



GUJARAT TECHNOLOGICAL UNIVERSITY
Syllabus for Integrated MSc, 8th Semester
Branch: Information Technology
Subject Name: Full Stack Development
Subject Code: 1380504

Teaching and Examination Scheme

Teaching Scheme			Credits C	Examination Marks				Total Marks
L	T	P		Theory Marks		Practical Marks		
				ESE(E)	PA (M)	PA (I)	ESE(V)	
3	0	2	4	70	30	20	30	150

Content:

Sr. No.	Content	Teaching Hours	Module Weightage (%)
1.	Introduction to Full Stack Development- Overview of full stack development, Understanding client-side vs. server-side, The role of a full stack developer	4	10
2.	Front-End Development - HTML/CSS -Structure of a web page (HTML), Styling (CSS), Responsive design (Flex box, Grid), Preprocessors (Sass, LESS) JavaScript - Basics of JavaScript (variables, functions, loops) ,DOM manipulation, Event handling, ES6 features (arrow functions, promises, async/await) Front-End Frameworks – Introduction to frameworks (React, Angular, Vue), Component-based architecture, State management (Redux, Context API), Routing (React Router, Vue Router) Build Tools -Webpack, Babel, NPM/Yarn for package management	8	20
3.	Back-End Development- Server-Side Languages, Introduction to Node.js, Express.js framework, RESTful APIs and GraphQL Database Management -SQL (PostgreSQL, MySQL), Database design and normalization, NoSQL (MongoDB),Document-oriented databases, Mongoose for Mongo DB Authentication and Authorization -Understanding sessions and JWT,OAuth and social logins, User roles and permissions	8	20
4.	DevOps and Deployment Version Control - Git basics and workflows (branching, merging) ,Collaboration using GitHub Deployment- Hosting platforms (Heroku, Vercel, AWS), Continuous integration/continuous deployment (CI/CD) Containerization- Introduction to Docker,Creating and managing containers	8	20



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5.	Testing- Front-End Testing - Unit testing (Jest, React Testing Library), End-to-end testing (Cypress, Selenium) Back-End Testing -Testing frameworks (Mocha, Chai),API testing (Postman, Swagger)	8	20
6.	Real-World Projects -Building a full stack application from scratch, Planning and wireframing, Implementing front-end and back-end features, Deployment and presentation	4	10

Reference Books:

1. Raju Kumar "Full Stack Development with Angular and Node" A practical guide for building applications using Angular for the front end and Node.js for the back end. BPB Publications
2. Awais Mirza "MERN Quick Start Guide" A hands-on approach to building full stack applications using the MERN stack (MongoDB, Express, React, Node.js). Packt Publishing
3. Sandeep Kumar "JavaScript for Beginners" A beginner-friendly introduction to JavaScript, covering the basics needed for full stack development. CreateSpace Independent Publishing Platform
4. Pankaj Sharma "Web Development with Django and Angular" Explores building applications using Django for the backend and Angular for the frontend. Packt Publishing

Course Outcome:

After learning the course, the students should be able to:

No.	CO statement
CO-1	The structure of Full stack Development
CO-2	Understanding of Front End Technology
CO-3	Thoughtful of Back End Technology
CO-4	Introduction of Devops and deployment
CO-5	Level of different type of testing
CO-6	To build and develop real world project