CourseId SD-FER-001 React

Day	Subject	Topics to be Covered
Day 1	Introduction to HTML (Part 1)	Basic HTML structure, Doctype, Meta tags, HTML elements, HTML attributes, HTML comments
Day 2	Introduction to HTML (Part 2)	Introduction to style tags, Header, Span, Paragraph, HTML ID, Tags
Day 3	Formatting HTML Page (Part 1)	Text formatting, Adding Web links and images
Day 4	Formatting HTML Page (Part 2)	Inline and external styling
Day 5	Creating Tables and Forms (Part 1)	Introduction to tables and forms, use cases of tables and forms
Day 6	Creating Tables and Forms (Part 2)	Table implementation, <td>,<th>,<td> tags, integration of input fields in forms, collecting data on form submission
Day 7	Create a Simple Web Page	Creating a simple web page, implementation of required tags and styling
Day 8	Introduction of React (Part 1)	Advantages of using React, client-server architecture, single page apps
Day 9	Introduction of React (Part 2)	Examples of whole app reloading vs single component render, re-renderings
Day 10	Environment Setup	NPM vs NPX vs Yarn, installation of dependencies and node modules
Day 11	Understanding Real and Virtual DOM	Introduction to DOM, working and benefits of virtual DOM
Day 12	Introduction to Event Loop	Understanding event loop mechanism
Day 13	JavaScript (ES6) Basics (Part 1)	Let, Const, Var keywords, their scopes with examples
Day 14	JavaScript (ES6) Basics (Part 2)	Functions, Arrow functions, Pass by value and reference, parameters and arguments passing with examples

Day 15	JavaScript (ES6) Basics (Part 3)	Spread operator, use cases and comparison with concat with examples
Day 16	JavaScript (ES6) Basics (Part 4)	For/of, Map Objects, Promises
Day 17	JavaScript (ES6) Basics (Part 5)	Promises, String.includes(), String.startsWith(), String.endsWith(), Object entries, Array.from()
Day 18	Create Your First React Application (Part 1)	Creating functional components, introduction to JSX
Day 19	Create Your First React Application (Part 2)	Introduction to folder structure, package.json, index.html, App.js, global CSS
Day 20	Understanding Props and State (Part 1)	What are props? How to pass data with props?
Day 21	Understanding Props and State (Part 2)	What is state? How to update a component's state?
Day 22	Understanding Props and State (Part 3)	State changes impact, using state in every component
Day 23	Event Handling in React (Part 1)	Introduction to events and event handlers, Mouse events (onClick, onDrag)
Day 24	Event Handling in React (Part 2)	Keyboard events (onKeyDown, onKeyPress, onKeyUp), Focus events (onFocus, onBlur)
Day 25	Destructuring in JavaScript	Introduction to destructuring techniques
Day 26	Conditional Rendering in React	Introduction to conditional rendering with examples
Day 27	Lists and Keys in React	Introduction to lists and keys with examples
Day 28	Forms and Controlled Components (Part 1)	Introduction to controlled and uncontrolled components, DOM and useState handling, understanding of component re-rendering using useState
Day 29	Forms and Controlled Components (Part 2)	Data flow and form handling using useState with examples

Day 30	Forms and Controlled Components (Part 3)	Field validation, error messages, implementation of regex for validation using useState
Day 31	Forms and Controlled Components (Part 4)	Recap on HTML forms, onSubmit event handling, validation messages
Day 32	Forms and Controlled Components (Part 5)	Form handling using React Hook Form library
Day 33	Component Lifecycle (Part 1)	Introduction to component lifecycle: Initialization, Mounting, Updating, Unmounting
Day 34	Logical Operators in JSX	Implementation of logical operators in JSX components
Day 35	Introduction to Hooks (Part 1)	What is hook, introduction to useState() hook with examples
Day 36	Introduction to Hooks (Part 2)	Introduction to useEffect() hook, execution steps, dependency, implementation with examples
Day 37	Introduction to Hooks (Part 3)	useRef() implementation, elements access levels with examples
Day 38	Introduction to Hooks (Part 4)	useCallback(), useMemo() implementation, resolving re-renders using these hooks
Day 39	Introduction to Hooks (Part 5)	Introduction to useContext(), implementation of global provider on routes with examples
Day 40	Custom Hooks in React	Creating custom hooks, implementation with examples, passing props and its handling
Day 41	React Router Dom (Part 1)	Introduction to React Router Dom library, installation, routing, implementation with simple examples
Day 42	React Router Dom (Part 2)	Implementation of nav bar with route switching, React Router API: <Router>,<Link>,<Route>
Day 43	React Router Dom (Part 3)	Component switching, dynamic variables passing using pathParams, states, nested routes, setting default route, with examples

