SEMESTER-II

MAJOR - VII

Course Title: **Front End Development with React**	Course Code :
Semester: **II**	Course Group : **M**
Teaching Scheme in Hrs (L: T: P): **5:0:0**	Credits : **5**
Map Code: **NA**	Total Contact Hours: **75 Hrs**
Formative Assessment: **25 Marks**	Summative Assessment(SEE) #:**75 Marks**
Programme: **MSc [CS]**	**# - Semester End Exam**

No.	Course Outcome	PSOs	Cl. Ses	CL
CO1	Explain key React concepts such as JSX and Hooks	PSO1, PSO4	15L	AP
CO2	Design UI components using the React framework	PSO1, PSO4	15L	AP
CO3	Build UI components using the React framework	PSO1, PSO4	15L	AP
CO4	Build a React application	PSO1, PSO4	15L	AP
CO5	Test & Deploy a React application	PSO1, PSO4	15L	AP

UNIT – I   **15 Hours**

Introduction to JavaScript ES6: Introduction To React (Getting Started With React For Front-End Development) - Introduction To ES6 And Default Parameters (Introduction To ES6) - Template Literals (Template Literals - Multiline Strings And Template Literals, Embedding Expressions) – Destructuring (Destructuring Assignment, Destructuring Assignment - Functions) - Spread And Rest (Spread And Rest And Spread - Value And Reference, Spread - Merge Arrays, Enhanced Object Literals) - Asynchronous Functions And Modules (Arrow Functions, Modules In ES6) - Var, Let, And Const (Function Scope, Block Scope, Closures, Closures Vs. Let - Timer Scope and Closures vs. Let: Block Scope Differences) - ES6 Word Count Exercise (ES6 Word Count, ES6 Word Count Solution) - **Introduction to React:** ES6 Warm-Up Exercises (Introduction To ES6 Exercises, ES6-Warm-Up - Shopping Cart, ES6 Warm-Up - Shopping Cart Solution, ES6 Warm-Up Code Interpretation, ES6 Warm-Up Code Interpretation Solution) - Introduction To React (Introduction To The JSX Render Element and JSX Components, Passing Properties Into A Component) - Using ES6 In React (ES6 And React, Destructuring An Object and Renaming An Object, Map To Generate Child Buttons, Using Props Index To Identify Buttons, Using Closure To Generate ID Functions, Delete Button Exercise, Delete Button Solution)

UNIT – II   15 Hours

Introduction to JSX: JavaScript Tips And Tricks (JavaScript Tips And Tricks And ECMAScript 262 - How The Interpreter Runs, How To Filter Lists And How To Use Reduce) - Introduction To JSX (Introduction To JSX, Introduction To Babel And Adding A JSX Component On A Page, Embedding Expressions And Adding Styles, Using Expressions And HTML Attributes In Components, Adding Children To Elements) - Introduction To Forms (Forms - Capturing Data, HTML Form And HTML Form Tag, React Form -Unmanaged And React Form – Managed) - Forms in React (Custom Hook To Clean Up React Form, Validate Form) - React Toolchains And Formik (What Is A Toolchain?, Toolchains, Formik Form And Formik Validation) - **Working With Lists in React:** Creating The ToDo List (Introduction To ToDo List And CRUD And ToDo List Overview, Set State And List ToDos And Styling The ToDo List, Input Form - Add ToDo Item And Remove ToDo Item) - Refactoring The ToDo List (Refactor - Form Component And Refactor - ToDo Component, Final Style Touches) - Rendering Lists (Introduction To Rendering List Exercises, List With Simple Data, Rendering List and Rendering List With Buttons And Handling onClick Events, Anonymous onClick Function To Pass Multiple Arguments, Saving State With UseState) – ReactDOM (ReactDOM, When Does UseEffect Run?) - Shopping Cart List (Shopping Cart List with Complex Data, Shopping Cart with Multiple Lists)

