COURSE TITLE	**WEB APPLICATION DEVELOPMENT USING REACTJS**
COURSE CODE	**05CA0505**
COURSE CREDITS	**4**

Objective:

1 To introduce students to the concepts of Single Page Applications (SPA) and component-based architecture using ReactJS.

2 To develop proficiency in creating dynamic and responsive web interfaces using React components, hooks, and routing.

3 To enable students to manage state effectively in complex applications using Context API and Redux.

4 To prepare students to build, test, and deploy real-world web applications using modern development tools.

Course Outcomes: After completion of this course, student will be able to:

1 Explain the architecture and structure of ReactJS applications and how components interact within SPAs.

2 Build interactive user interfaces using functional components, hooks, and React Router.

3 Analyze and optimize state management using Context API or Redux for scalability.

4 Develop and deploy a complete React-based project integrating APIs and external libraries.

Pre-requisite of course: Basic knowledge of web development

Teaching and Examination Scheme

Theory Hours	Tutorial Hours	Practical Hours	ESE	IA	CSE	Viva	Term Work
2	0	4	50	30	20	25	25

Contents : Unit	Topics	Contact Hours
1	**React Fundamentals & Component Architecture** Introduction to Single Page Applications (SPA), ReactJS Overview and History, Project Structure & File Organization, JSX Syntax and Babel, Components – Functional and Class-Based, Props and State, Lifecycle Methods (Class Components), Event Handling in React, Conditional Rendering, List Rendering and Keys	15
2	**Routing, Hooks, and State Management** React Router – Basic and Nested Routes, useState and useEffect Hooks, Custom Hooks, useContext and Context API, Form Handling and Validation, Lifting State Up, Introduction to Redux, Redux Architecture and Data Flow, Actions, Reducers, and Store, React DevTools and Debugging Techniques	15
Total Hours		**30**

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Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
1	**Unit 1** Building Interactive UI with React, Setting up React using Create React App, Folder Structure and Component Setup, Creating Reusable Components, Implementing Navigation with React Router, Dynamic Forms and Validation, Fetching API Data with useEffect Implementing Search and Filter Functionality, Handling Modal & Toast UI, Working with External UI Libraries (e.g., Material UI / Bootstrap), React App Deployment using Vercel / Netlify	30
2	**Unit 2** Mini Project – Real-world React App, Defining the Project Scope (To-do App / Blog App / E-Commerce UI), Designing Layout and Navigation, Building and Integrating UI Components, Consuming Public APIs (e.g., JSONPlaceholder, OMDb API), Managing Global State with Context / Redux, CRUD Operations with Forms, Handling Authentication UI Flow, Error Handling and Loading States, Testing Components with React Testing Library (Basics), Final Project Review & Presentation	30
Total Hours		**60**

Textbook :

1 Learning Node.js: A Hands-On Guide to Building Web Applications in JavaScript, Marc Wandschneider, Pearson, 2016

References:

1 Learning Node.js: A Hands-On Guide to Building Web Applications in JavaScript, Learning Node.js: A Hands-On Guide to Building Web Applications in JavaScript, Marc Wandschneider, Pearson, 2016

Suggested Theory Distribution:

The suggested theory distribution as per Bloom's taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery					
Remember / Knowledge	**Understand**	**Apply**	**Analyze**	**Evaluate**	**Higher order Thinking / Creative**
10.00	15.00	25.00	25.00	25.00	0.00

Instructional Method:

1 Pratical, Demo, PPT

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Supplementary Resources:

1 https://reactjs.org/en

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