

Year: M. Tech. I (Semester – II)

Subject Name: Full Stack Developer

Subject Code: MTCO14207

Type of course: Professional Elective - IV

Prerequisite (if any): Basic knowledge of Internet and Client Server system is required, HTML, Java Script, Dynamic Web Programming

List of Courses where this course will be prerequisite: --

Rationale: Today's world is driven by Internet based applications. The rationale behind this course is to impart the knowledge of java script based framework for web programming among students of Information Technology. Students will learn advanced web programming concepts related to Java script, Angular JS, Node JS and MongoDB.

Teaching and Examination Scheme:

Teaching Scheme				Theory Marks			Practical Marks		Total
L	T	P	C	TEE	CA1	CA2	TEP	CA3	
3	0	2	4	60	25	15	30	20	150

CA1: Continuous Assessment (assignments/projects/open book tests/closed book tests. CA2: Sincerity in attending classes/class tests/ timely submissions of assignments/self-learning attitude/solving advanced problems TEE: Term End Examination TEP: Term End Practical Exam (Performance and viva on practical skills learned in course) CA3: Regular submission of Lab work/Quality of work submitted/Active participation in lab sessions/viva on practical skills learned in course

Content:

Sr.No.	Content	Total Hrs
1	Refreshing HTML,CSS and Java Script : HTML Tags, CSS syntax, Responsive design, Bootstrap introduction, Java script syntax, Java script inbuilt objects, Error handling and event handling, DOM, Asynchronous Programming, JSON, jquery	5
2	Introduction to Angular JS Basics and Syntax of Angular JS, Features, Advantages, Application Structure, Basics of routes and navigation, MVC with Angular JS, Services	7

3	Angular JS in Details Modules, Directives, Routes, Angular JS Forms and Validations, Data binding, Creating single page website using Angular JS	8
4	Introduction to Node JS Setup Node JS Environment, Package Manager, Features, Console Object, Concept of Callbacks	7
5	Node JS in details Events and Event Loop, timers, Error Handling, Buffers, Streams, Work with File System, Networking with Node (TCP, UDP and HTTP clients and servers), Web Module, Debugging, Node JS REST API, Sessions and Cookies, Design patterns, caching, scalability	10
6	Database Programming with Node JS and MongoDB Basics of MongoDB, Data types, Connect Node JS with MongoDB, Operations on data (Insert, Find, Query, Sort, Delete, Update) using Node JS	8

Reference Books:

Sr.No.	Title of book /article	Author(s)	Publisher and details like ISBN	Year of publication	Publication Edition
1	The Complete Node.js Developer Course	By Andrew Mead and Rob Percival	Packt Publishing	March 2019	(3rd Edition)
2	Web Development with Node and Express: Leveraging the JavaScript Stack	Ethan Brown	O'Reilly	November 2019	Second Edition
3	Learning Angular JS	Matt Frisbie	Infinite Skills	March 2014	
4	Web Technology	Moseley and Savaliya	Wiley India		
5	Web Programming with HTML5, CSS, and JavaScript	John Dean	Jones & Bartlett Learning	January 2018	

Course Outcomes:

Sr.No.	CO statement	Marks % weightage
CO-1	Learn the concepts of client side programming using CSS and Java Script 2. 3. 4. 5.	10%
CO-2	Understand the concepts of Angular JS to extend basic HTML features	20%
CO-3	Learn Node JS framework to build dynamic server side applications	30%
CO-4	Study the concept of database using Mongo DB and connect database with application.	20%
CO-5	Design and implement full featured web application using the concepts of Angular JS and Node JS	20%

List of Open learning website:

1. <https://www.w3schools.com/nodejs/>
2. <https://www.tutorialspoint.com/nodejs/index.htm>
3. <https://www.javatpoint.com/nodejs-tutorial>
4. <https://www.tutorialsteacher.com/angular>
5. <https://www.w3schools.com/angular/>

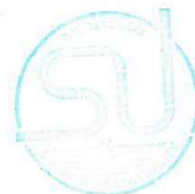
List of Open Source Software:

1. Express.js
2. Geddy
3. Locomotive
4. Koa
5. Total.js

FOR LAB SESSIONS:

List of Experiments:

Sr. No.	Practical
1	Develop a simple web page using the latest HTML5 and CSS3
2	Demonstrate DOM, how to manipulate DOM with Javascript
3	Demonstrate open-source document database, and NoSQL database aka MongoDB



4	Demonstrate establishing connections with a MongoDB database
5	Perform the normal operations of reading data from a database as well as inserting, deleting, and updating records in a MongoDB database
6	Develop program to execute CRUD - write queries to create, read, update and delete operations using NodeJS and MongoDB
7	Use "Node JS" and "MongoDB" together to make use of the Employee collection in the MongoDB EmployeeDB database and display on to web page
8	Create single page website using Angular JS

Major Equipment Needed:

