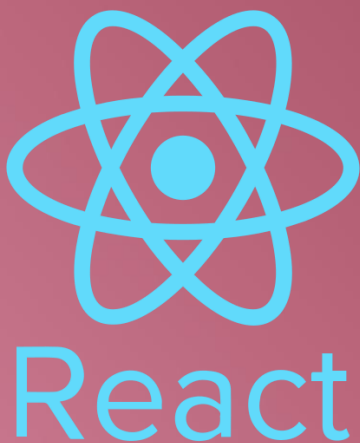


SKILLSPROUT: TECHS FOR TOMMOROW

# MASTER FULL STACK DEVELOPMENT

Complete Beginner to Advanced



Detailed  
Course Syllabus

# CONTENTS

## FOUNDATION OF HTML AND CSS

### Fundamentals of HTML

- Introduction to HTML
- Basic structure of an HTML document
- Common tags (headings, paragraphs, links, images, lists)
- Form elements and attributes
- Input types and validation
- Semantic HTML tags (header, nav, section, article, footer)
- **Project: First landing page with HTML**

### Getting Started with CSS & GitHub

- Inline, internal, and external CSS
- Basic selectors and properties (colour, background, font, text alignment)
- Box model (margin, border, padding, content)
- Positioning (static, relative, absolute, fixed)
- Flexbox basics
- Introduction to git & GitHub and its setup
- **Project: Creating a simple layout with CSS**

## JAVASCRIPT ESSENTIALS AND ADVANCED TECHNIQUES

### JavaScript Essentials

- Variables, data types, and operators
- Basic syntax and control structures (if statements, loops)
- Introduction to functions
- Let var and constant
- Hoisting and scopes
- Closure
- Introduction to HOF
- DOM manipulation (getElementById, querySelector)
- Event handling (click, hover, etc.)
- Event bubbling and capturing

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## Advanced Concepts of JavaScript

- Arrow functions
- Destructuring arrays and objects
- Working with arrays (methods like push, pop, map, filter)
- Objects and their properties
- Working with asynchronous JavaScript (callbacks, promises, async/await)

## INTRODUCTION TO REACT AND COMPONENT BASICS

### Introduction to React and JSX

- What is React and why use it
- Setting up a React environment (using Create React App)
- Installing bundlers
- React.createElement and render method
- Introduction to JSX
- Tailwind CSS

### Components, Props, and State

- Creating and rendering components
- Creating different components
- Understanding props
- Creating cards with props
- React reconciliation and React fibers
- Understanding keys in React
- Understanding the useState hook
- **Project: Creating a simple React project**

## REACT ADVANCED FEATURES AND ROUTING

### Advanced Hooks and State Management

- Understanding the useEffect hook
- Clean-up function of useEffect
- Custom hooks
- State lifting
- Context API

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## UI Functionalities and React-Routing

- Introduction to React Router DOM
- Creating different paths
- Creating an error page using `useRouteError` hook
- Creating children routes
- Understanding types of routing (SSR vs CSR)
- Single Page Application and dynamic routing
- Using `useParams` hook
- Applying event handlers

## CSS FRAMEWORKS AND ADVANCED REACT CONCEPTS

### Getting Started with Frameworks

- Introduction to Bootstrap / Tailwind
- Setting up Bootstrap/Tailwind
- Grid system and responsive design
- Commonly used classes (buttons, cards, alerts)

### Advanced React Concepts

- Higher-order components
- Lazy loading (on-demand loading)
- Controlled vs uncontrolled components

## REACT LIFECYCLE AND PERFORMANCE OPTIMIZATION

### Class Components

- Creating class-based components
- States in class components
- Lifecycle methods of React

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## Performance optimization

- Error boundaries
- Fragments and StrictMode
- Performance optimization with React.memo and useCallback

## STATE MANAGEMENT WITH REDUX

### Introduction to Redux

- What is Redux and why use it
- Setting up Redux
- Actions, reducers, and the store
- Connecting Redux with React components

### Advanced Redux

- Advanced Redux concepts (middleware, async actions)
- Combining reducers
- Project work: Integrating Redux into the Recipe app

## PROJECT IMPLEMENTATION

### Setting Up the E-commerce Website

- Planning the project structure
- Setting up the environment with Create React App
- Installing necessary dependencies (React Router, Redux, Tailwind CSS, etc.)
- Creating the basic layout (header, footer, product listing)

### Implementing Functionality and deployment

- Adding product data and displaying products
- Implementing product details page
- Adding a shopping cart with Redux
- Deployment of react front end on hosting platforms

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## INTRODUCTION TO NODE.JS AND EXPRESS

### Node.js Basics and Modules

- Introduction to Node.js and its architecture
- Setting up Node.js and creating a basic server
- Understanding the Node.js event loop and asynchronous programming
- Core modules and third-party packages
- Working with NPM for package management
- Creating and managing custom modules

### Basics of Express.js and RESTful APIs

- Setting up an Express application
- Understanding routing and middleware in Express
- Creating a basic RESTful API
- CRUD operations and data handling
- Implementing error handling and validation

## ADVANCED EXPRESS AND API DESIGN

### Advanced Express Features

- Authentication and authorization (JWT, OAuth)
- Advanced routing techniques and error handling
- Integrating third-party services (e.g., payment gateways)

### API Design and Documentation

- Designing scalable and maintainable APIs
- Documenting APIs using tools like Swagger
- Testing APIs with Postman or similar tools

## INTRODUCTION TO MONGODB

### MongoDB Basics

- Introduction to NoSQL and MongoDB

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- Setting up MongoDB and using MongoDB Atlas
- Basic CRUD operations and data modelling

## Advanced MongoDB

- Schema design and data relationships
- Aggregation framework and indexing
- Performance optimization and data validation

## AUTHENTICATION AND CI/CD PIPELINES

### Authentication and Authorization

- Implementing user authentication (e.g., JWT, Passport.js)
- Managing user roles and permissions
- Securing APIs and handling sessions

### CI/CD Pipelines

- Introduction to Continuous Integration and Continuous Deployment
- Setting up CI/CD pipelines using GitHub Actions or similar tools
- Deploying applications (backend and frontend) to cloud platforms

## MAJOR PROJECT FRONTEND SETUP

### Setting Up the E-commerce Website

- Planning and organizing the project structure
- Setting up the frontend environment with Create React App
- Installing and configuring dependencies (React Router, Redux, Tailwind CSS, etc.)
- Building the basic layout (header, footer, product listing)

### Implementing Functionality

- Adding and displaying product data
- Implementing product details and shopping cart functionality with Redux

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## FINALIZING AND DEPLOYMENT

### Backend Integration and Checkout Functionality

- Developing checkout functionality and integrating with the backend

### Deployment and Final Touches

- Deploying Node.js/Express backend to cloud platforms (Heroku, AWS, etc.)
- Hosting the React frontend on platforms like Netlify or Vercel
- Configuring domain names, SSL certificates, and final deployment checks
- Conducting final testing and performance optimization