III Year I Semester	FULL STACK DEVELOPMENT - 2	L	T	P	C
		0	1	2	2

Course Objectives:

The main objectives of the course are to

- Make use of router, template engine and authentication using sessions to develop application in Express JS.
- Build a single page application using RESTful APIs in Express JS
- Apply router and hooks in designing React JS application
- Make use of MongoDB queries to perform CRUD operations on document database

Experiments covering the Topics:

- Express JS – Routing, HTTP Methods, Middleware, Templating, Form Data
- Express JS – Cookies, Sessions, Authentication, Database, RESTful APIs
- React JS – Render HTML, JSX, Components – function & Class, Props and States, Styles, Respond to Events
- React JS – Conditional Rendering, Rendering Lists, React Forms, React Router, Updating the Screen
- React JS – Hooks, Sharing data between Components, Applications – To-do list and Quiz
- MongoDB – Installation, Configuration, CRUD operations, Databases, Collections and Records

Sample Experiments:

1. Express JS – Routing, HTTP Methods, Middleware.

a. Write a program to define a route, Handling Routes, Route Parameters, Query Parameters and URL building.

b. Write a program to accept data, retrieve data and delete a specified resource using http methods.

c. Write a program to show the working of middleware.

2. Express JS – Templating, Form Data

a. Write a program using templating engine.

b. Write a program to work with form data.

3. Express JS – Cookies, Sessions, Authentication

a. Write a program for session management using cookies and sessions.

b. Write a program for user authentication.

4. Express JS – Database, RESTful APIs

a.   Write a program to connect MongoDB database using Mangoose and perform CRUD operations.

b.   Write a program to develop a single page application using RESTful APIs.

5. ReactJS – Render HTML, JSX, Components – function & Class

a.   Write a program to render HTML to a web page.

b.   Write a program for writing markup with JSX.

c.   Write a program for creating and nesting components (function and class).

d.

6. ReactJS – Props and States, Styles, Respond to Events

a.   Write a program to work with props and states.

b.   Write a program to add styles (CSS & Sass Styling) and display data.

c.   Write a program for responding to events.

7. ReactJS – Conditional Rendering, Rendering Lists, React Forms

a.   Write a program for conditional rendering.

b.   Write a program for rendering lists.

c.   Write a program for working with different form fields using react forms.

8. ReactJS – React Router, Updating the Screen

a.   Write a program for routing to different pages using react router.

b.   Write a program for updating the screen.

9. ReactJS – Hooks, Sharing data between Components

a. Write a program to understand the importance of using hooks.

b.   Write a program for sharing data between components.

10. MongoDB – Installation, Configuration, CRUD operations

a.   Install MongoDB and configure ATLAS

b.   Write MongoDB queries to perform CRUD operations on document using insert(), find(), update(), remove()

11. MongoDB – Databases, Collections and Records

a.   Write MongoDB queries to Create and drop databases and collections.

b.   Write MongoDB queries to work with records using find(), limit(), sort(), createIndex(), aggregate().

12. Augmented Programs: (Any 2 must be completed)

a.   Design a to-do list application using NodeJS and ExpressJS.

b.   Design a Quiz app using ReactJS.

c.   Complete the MongoDB certification from MongoDB University website.

Text Books:

1. Pro MERN Stack: Full Stack Web App Development with Mongo, Express, React, and Node, Vasan Subramanian, 2nd edition, APress, O'Reilly.
2. Node.Js in Action, Mike Cantelon, Mark Harter, T.J. Holowaychuk, Nathan Rajlich,Manning Publications. (Chapters 1-11)
3. React Quickly, AzatMardan,Manning Publications(Chapters 1-8,12-14)

Web Links:

1. ExpressJS - https://www.tutorialspoint.com/expressjs
2. ReactJS - https://www.w3schools.com/REACT (and)   https://react.dev/learn#
3. MongoDB - https://learn.mongodb.com/learning-paths/introduction-to-mongodb