to extract meaningful data **Mini Project/ Assessment** **Online Courses:** - FreeCodeCamp CSS Challenges - CSS-Tricks Almanac - MDN Web Docs (CSS)

| 4-7 | In the second phase, Technical, fellows will be introduced to a JavaScript framework like React. They will learn what a framework is all about, initializing react project and the different components in react (class and functional component)

In this phase, fellows will take a deep dive into react. They will be learning Routing in React, and the use of react hooks (use Effect, use State, use Context etc.).

Fellows will also learn how to authenticate and authorize users by leveraging the power of local storage and session. They will also be learning how to consume API; test reacts applications and State management in React. | **Introduction to ReactJs:**
● Project initialization,
● Framework deep dive,
● Functional Component,
● Class vs Functional Component,
● what is State?
● State in Functional component,
● Counter functional component,
● Counter class component,
● Props in-class component,
● Props in functional component,
● Previous data in functional component,
● Jsconfig, Init layout + styles,
● style component,
● Bootstrap

Intro to React Hooks and Routing:
Routing using react-router,
use Effect, useState, useContext, useRef
Consuming Restful API with Axios and JavaScript fetch API.

Authentication:
● Login & Register page
● add use Form package
● Validators
● Custom validators
● Register User
● create a user profile
● Handle register response
● Handle Login
● Local Storage and Session Storage
● Watch auth state changes
● Display UI auth changes
● Handle Logout

Testing in React:
End-to-End Testing of theUI, Integration Testing,

State Management:

● What is Redux
● Connect function
● Dispatch action + simple reducer |

		● Add logger to dispatch ● Redux Promises ● Middleware improvements ● Add API ● Reducer improvements ● Spinner component ● Redux thunk ● Caching improvements ● Enhancers **Mini Project/ Assessment** React Introducing JSX ● Rendering Elements, ● Components and Props, ● State and Cycle, ● Handling Events, ● Conditional Rendering, ● List and Keys, Forms, ● Lifting State Up, Composition ● Inheritance, **Mini Project/ Assessment**
8 - 9	Understanding the React Rendering Process Rendering in Large-Scale Applications	● React component lifecycle ● What triggers a render in React ● Virtual DOM vs. Real DOM ● Reconciliation process ● Differences between class components and functional components in rendering ● Rendering in the context of large React applications ● The role of server-side rendering (SSR) and static site generation (SSG) ● Integrating SSR with frameworks like Next.js ● Strategies for managing and optimizing rendering in large codebases
10	Soft Skill Training	● Online freelancing and remote jobs ● Soft Skill training (Communication, Team work, Leadership, Critical Thinking and Problem Solving, etc.)
11	**CERTIFICATION EXAMINATION PREPARATION**	
12	**& CAPSTONE PROJECT**	