INSTITUTE OF AERONAUTICAL ENGINEERING
(Autonomous)
Dundigal - 500 043, Hyderabad, Telangana

COURSE CONTENT

WEB SYSTEMS ENGINEERING LABORATORY

V Semester: CSE (CS)

Course Code	Category	Hours / Week			Credits	Maximum Marks		
		L	T	P	C	CIA	SEE	Total
ACSD17	Core	0	0	2	1	40	60	100
Contact Classes: Nil	Tutorial Classes: Nil	Practical Classes: 45				Total Classes: 45		
Prerequisites: Programming with Objects								

I. COURSE OVERVIEW:

This course will give you the basic terminology and fundamental concepts to build modern web applications. This course introduces students to develop web applications. This course presents the basics of HTML5 and CSS3 for Web application development using HTML links and HTML forms. Introduction to the use of React router and its use in developing single-page applications, redux to develop React Redux powered applications, client-server communication and the use of REST API on the server side and react primitives render to native platform UI. This course will make the students to expose the front-end framework Bootstrap and to basic security mechanisms for server-side web application development.

II. COURSES OBJECTIVES:

The students will try to learn

    I.   The characteristics, systematic methods, model for developing web applications.

    II.   The concepts of client side programming with Bootstrap, JavaScript, Ajax, Design user interfaces that follow best practices for usability and user experience

    III.   Web application Development Database with React and React Native.

III. COURSE OUTCOMES:

At the end of the course students should be able to:

CO1	Create a web page with different layouts including links by applying different styles and colors to produce specified outputs
CO2	Develop a responsive web application using bootstrap with background images, menus, with admin panel and tables.
CO3	Develop interactive forms with different styles using javascript, CSS and bind data using AJAX
CO4	Develop single page applications using react router and make use of react data libraries for data visualization in dynamic pages
CO5	Adapt to design and develop web applications like drunken snake game and chat application with API responses using the industry's current models and architectures
CO6	Test for the database to extend the features and deployment of applications for solving problems that require interaction with a web server

IV.COURSE CONTENT:

Week – 1: HTML LAYOUTS AND LINKS

a. Develop a web application to control over different layouts.

b. Create a webpage with HTML describing your department use paragraph and list tags.

c. Apply various colors to suitable distinguish key words, also apply font styling like italics, underline and two other fonts to words you find appropriate, also use header tags.

d. Create links on the words e.g. "Wi-Fi" and "LAN" to link them to Wikipedia pages.

Week – 2: WEB APLLICATION DESIGN FORMTTING

a. Develop a web application with background banner image and navigation menus.

b. Develop a web application with responsive images.

c. Develop a web application using left menu.

d. Develop setting to change the theme of entire web Application.

Week – 3: INTRODUCTION TO RESPONSIVE INTERFACE USING BOOTSRAP.

a. Write code for developing responsive web application with Admin panel and tables with static data.

Week – 4: BUIDLING INTERFACES USING JAVASCRIPT

a. Set up the Folder Structure.

b. Write the Model code and initialize the application.

c. Implement the list objects and use cases.

d. Implement the create object use case.

e. Implement the update object use case.

Week – 5: INTRODUCTION TO INTERATIVE FORMS AND AJAX DATA BINIDNG

a. Developing Web Page Styles using JavaScript and CSS,

b. Develop Script interactive forms

c. Data binding using Ajax.

Week – 6: REACT ENVIRONMENT SETUP

a. Setting up development environment.

b. Integration with Existing Apps.

c. Running on Device.

d. Debugging

e. Testing

f. Write source code using Typescript.

Week – 7: PROGRAMMING WITH REACT

a. Basics Interactive examples.

b. Function Components and Class Components

c. React Native Fundamental, Handling Text Input,

d. Using a scroll View, using List View.

e. Platform Specific Code.

Week – 8: BUILD A DRUNKEN SNAKE GAME USING HOOKS

a. Introduction and scaffolding the project.

b. Components, Props and Styles.

c. State and Lifecycle Events.

d. Extended Game Functionality.

e. Finishing up and Deployment.

Week – 9: PHP SESSIONS BOX React FOR DATA VISUALIZATION

a. Introduction and scaffolding the Project.

b. Pages and Layout.

c. Working with an API, CSS-in-JS.

d. Dynamic Pages and React Hooks.

e. Custom React Hooks, Dynamic CSS-in-JS.

f. Finishing up and Deployment.

g. Optimization and PWA.

Week – 10: CHAT APPLICATION

a. Firebase Environment. Introduction and Scaffolding the project.

b. Private and Public pages, Context API.

c. Creating Side bar and Dashboard

d. Creating and displaying Chat Rooms.

e. Creating Layout for Chat page.

Week – 11: CHAT APPLICATION API RESPONSES

a. Context API Problem-solution for the chat messages.

b. Denormalization of the data to be stored in app.

c. Displaying chat feed for Interactive UI along with Real time user presence.

Week – 12: DATABASES HANDLING

a. Role Based Access.

b. Messages Likes and deletion.

c. File and Audio Chat Messages

d. Extended Chat Features and Deployment

V. TEXT BOOKS:

1. Thomas A. Powell, "*The Complete Reference*", "HTML and CSS", 5th edition, 2017
2. Elisabeth Robson , Eric Freeman,"*Head First HTML and CSS: A Learner's Guide to Creating Standards-Based Web Pages*", 2nd edition, 2012
3. Adam Boduchand Roy Derks, "*React and React Native*: A Complete Hands-on Guide to Modern Web and Mobile Development with React.js", 3rd edition, 2020.

VI. REFERENCE BOOKS:

1. W Hans Bergsten, "*Java Server Pages*", O'Reilly, 3rd edition, 2003.
2. D. Flanagan, "*Java Script*", O'Reilly, 6th edition, 2011.
3. Jon Duckett, "*Beginning Web Programming*", WROX, 2nd edition, 2008.

VII. ELECTRONICS RESOURCES:

1. https://www.codecademy.com/learn/paths/web-development/
2. https://nptel.ac.in/courses/106/105/106105084/
3. https://medium.com/@aureliomerenda/create-a-native-web-app-with-react-native-web419acac86b82
4. https://www.coursera.org/learn/react-native
5. https://desirecourse.net/react-native-and-redux-course-using-hooks

VIII. MATERIALS ONLINE

1. Course template
2. Lab Manual