UNIT – III   15 Hours

Working with Simple Components: ATM With Simple Components (Introduction To ATM Exercise, ATM With HTML And ATM Component, ATM In React And ATM State, Deposit And Cashback Buttons) - Fetching Data With React (Fetching Data Exercise Overview And Fetch Data Via A URL With UseEffect, Render Data From URL) - Fetching Data From Hacker News (Fetch Data From Hacker News and UseReducer For Fetching Data, Paginate Data) - **Tic Tac Toe Exercise with React:** Introduction To Tic-Tac-Toe Exercise (Introduction To Tic-Tac-Toe Exercise and Tic-Tac-Toe Overview, Control Component With OnClick Events And Generate Players On The Tic-Tac-Toe Board) - Parent And Child Components (Add Squares As Child Components and Pass ID As State From Parent To Child, Change Color Of Square And Track State, Pass State From Child To Parent) - React Component Lifecycle (React Component Lifecycle: Mounting And Unmounting , Component Lifecycle, Parent State Forces Re-Render) - UseEffect And UseState Hooks (Track Re-Render With UseEffect, UseState Delay, Tracking Total Game State And Passing Player From Parent To Child, Tic-Tac-Toe Final Refactor.

UNIT – IV   15 Hours

Working with React Components: Styling Components With Bootstrap (Introduction To Styling With Bootstrap And Styling Components) - Web Components And React Components (Introduction To Components - HTML To React And Web Components, Create Custom Element - Web Component And Create Web Components Programmatically, React Components And Web Components In React) - Routing And The Single Page Application (Introduction To Routing And The Single-Page Application, Overview of Frameworks And Routing And Route Using Buttons, Same Page Linking And Listening To Browser Events, URL Location Access With JavaScript And Route Using Location Hash, Building A Router, Same Page Linking

Limitation And How To Avoid Reloading The Page) - **Bad Bank Exercise:** Growth Mindset-Introduction To Bad Bank (Introduction To Bad Bank Exercise) - Routing, Context, And Styles (Routing and Context Basics, Style Basics) - Bad Bank Walkthrough (Bad Bank Exercise Overview and Create Bad Bank Application Files, Bad Bank Navigation Bar and Routing, Bad Bank Context, Bad Bank - Styling The Navigation Bar and Styling The Bootstrap Card, Create Account, Bad Bank Challenge)

UNIT – V   15 Hours

Shopping Cart Exercise: Integrating React With The Back End (Introduction To The Shopping Cart Exercise) - Strapi And Postman (Create Strapi Product Database, Install Postman, Using Postman And Express Web Server) - Shopping Cart Refactor (Shopping Cart Exercise - Refactor Introduction and Restocking Functionality, Shopping Cart Exercise - Refactor Solution) - **Testing:** Create React App (Introduction To Create React App, NPM Scripts For React , Install Create React App, Create React App - Shopping Cart Example and Build Static Website) - Deploy To The Cloud (Introduction To Deployment, Introduction To Cloud Computing And Amazon Web Services , Deploy Static Website On AWS3) – APIs (Rest Principles And RESTful API, Introduction To GraphQL, What is GraphQL, GraphQL Demo) – Testing (Testing The Front End and Testing Overview, Install Node and Test-Driven Development, Testing Using The DOM and Testing Using The React Library, Testing Render, Testing Fire Event And Testing User Event, What Is A Mock And Why Does It Matter?, Mock A Dependency and Mock A ToDo Application API)

REFERENCES

1. Full Stack Development with MERN- MIT
2. https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Template_literals
3. https://developers.google.com/web/updates/2015/01/ES6-Template-Strings
4. https://reactjs.org/docs/forms.html#fully-fledged-solutions
5. https://reactjs.org/tutorial/tutorial.html
6. https://adostes.medium.com/validating-a-form-in-react-cc29d47e140f
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8. https://reactjs.org/docs/rendering-elements.html
9. https://reactjs.org/docs/hooks-intro.html
10. https://github.com/4GeeksAcademy/react-tutorial-exercises/tree/master/exercises
11. https://www.pluralsight.com/guides/how-to-handle-communication-between-parent-and-child-components-in-reactjs
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13. https://medium.com/@NeotericEU/single-page-application-vs-multiple-page-application-2591588efe58
14. https://reactjs.org/docs/context.html
15. https://docs.strapi.io/developer-docs/latest/getting-started/introduction.html.