

FULL STACK DEVELOPMENT-2

Course Code	23SO8554	Year	III	Semester	I
Course Category	SOC	Branch	CSE	Course Type	Practical
Credits	2	L – T – P	0-1-2	Prerequisites	HTML,CSS, JAVASCRIPT
Continuous Evaluation:	30	Semester End Evaluation:	70	Total Marks:	100

CO	Statement	Skill	Blooms
CO1	Develop back-end services using appropriate frameworks like ExpressJS and connect them with databases.	Apply	L3
CO2	Develop front-end using ReactJS framework and integrate it with back-end systems to create full-stack web applications with proper routing, APIs, and authentication.	Analyze	L4
CO3	Demonstrate teamwork, ethical responsibility, and adaptability to emerging full-stack frameworks and practices.	Individual Performance, and leadership	--
CO4	Develop an effective report for the project implemented and present the solution.	Communication	--

Contribution of Course Outcomes towards achievement of Program Outcomes & Strength of correlations (3:Substantial, 2: Moderate, 1:Slight)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1		√	√		√							√		
CO2		√	√		√							√		
CO3								√		√				
CO4									√					

List of Experiments		
S.No.	Experiment	Mapped CO
1	Express JS – Routing, HTTP Methods, Middleware. <ol style="list-style-type: none"> 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. 	CO1, CO2
2	Express JS – Templating, Form Data <ol style="list-style-type: none"> a. Write a program using templating engine. b. Write a program to work with form data. 	CO1, CO2
3	Express JS – Cookies, Sessions, Authentication <ol style="list-style-type: none"> a. Write a program for session management using cookies and sessions. b. Write a program for user authentication. 	CO1, CO2
4	ReactJS – Render HTML, JSX, Components – function & Class <ol style="list-style-type: none"> 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). 	CO2, CO3
5	ReactJS – Props and States, Styles, Respond to Events <ol style="list-style-type: none"> 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. 	CO2, CO3
6	ReactJS – Conditional Rendering, Rendering Lists, React Forms <ol style="list-style-type: none"> 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. 	CO2, CO3
7	ReactJS – React Router, Updating the Screen <ol style="list-style-type: none"> a. Write a program for routing to different pages using react router. b. Write a program for updating the screen. 	CO2, CO3
8	ReactJS – Hooks, Sharing data between Components <ol style="list-style-type: none"> a. Write a program to understand the importance of using hooks. b. Write a program for sharing data between components. 	CO2, CO3
9	MongoDB – Installation, Configuration, CRUD operations <ol style="list-style-type: none"> a. Install MongoDB and configure ATLAS b. Write MongoDB queries to perform CRUD operations on documents using insert(), find(), update(), remove() 	CO1, CO4
10	MongoDB – Databases, Collections and Records <ol style="list-style-type: none"> 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(). 	CO1, CO4
11	Express JS – Database, RESTful APIs <ol style="list-style-type: none"> a. Write a program to connect MongoDB database using Mongoose and perform CRUD operations. b. Write a program to develop a single page application using RESTful APIs. 	CO1, CO4

12	<p>CAPSTONE PROJECT: Develop a project (student/faculty choice) using full stack technologies like react, node.js, express.js and mongoDB. Example (for reference): E-commerce application Front-End:</p> <ul style="list-style-type: none"> ○ User Interface (UI): A visually appealing and user-friendly interface using HTML, CSS, and JavaScript frameworks like React ○ Functionality: Features like product listings, shopping cart, user accounts, search functionality, and order history. <p>Back-End (use node.js and express.js, mongodb)</p> <ul style="list-style-type: none"> ○ Server-side Logic: Handling user authentication, product data management, shopping cart operations, and order processing. ○ Database: Storing product information, user data, and order details using a database like PostgreSQL or MongoDB. ○ APIs: Creating and consuming APIs for communication between the front-end and back-end. 	CO1, CO2, CO3, CO4
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Learning Resources

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)

Reference Books

1. Pro MERN Stack: Full Stack Web App Development with Mongo, Express, React, and Node by Vasan Subramanian, Apress; 2nd ed. edition (13 May 2019), ISBN-10 : 1484243900, ISBN13 : 978-1484243909
2. MongoDB, React, React Native Full-Stack Fundamentals and Beyond, by Eric Bush, Zaccheus Entertainment Publication, ISBN-10 : 0997196688, ISBN-13 : 978-0997196689.
3. Quick Start Guide: Build web applications with MongoDB, Express.js, React, and Node by Eddy Wilson Iriarte Koroliova, Packt Publishing, ISBN-10: 1787281086, ISBN-13: 978-1787281080
4. Beginning Node.js, Express & MongoDB Development, by Greg Lim (Author), ISBN-10 : 9811480281
5. React Quickly: Painless web apps with React, JSX, Redux, and GraphQL, by Azat Mardan, Published by Manning Publications, Manning Publications, ISBN-10 : 1617293342, ISBN-13 : 978-1617293344

E-Resources & other digital material

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>