



MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AN AUTONOMOUS INSTITUTION)

(Approved by AICTE, New Delhi & Affiliated to JNTUH, Hyderabad)

Accredited by NAAC with 'A' Grade & Recognized Under Section 2(f) & 12(B) of the UGC act, 1956

COURSE CONTENT

FULL STACK DEVELOPMENT								
V Semester : CSE								
VII Semester : CSM / CSD								
Course Code	Category	Hours / Week			Credits	Maximum Marks		
24X0544	Core(CSE / CSM)	L	T	P	C	CIA	SEE	Total
	Elective(CSD)	3	0	0	3	40	60	100
Contact Classes: 45	Tutorial Classes: Nil	Practical Classes: Nil			Total Classes: 45			
Prerequisites: Object Oriented Programming using JAVA.								

Course Overview:

Full Stack Development is a comprehensive course designed to equip learners with the knowledge and practical skills required to design, develop, deploy, and maintain modern web applications. The course covers both front-end and back-end technologies, along with databases, version control, and deployment practices, enabling students to build complete, end-to-end web solutions.

Course Objectives:

1. To learn the fundamentals the fundamentals of web technologies, including HTML, CSS, and JavaScript,
2. To understand the various steps in program development.
3. To learn the back-end development concepts, such as server architecture, RESTful APIs, authentication, and middleware.
4. By the end of the course, learners will be able to design and implement full-stack web applications, collaborate effectively in development teams, and adapt to emerging web technologies and frameworks.

Course Outcomes: After Completion of the Course, Students should be able to

1. Understand Full stack components for developing web application.
2. Apply packages of NodeJS to work with Data, Files, HTTP Requests and Responses.
3. Use MongoDB data base for storing and processing huge data and connects with Node JS application.
4. Design faster and effective single page applications using Express and Angular.
5. Create interactive user interfaces with react components.

UNIT - I: Introduction to Full Stack Development

Understanding the Basic Web Development Framework- User, Browser, Web server, Backend Services, Full Stack Components - Node.js, MongoDB, Express, React, Angular. Java Script Fundamentals, Node JS- Understanding Node.js, Installing Node.js, Working with Node Packages, creating a Node.js Application, Understanding the Node.js Event Model, Adding Work to the Event Queue, Implementing Callbacks

UNIT - II: Node.js

Working with JSON, Using the Buffer Module to Buffer Data, Using the Stream Module to Stream Data, Accessing the File System from Node .js- Opening, Closing, Writing, Reading Files and Other File System Tasks.

Implementing HTTP Services in Node.js-Processing URLs, Processing Query Strings and Form Parameters, Understanding Request, Response, and Server Objects, Implementing HTTP Clients and Servers in Node.js, Implementing HTTPS Servers and Clients. Using Additional Node.js Modules-Using the os Module, Using the util Module, Using the dns Module, Using the crypto Module.

UNIT - III: MongoDB:

Need of NoSQL, Understanding MongoDB, MongoDB Datatypes, Planning Your Data Model, Building the Mongo DB Environment, Administering User Accounts, Configuring Access Control, Administering Databases, Managing Collections, Adding the MongoDB Driver to Node.js, Connecting to MongoDB from Node.js, Understanding the Objects Used in the MongoDB Node.js Driver, Accessing and Manipulating Databases, Accessing and Manipulating Collections

UNIT - IV: Express and Angular

Getting Started with Express, Configuring Routes, Using Requests Objects, Using Response Objects. Angular: importance of Angular, Understanding Angular, creating a Basic Angular Application, Angular Components, Expressions, Data Binding, Built in Directives, Custom Directives, Implementing Angular Services in Web Applications.

UNIT - V: React

Need of React, Simple React Structure, The Virtual DOM, React Components, Introducing React Components, Creating Components in React, Data and Data Flow in React, Rendering and Lifecycle Methods in React, Working with forms in React, integrating third party libraries, Routing in React.

TEXT BOOKS:

1. Jeri R. Hanly and Elliot B. Koffman, Problem solving and Program Design in C 7th Edition, Pearson.
2. B.A. Forouzan and R.F. Gilberg C Programming and Data Structures, Cengage Learning, (3rd Edition).

REFERENCE BOOKS:

1. Vasan Subramanian, Pro MERN Stack,FullStack Web App Development with Mongo, Express, React, and Node, 2ndEdition, Apress , 2019.
2. ChrisNorthwood, The Full Stack Developer: Your Essential Guide to the Everyday Skills Expected of a Modern Full Stack Web Developer', 1stedition, Apress, 2018.
3. KirupaChinnathambi, LearningReact:AHands-OnGuidetoBuildingWebApplicationsUsing React and Redux, 2ndedition, Addison-Wesley Professional, 2018.

ELECTRONIC RESOURCES:

1. https://de.wikipedia.org/wiki/FreeCodeCamp?utm_source=chatgpt.com
2. https://www.geeksforgeeks.org/web-development-bootcamp-become-a-full-stack-web-developer/?utm_source=chatgpt.com

3. https://en.wikipedia.org/wiki/Codecademy?utm_source=chatgpt.com
4. https://trulyzer.com/blogs/top-10-free-resources-to-learn-web-development-2025?utm_source=chatgpt.com

MATERIALS ONLINE:

1. Course Template (Syllabus / Roadmap)
2. Tutorial Question Bank (Practice Questions)
3. Tech Talk & Concept Video Topics
4. Open-Ended Experiments (Mini / Major Projects)
5. Definitions and Terminology
6. Assignments (Hands-on Tasks)
7. Model Question Paper – I (Mid / Internal Exam)
8. Model Question Paper – II (End Semester / Final Exam)
9. Lecture Notes (Readable Documentation)
10. E-Learning Readiness Videos