Day 44	React Context API (Part 1)	Introduction to React Context, components and props in react, prop drilling
Day 45	React Context API (Part 2)	Use cases of React Context API, Redux vs. React Context API, React Context with functional components
Day 46	Working with APIs (Part 1)	Introduction to APIs, understanding API workflow with client-server communication, introduction to AXIOS, API endpoints
Day 47	Working with APIs (Part 2)	Implementation of CRUD operations with 3rd party dummy APIs, handling error messages, understanding then(), catch() cases
Day 48	Working with APIs (Part 3)	Promises, implementation of resolve(), reject(), handling API response data and displaying contents in UI, implementation of loading states
Day 49	Async/Await in JavaScript	Introduction to async/await keywords, implementation with API calls
Day 50	Try-Catch Statements in JavaScript	Working with try, catch, finally, throw blocks, error handling

Day 51	Error Boundaries in React	Introduction to error boundaries, how to handle errors using Error Boundaries in React
Day 52	Higher-Order Components in React	Understanding Higher-Order Components (HOCs), use cases of HOCs, implementation with examples
Day 53	Rendering Optimization (Part 1)	Understanding of unnecessary rendering, memo() hook, useMemo() and useCallback() hooks with examples
Day 54	Rendering Optimization (Part 2)	Code splitting, lazy loading implementation with examples
Day 55	React Suspense and Concurrent Mode (Part 1)	Introduction to React Suspense and Concurrent mode, use cases and benefits
Day 56	React Suspense and Concurrent Mode (Part 2)	Implementing fallbacks and suspense with lazy loaded components

Day 57	Deployment (Part 1)	Introduction to Git, GitHub, commands of Git, pushing local repository to GitHub
Day 58	Deployment (Part 2)	Introduction to Heroku and Netlify, deployment process on these platforms, dealing with common errors during deployment
Day 59	Introduction to Redux (Part 1)	Why Redux, basic concepts of Redux, understanding the flow of Redux
Day 60	Introduction to Redux (Part 2)	Actions, Reducers, Store in Redux
Day 61	Introduction to Redux (Part 3)	Middleware in Redux, Thunk Middleware, API calls with Thunk
Day 62	Redux with React	Introduction to react-redux library, how to connect Redux with a React application
Day 63	Testing in React (Part 1)	Introduction to Jest, installation of Jest, understanding how Jest works, writing simple tests with Jest
Day 64	Testing in React (Part 2)	Introduction to Enzyme, installation of Enzyme, shallow rendering, full rendering, snapshot testing
Day 65	Testing in React (Part 3)	Mocking in Jest, testing async code, running tests in CI/CD
Day 66	Review and Q&A	Recap of the entire course, answering questions, providing resources for further learning

Course NodeJS

Day	Subject	Topics to be Covered
1	Introduction to Node.js	1. Overview of Node.js 2. Benefits of Node.js 3. Event-driven, non-blocking model 4. Brief history of Node.js
2	JavaScript Fundamentals	1. Variables and data types 2. Operators 3. Control structures 4. Functions
3	JavaScript Asynchronous Programming	1. Callback functions 2. Promises 3. Async/Await
4	Node.js Setup	1. Installing Node.js 2. NPM (Node Package Manager) 3. Creating a basic Node.js app 4. Running a Node.js app
5	Understanding Servers	1. What is a server? 2. Client-Server Architecture 3. Creating a basic HTTP server using Node.js 4. Introduction to Express.js
6	Introduction to MongoDB	1. NoSQL Databases 2. Overview of MongoDB 3. Installing MongoDB 4. Basic MongoDB operations
7	API and Endpoints	1. Introduction to APIs 2. Understanding endpoints 3. RESTful APIs 4. Creating a simple API with Express.js
8	Advanced Node.js	1. Modules in Node.js 2. File system module 3. Path module 4. Event module
9	Using NPM	1. Understanding packages 2. Installing packages 3. Updating and removing packages 4. package.json file
10	Version Control with Git	1. Basics of Git 2. Creating a Git repository 3. Git commands 4. Using GitHub
11	Express.js Framework	1. Understanding middleware 2. Handling routes with Express.js 3. Serving static files 4. Error handling
12	Introduction to Mongoose	1. What is Mongoose? 2. Connection between Node.js and MongoDB using Mongoose 3. Mongoose schemas and models 4. CRUD operations with Mongoose

