NIRMA UNIVERSITY

Institute:	Institute of Technology
Name of Programme:	B.Tech.(CSE), Integrated B.Tech. (CSE)-MBA
Course Code:	2CS201
Course Title:	Full Stack Web Development
Course Type:	Core
Year of Introduction:	2023-24

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Course Learning Outcomes (CLO):

At the end of the course, students will be able to –

1. compare the approaches used for web applications development and identify the various components of it. (BL-2)
2. develop user-friendly and responsive user interfaces. (BL-3)
3. demonstrate the creation of REST APIs for various backend database functionalities of an application. (BL-2)
4. design and develop end-to-end web applications with various tools and frameworks. (BL-6)

Syllabus: **Total Teaching hours: 30**

Unit	Syllabus	Teaching hours
Unit-I	**Full Stack Development Basics:** JSON and its usage in web applications, RESTAPIs, 3-Tier Applications, Various Stacks usage for web application development	04
Unit-II	**Frontend Frameworks**: Responsive Web Design, Media Queries, HTML5 Features, Bootstrap, Tailwind and CSS based web development, Vue JS: Directives and Binding, React JS: Elements, UI Components, JSX, Redux, Fetch Data and Asynchronous Programming, GraphQL APIs	09
Unit-III	**Backend Frameworks:** Java Spring MVC, Spring Boot Framework and its Features, Node JS: Express Framework, Routing and Package Manager, Application Development with Built-in Modules and Plugins Integrations	08
Unit-IV	**Databases Integrations:** RDBMS - MySQL, NoSQL – MongoDB, CRUD Operations and Integration with Front End Tools	04
Unit-V	**Managing and Deploying Application:** Version Control and Project Management with Git, Authentication & Authorisation, Securing, Deploying and Testing the Application	05

Self-Study: The self-study contents will be declared at the commencement of semester. Around 10% of the questions will be asked from self-study contents.

Suggested Readings/ References:

1. Chris Northwood, The Full Stack Developer: Your essential guide to the everyday skills, Apress
2. Frank Zammetti, Modern Full-Stack Development: Using Type Script,

React, Node.js, Apress
3. David Flanagan, JavaScript: The Definitive Guide, O'Reilly
4. Juha Hinkula, Hands-On Full Stack Development with Spring Boot 2 and React, Packt.
5. Shagun Bakliwal, Hands-on Application Development using Spring Boot, BPB
6. Hassan Djirdeh, Nate Murray, and Ari Lerner, Fullstack Vue: The Complete Guide to Vue.js, Createspace
7. Hugo Di Francesco, Professional JavaScript, Packt
8. Shama Hoque, Full-Stack React Projects, Packt

Suggested List of Experiments:

S. No	Title	Hours
1	Implement JavaScript application to create and store JSON Object in File	2
2	Implement Java Script Web Application with REST APIs	2
3	Testing of the API implementation and Documentation	2
4	Design Single Page application with React JS	2
5	Develop GraphQL API based Web application	2
6	Develop Web Application using CRUD operations REST APIs on Database with MERN Stack	6
7	Develop Web Application with Java Spring Boot Framework	6
8	Test-Driven Web Application Development	2
9	Apply Identity and Access Management to the Web Application with Deployment	4
10	Manage the Application Versions with Git and Github	2

Suggested Case List: -NA-