



Course: BTech

Semester: 6

Prerequisite: Database Management system, SQL, Basics of Javascript and web development

Course Objective: 1. Understanding the basics of web development and JavaScript programming 2. Learning how to use MongoDB, a popular NoSQL database, to store and retrieve data 3. Learning how to use Node.js, a server-side JavaScript runtime, to create APIs and handle server-side logic 4. Learning how to use Express.js, a lightweight web application framework for Node.js, to build web applications 5. Learning how to use AngularJS, a powerful front-end JavaScript framework, to create dynamic user interfaces and connect with APIs 6. Building a full-stack web application from scratch using the MEAN stack 7. Understanding best practices for deploying, testing, and maintaining MEAN stack applications

Teaching and Examination Scheme					Examination Scheme						Total	
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Seminar Hrs/Week	Credit	Internal Marks			External Marks				
					T	CE	P	T	P			
3	0	0	-	3	20	20	-	60	-	100		

SEE - Semester End Examination, T - Theory, P - Practical

Course Content		W - Weightage (%) , T - Teaching hours	
Sr.	Topics	W	T
1	Introduction to Web Development and the MEAN Stack: Overview of web development, Introduction to the MEAN stack, Setting up the development environment	4	2
2	MongoDB: Introduction to NoSQL databases, Installation and configuration of MongoDB, CRUD operations in MongoDB, Indexing and querying in MongoDB, Schema design and data modeling	20	10
3	Node.JS & Express JS: Introduction to Node.js and Express.js, Introduction to Node.js and Express.js, Middleware and routing, Authentication and security with Passport.js, Error handling and logging	20	10
4	Angular: Introduction to Angular, Setting up an Angular application, Components, modules, and services, Data binding and templates, Forms and validation, Routing and navigation, HTTP and observables, Building a complete frontend for the MEAN stack application	30	13
5	Integration: Integrating the Angular frontend with the Express.js API, Authentication and user management integration, Handling real-time data with WebSockets, Error handling and testing	10	3
6	Deployment and Best Practices: Preparing the application for deployment, Hosting and server setup options, Security best practices, Performance optimization and testing, Version control and continuous integration.	6	3
7	Final Project: Project	10	4
		Total	100
			45



Reference Books

1.	"MEAN Web Development" by Amos Q. Haviv (Publisher: Packt Publishing) (TextBook)
2.	"Learning Node.js: A Hands-On Guide to Building Web Applications in JavaScript" by Marc Wandschneider (Publisher: Addison-Wesley Professional)
3.	"AngularJS: Up and Running: Enhanced Productivity with Structured Web Apps" by Shyam Seshadri and Brad Green (Publisher: O'Reilly Media)
4.	"MongoDB: The Definitive Guide: Powerful and Scalable Data Storage" by Shannon Bradshaw, Kristina Chodorow, and Eoin Brazil (Publisher: O'Reilly Media)

Course Outcome

After Learning the Course the students shall be able to:

1. Have a comprehensive understanding of the technologies and frameworks that make up the MEAN stack, including MongoDB, Express.js, AngularJS, and Node.js.
2. Build full-stack web applications.
3. Understand web development best practices.
4. Work on real-world projects using the MEAN stack. This could include developing a portfolio of projects or contributing to open-source projects.