13	Handling HTTP Requests	1. Understanding HTTP methods (GET, POST, PUT, DELETE) 2. Implementing methods in Express.js 3. Request and response objects in Express.js
14	Introduction to Postman	1. Overview of Postman 2. Creating requests in Postman 3. Testing APIs with Postman
15	Schema Validation with Mongoose	1. Understanding schema validation 2. Built-in validators in Mongoose 3. Custom validators 4. Asynchronous validators
16	MongoDB Data Types and Queries	1. Data types in MongoDB 2. Basic queries (find, findOne) 3. Update operations (findOneAndUpdate, findByIdAndUpdate) 4. Delete operations (findOneAndDelete, findByIdAndDelete)
17	Advanced MongoDB Queries	1. Logical operators in MongoDB queries 2. Array operators 3. Query projection
18	Async/Await in JavaScript	1. Understanding Async/Await 2. Error handling with Async/Await 3. Using Async/Await with Mongoose
19	Node.js Application Structure	1. MVC (Model-View-Controller) pattern 2. Organizing a Node.js application 3. Understanding routes, models, and controllers
20	Test 1	Review and assessment of the topics covered
21-24	MongoDB Aggregation	1. Introduction to MongoDB aggregation 2. Aggregation stages (match, group, sort, etc.) 3. Complex aggregation pipelines 4. Using aggregation in a Node.js application
25	Introduction to Middleware	1. Understanding middleware in Express.js 2. Types of middleware 3. Creating and using custom middleware
26	Authentication in Node.js	1. What is authentication? 2. User registration and login 3. Password hashing with bcryptjs 4. Generating and verifying JSON Web Tokens (JWT)
27	Authorization in Node.js	1. What is authorization? 2. Role-based authorization 3. Implementing authorization middleware
28	Test 2	Review and assessment of the topics covered

29-32	Building a Full-Stack Application	1. Planning the application 2. Setting up the backend 3. Implementing user authentication and authorization 4. Building the frontend
33	Introduction to Database Management Systems (DBMS)	1. Overview of DBMS 2. Types of DBMS (Relational, NoSQL) 3. SQL vs NoSQL
34-35	Relational Databases and SQL	1. Basics of SQL 2. Creating tables and inserting data 3. Querying data with SQL 4. Updating and deleting data
36	Test 3	Review and assessment of the topics covered
37-49	Project Work	Project development and assessment
50	Interview Preparation	1. Common Node.js interview questions 2. JavaScript interview questions 3. MongoDB interview questions 4. Interview tips and best practices

Course HTML CSS

Day	Subject	Topics to be Covered
1	Introduction to HTML	- Explanation of HTML and its function in web development Learning the foundational structure of an HTML document Process of creating and saving an HTML file
2	HTML Text Formatting	- Adding headings, paragraphs, and line breaks in HTML Familiarizing with text formatting tags: bold, italic, underline
3	Hyperlinking in HTML	- Incorporating anchor tags to navigate between web pages
4	Unordered Lists in HTML	- Crafting unordered lists (bulleted lists)
5	Ordered Lists in HTML	- Developing ordered lists (numbered lists) Nesting lists to form hierarchical structures
6	Working with Images in HTML	- Inserting images via the img tag Configuring image attributes: source, alt text, width, height
7	HTML Tables	- Forming tables utilizing table, tr, td tags Adding headers to tables using the th tag
8	Styling HTML Tables with CSS	- Applying CSS to style tables
9	HTML Forms	- Building HTML forms with form, input, and textarea tags
10	Diverse Form Inputs	- Exploring types of form input fields: text, checkbox, radio buttons, select Understanding the concept of form validation
11	Introduction to CSS	- Introduction to CSS and its function in web design Differentiating between inline CSS, internal CSS, and external CSS
12	CSS Selectors	- Understanding selectors and declaration blocks Distinguishing between class selectors, ID selectors, and element selectors
13	CSS Properties	- Manipulating various CSS properties: color, background, font, margin, padding
14	CSS Box Model	- Introduction to the CSS box model: content, padding, border, margin

