Front End Development (Open Elective-1)					
Course Code:	Year and Semester: III – I	L	T	P	C
Prerequisites: Fundamentals of HTML, CSS and Java Script		2	0	2	3

Course Objectives:

1. To learn Client-side application development using HTML and CSS
2. To understand Java script ES6 features
3. To focus on contemporary front-end technologies like React
4. To understand data access through NodeJS

Course Outcomes: By the end of the course the student will be able to

CO1 Summarize Client-side design of the web.
CO2 Explore different ES6 features in Java script.
CO3 Implement components and props through React.
CO4 Comprehend React Hooks
CO5 Use NodeJs for data availability

Unit-1: **10 Hrs**

Introduction to HTML 5, syntax, attributes, events, SVG, Web storage, Introduction to Canvas, Audio & Video, Geolocations, Drag & Drop, Web workers, working with Fonts, working with other graphics.

Style sheets: Introduction CSS, Applying CSS to HTML, Selectors, Properties and Values, CSS Colors and Backgrounds, CSS Box Model, CSS Margins, Padding, and Borders, CSS Text and Font Properties

Unit-2: **10 Hrs**

Introduction to ES6 features, Arrow functions, default parameters, destructuring elements, Higher order functions, defining classes, accessing data members, constructors, inheritance, super.

Unit-3: **10 Hrs**

ReactJS: Introduction, Installing Node JS server, creating a simple react project, Templating using JSX, Components, Rendering, State and Props, Types of Components – Component Lifecycle, Forms and User Input, Event Handling.

Unit-4: **10 Hrs**

React JS: React Routing, Introduction to Hooks, State management, Types of Hooks -useState, useEffect, useContext, useReducer, useRef, useMemo, useCallback, Usage of Web API calls-fetch and axios, Error Handling.

Unit-5: **8 Hrs**

React Date picker, Communicate Between Components, CORS policies
Introduction to MongoDB, creating databases, Operations – insert, update, delete and Querying.

Text Books:

1. HTML5, Black book, Dreamtech Publications
2. Beginning React, Greg Lim
3. Learning AngularJS: A Guide to AngularJS Development, O' Reilly Publication

References:

1. React Cook Book, Carlos Santana Roldan
2. Learning React, 2nd Edition, O' Reilly publications.
3. React in Action by Mark Tielens Thomas

Web Resources:

https://developer.mozilla.org/en-US/docs/Web/JavaScript
https://reactjs.org/docs/getting-started.html
https://nodejs.org/en/docs/

CO-PO mapping Table with justification

Mapping	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	**PSO1**	**PSO2**
C01	1	1	2	3	-	-	-	-	-	-	-	-	1	2
C02	1	-	2	3	-	-	-	-	-	-	-	-	2	2
C03	1	-	2	3	-	-	-	-	-	-	-	-	3	2
C04	1	-	2	3	-	-	-	-	-	-	-	-	3	2
C05	1	-	2	3	-	-	-	-	-	-	-	-	3	2

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Front End Development Lab					
Course Code:	Year and Semester: III - I	L	T	P	C
Prerequisites: Fundamentals of HTML, CSS and Java Script		0	0	3	1.5

Course Objectives At the end of the course the students will understand

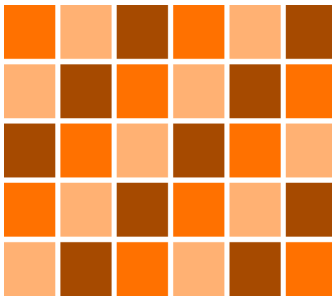
1. Higher order functions
2. Class Components.
3. Functional Components.
4. Different types of Hooks.
5. React application with data base connectivity.

Course Outcomes: At the end of the course the students will be able to

1. Use Higher Order functions like filter(), reduce(), map() .
2. Develop a react application using class components.
3. Develop a react application using functional components.
4. Develop a complete react application with data base connectivity.

List of experiments:

1. Try to recreate the following patterns using HTML and CSS only.



2. Implement Drag n Drop feature in HTML 5
3. Demonstrate Event bubbling with necessary examples.
4. Design a Calculator using Java script and relevant CSS.

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1	2	3	+
4	5	6	-
7	8	9	x
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5. Demonstrate Higher order functions with necessary examples – filter(), reduce() and map()

6. Create a Class Component for Counter in React JS
7. Create a Class component for Changing the color of the text given in React JS
8. Class a Class Component for viewing an array of objects in a tabular form.
9. Display a digital clock in React JS.
10. Demonstrate useState Hook with the help sample text.
11. Demonstrate useContext Hook with necessary example.
12. Demonstrate useEffect Hook with necessary example.
13. Demonstrate consuming web API using fetch & axios (AXIOS API). Demonstrate with the help of fake URL.
14. Design a BMI calculator using React JS based on the description given below:

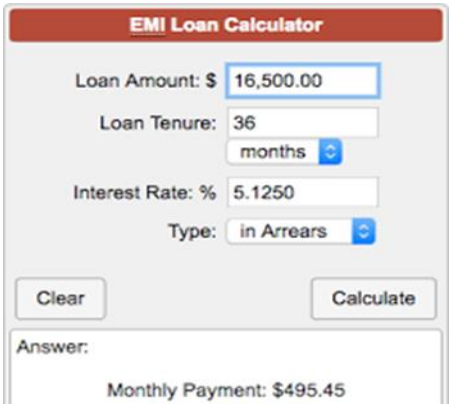
BMI is a measurement of a person's leanness or corpulence based on their height and weight, and is intended to quantify tissue mass. It is widely used as a general indicator of whether a person has a healthy body weight for their height.
Formula:

weight (kg) / [height (m)]2 (or) [weight (kg) / height (cm) / height (cm)] x 10,000

BMI table for adults: This is the World Health Organization's (WHO) recommended body weight based on BMI values for adults. It is used for both men and women, age 18 or older.

Category	BMI range - kg/m^2
Severe Thinness	< 16
Moderate Thinness	16 - 17
Mild Thinness	17 - 18.5
Normal	18.5 - 25
Overweight	25 - 30
Obese Class I	30 - 35
Obese Class II	35 - 40
Obese Class III	> 40

15. Display a selected set of images in tabular format using React JS.
16. Implement Upload & down load options on a given file.
17. Create a React application to view EMI calculator. A specific view is given below:



$$E = P \times r \times \frac{(1+r)^n}{(1+r)^n - 1}$$

Where,

E is the EMI
P is the principal amount
r is the monthly rate of interest
n is the number of months

18. Design the following Hotel bill screen. User can select as many items as possible from the dropdown box and is allowed to enter in the text field provided. Each transaction must be added in the table given below along with the bill amount.

GREEN STAR HOTEL

Customer Bill

Date:

Items: Biryani No of Items:

1.	Biryani	2	Rs. 140 Each	Rs.280
2.	Fried Rice	1	Rs. 110 Each	Rs.110
3.	Chicken Curry	2	Rs. 230 Each	Rs.460
			Total	Rs. 850
			GST @5%	Rs. 42.50
			Bill to be paid	Rs. 892.50

19. Demonstrate the procedure to create a schema in MongoDB.
20. Demonstrate CRUD operations using MongoDB.

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