PRASAD V. POTLURI SIDDHARTHA INSTITUTE OF TECHNOLOGY
(Autonomous)
Kanuru, Vijayawada-520007
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING (Data Science)
III B. Tech I Semester

Full Stack Development-II

Course Code	23SO8554	Year	III	Semester	I
Course Category	Skill	Branch	CSE (Data Science)	Course Type	Practical
Credits	2	L-T-P	0-1-2	Prerequisites	Full Stack Development-I
Continuous Internal Evaluation	30	Semester End Evaluation	70	Total Marks	100

Course Outcomes	
Upon Successful completion of course, the student will be able to	
CO1	Demonstrate experimental procedures through oral communication and submit comprehensive documentation reports.	**L2**
CO2	Apply Full Stack Development (MERN) technologies for developing Web Applications using different tools.	**L3**
CO3	Analyze different Full Stack Development technologies by implementing them in different Web Applications.	**L4**
CO4	Design and Evaluate a Web Application to analyze the outputs of different web- based applications.	**L5**

Contribution of Course Outcomes towards achievement of Program Outcomes & Strength of correlation (3: High,2: Moderate,1: Low)												
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	2								2				
CO2	3				3						2		
CO3		3									2		
CO4				3							2		

Syllabus		
Exp. No.	**Contents**	**Mapped CO**
1	**Typescript** a. Write a program to understand simple and special types. b. Write a program to understand function parameter and return types. c. Write a program to show the importance with Arrow function. Use optional, default and REST parameters. d. Write a program to understand the working of typescript with class, constructor, properties, methods and access specifiers. e. Write a program to understand the working of namespaces and modules. f. Write a program to understand generics with variables, functions and constraints.	CO1
2	**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.	CO1 to CO4
3	**Express JS – Templating, Form Data** a. Write a program using templating engine. b. Write a program to work with form data.	CO1 To CO4
4	**Express JS – Cookies, Sessions, Authentication** a. Write a program for session management using cookies and sessions. b. Write a program for user authentication.	CO1 to CO4
5	**ExpressJS – Database, RESTful APIs** a. Write a program to connect MongoDB databases using Mongoose and perform CRUD operations. b. Write a program to develop a single page application using RESTful APIs.	CO1 to CO4
6	**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).	CO1 to CO4
7	**ReactJS – Props and States, Styles, Respond to Events** a. Write a program to work with props and states. b. Write a program to add CSS styles and display data. c. Write a program for responding to events.	CO1 to CO4
8	**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	CO1 to CO4
9	**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.	CO1 to CO4

10	**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	CO1 to CO4
11	**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()	CO1 to CO4
12	**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().	CO1 to CO4
13	**Mini Projects:** a. Design a to-do list application using RecatJS, NodeJS and ExpressJS. b. Design a Quiz app using ReactJS. c. Complete the MongoDB certification from MongoDB University website. d. Any Other.	CO1 to CO4

Learning Resources
Text Books
1. Programming the World Wide Web, Robet W Sebesta, 7th Edition, 2013, Pearson. 2. Pro MERN Stack: Full Stack Web App Development with Mongo, Express, React, and Node, Vasan Subramanian, 2nd edition, APress, O'Reilly. 3. Programming TypeScript by Boris Cherny, 1st Edition, 2019, O'Reilly Media.
References
1. React: Up & Running: Building Web Applications, Stoyan Stefanov and Adam Freeman, Second Edition, 2021, O'Reilly. 2. Express in Action by Evan Hahn, 2016.
E-Resources and other Digital Material
1. TypeScript - https://www.youtube.com/watch?v=d56mG7DezGs 2. ExpressJS - https://www.tutorialspoint.com/expressjs 3. ReactJS - https://www.w3schools.com/REACT (and)   https://react.dev/learn# 4. MongoDB - https://learn.mongodb.com/learning-paths/introduction-to-mongodb