

Course Code	21CSS301T	Course Name	FULL STACK DEVELOPMENT	Course Category	S	ENGINEERING SCIENCES	L	T	P	C
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Pre-requisite Courses	Nil	Co-requisite Courses	Nil	Progressive Courses	Nil
Course Offering Department	School of Computing	Data Book / Codes / Standards	Nil		

Course Learning Rationale (CLR):		The purpose of learning this course is to:		Program Outcomes (PO)												Program Specific Outcomes		
CLR-1:	learn the basics of JavaScript and importance of MERN stack	1	2	3	4	5	6	7	8	9	10	11	12					
CLR-2:	learn the role of React in designing front-end components	Engineering Knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex problems	Modern Tool Usage	The engineer and society	Environment & Sustainability	Ethics	Individual & Team Work	Communication	Project Mgt. & Finance	Life Long Learning	PSO-1	PSO-2	PSO-3		
CLR-3:	understand the design issues in the development of backend components using Node.js and Express																	
CLR-4:	learn the significance of using MongoDB as a database system																	
CLR-5:	explore the advanced features of full stack development																	
Course Outcomes (CO):		At the end of this course, learners will be able to:		-	-	-	-	-	-	-	-	-	-	1	-	-		
CO-1:	setting up MERN environment for node.js	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1		
CO-2:	apply the knowledge of react based web programming	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-		
CO-3:	deal with Node based programming and Express	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-		
CO-4:	analyze Express based web development	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2		
CO-5:	create a Mongodatabase for DDL commands	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2		

Unit-1 – Basics of MERN Stack	10 Hour
MERN Introduction-MERN Components - React - Node.js - Express - MongoDB - Need for MERN - Server-Less Hello World - Server Setup - npm - Node.js npm. MongoDB - MongoDB Basics - Documents - Collections - Query Language - Installation - The mongo Shell - Schema Initialization - MongoDB Node.js Driver - Reading from MongoDB - Writing to MongoDB	
Tutorial:	
<ul style="list-style-type: none"> Setting up MERN environment Simple programs in MERN environment Setting up MongoDB and handling data manipulation 	
Unit-2 - React	10 Hour
React Introduction - React ES6 - React Render HTML - React JSX - Components -React Classes - Composing Components - Passing Data - Dynamic Composition - React state - setting State - Async State Initialization - Event Handling Communicating from Child to Parent - Stateless Components - Designing components- React Forms - React CSS - React SaaS	
Tutorial:	
<ul style="list-style-type: none"> REACT based programming Exploring stateless components 	

Unit-3 - Node.JS and Express	10 Hour
Node.js basics - Local and Export Modules - Node Package Manager - Node.js web server - Node.js File system - Node Inspector - Node.js Event Emitter - Frameworks for Node.js. Express.js Web App - Serving static Resource - Node.js Data Access - Express REST APIs - REST - Resource Based - HTTP Methods as Actions - JSON- Express - Routing - Handler Function – Middleware-Rest API	
Tutorial:	
1. Node based web development Handling of various APIs associated with Node.js	
2. Express based web development Handling of various APIs associated with Node.js	
Mini Project (Tentative Title):	
1. E-commerce Website	
2. Food Delivery App	
3. Social Media App	
4. Chat Messaging App	
5. Content Management System	
6. Blog Site	
7. Workout Tracker App	
8. Project Management Dashboard	

Learning Resources	1. Pro MERN Stack, Full Stack Web App Development with Mongo, Express, React, and Node, Vasam Subramanian, A Press Publisher, 2019. 2. Bradshaw, S., Brazil, E., & Chodorow, K. (2019). MongoDB: the definitive guide: powerful and scalable data storage. O'Reilly Media.	3. Mardan, A. (2014). Express.js Guide: The Comprehensive Book on Express.js. Azat Mardan.
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Learning Assessment							
	Bloom's Level of Thinking	Continuous Learning Assessment (CLA)				Summative Final Examination (40% weightage)	
		Formative CLA-1 Average of unit test (50%)		Life-Long Learning CLA-2 (10%)			
		Theory	Practice	Theory	Practice	Theory	Practice
Level 1	Remember	40%	-	20%	-	40%	-
Level 2	Understand	40%	-	20%	-	40%	-
Level 3	Apply	10%	-	20%	-	10%	-
Level 4	Analyze	10%	-	20%	-	10%	-
Level 5	Evaluate	-	-	10%	-	-	-
Level 6	Create	-	-	10%	-	-	-
	Total	100 %		100 %		100 %	

Course Designers		
Experts from Industry	Experts from Higher Technical Institutions	Internal Experts
		1. Dr.P.Kanmani, SRMIST