PARUL UNIVERSITY - Faculty of Engineering and Technology

Department of Computer Science & Engineering

SYLLABUS FOR 6th Sem BTech PROGRAMME

MEA(R)N Stack Web Development Laboratory

Type of Course: BTech

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

Rationale:

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:

Teaching Scheme			Credit	Examination Scheme					Total
				External		Internal			
Lect Hrs/	Tut Hrs/	Lab Hrs/		T	P	T	CE	P	
0	0	2	1		30			20	50

Lect - Lecture, **Tut** - Tutorial, **Lab** - Lab, **T** - Theory, **P** - Practical, **CE** - CE, **T** - Theory, **P** - Practical

List of Practical:

In the lab portion of the course, students will work on a project, which is a 15-hour lab program for MEAN stack web development. The project will include the following stages:

Day 1 (3 hours)

- Introduction to MEAN stack
- Setting up the development environment
- Overview of MongoDB, Express.js, Angular, and Node.js

Day 2 (3 hours)

- Creating and configuring MongoDB
- Creating and configuring Express.js
- Building RESTful APIs with Express.js

Day 3 (3 hours)

- Introduction to Angular
- Building basic UI components with Angular
- Creating a Single-Page Application (SPA) with Angular

Day 4 (3 hours)

- Introduction to Node.js
- Creating and configuring Node.js
- Building server-side applications with Node.js

Day 5 (3 hours)

- Integrating all components to build a full-stack application
- Testing and debugging the application
- Deploying the application on a cloud platform

Course Outcome:

After learning the course, the students should 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. Real-world project experience: Learners will have practical experience working on real-world projects using the MEAN stack. This could include developing a portfolio of projects or contributing to open-source projects.