15	Box Model Properties	- Application of box model properties to HTML elements
16	CSS Layouts	- Introduction to various CSS layouts: fixed, fluid, responsive
17	CSS Positioning	- Building simple layouts using CSS positioning: static, relative, absolute
18	Flexbox in CSS	- Understanding the CSS Flexbox layout model Crafting flexible layouts with flex containers and flex items
19	CSS Grid Layout	- Introduction to CSS Grid layout Forming grid-based layouts using rows and columns
20	CSS Transitions	- Adding transitions to HTML elements: hover effects, smooth transitions
21	CSS Animations	- Creating basic animations using CSS keyframes
22	Responsive Web Design	- Introduction to responsive web design Applying media queries to adapt layouts for varying devices and screen sizes
23-27	Project-based Learning	- Assignment of a small web development project Applying HTML and CSS knowledge to create a website from scratch Providing guidance and support throughout the project Encouraging creativity and experimentation
28-30	Project Completion and Review	- Students' presentation of their projects to the class Review of key concepts and addressing any queries or issues encountered during the project

JAVASCRIPT COURSE

Day	Subject	Topics to be Covered
1	Introduction to JavaScript	- Purpose and role of JavaScript in web development Inline JavaScript, internal JavaScript, and external JavaScript Creating and linking an external JavaScript file
2	JavaScript Variables and Data Types (Part 1)	- Understanding variables and data types in JavaScript Declaring and initializing variables Variable naming conventions and best practices
3	JavaScript Variables and Data Types (Part 2)	- Recap of variables and data types Further exploration of data manipulation and type conversions
4	JavaScript Operators and Expressions (Part 1)	- Arithmetic operators (+, -, *, /, %) Comparison operators (==, ===, !=, !==, >, <, >=, <=)
5	JavaScript Operators and Expressions (Part 2)	- Logical operators (&&,
6	JavaScript Arrays (Part 1)	- Creating and manipulating arrays Accessing array elements
7	JavaScript Arrays (Part 2)	- Array methods (push, pop, shift, unshift, splice, slice) Iterating over arrays using loops (for loop, forEach loop)
8	JavaScript Objects (Part 1)	- Understanding objects and their properties Creating and accessing object properties
9	JavaScript Objects (Part 2)	- Object methods JSON notation (JavaScript Object Notation)
10	JavaScript Functions (Part 1)	- Declaring and invoking functions Function parameters and arguments
11	JavaScript Functions (Part 2)	- Return statements Function expressions and function declarations

12	JavaScript Conditionals (Part 1)	- If statements, else statements, and else if statements
13	JavaScript Conditionals (Part 2)	- Switch statements Ternary operators
14	JavaScript Loops (Part 1)	- For loops
15	JavaScript Loops (Part 2)	- While loops Do-while loops Loop control statements (break, continue)
16	JavaScript DOM Manipulation (Part 1)	- Introduction to the Document Object Model (DOM) Selecting HTML elements using JavaScript
17	JavaScript DOM Manipulation (Part 2)	- Modifying HTML elements (changing text, attributes, styles) Creating and removing HTML elements dynamically
18	JavaScript Events (Part 1)	- Handling events in JavaScript Common events (click, mouseover, keydown, etc.)
19	JavaScript Events (Part 2)	- Event listeners and event handlers
20	JavaScript Form Validation	- Validating user input in forms using JavaScript Checking for required fields Validating email addresses, numbers, and other specific formats
21	JavaScript Error Handling	- Understanding JavaScript errors and exceptions Using try-catch blocks to handle errors
22	JavaScript Date and Time	- Working with dates and times in JavaScript Creating Date objects Formatting dates and times
23	JavaScript Local Storage	- Introduction to the browser's Local Storage API Storing and retrieving data using localStorage Managing and manipulating data in local storage
24-33	Project-based Learning	- Assign a web development project incorporating HTML, CSS, and JavaScript Application of knowledge to create an interactive and dynamic website or web application

		Guidance, support, and encouragement for creativity and experimentation
34-35	Project Presentation and Review	- Students present their projects to the class Review key concepts Address questions or difficulties encountered during the project