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| **B. Tech III Year I Semester**  **Skill Enhancement Course - III** | | | | | | | | | | |
| **23CAI603 FULL STACK DEVELOPMENT - II** | | | | | | | | | | |
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| **Pre-requisite: NIL** | | | |  | | | | | | |
| **Course Objectives:** | | | | | | | | | | |
| 1. To become knowledgeable about the most recent web development technologies. 2. Idea for creating two tier and three tier architectural web applications. 3. Design and Analyse real time web applications. 4. Constructing suitable client and server side applications. 5. To learn core concept of both front end and back end programming. | | | | | | | | | | |
| **UNIT I** | | **WEB DEVELOPMENT BASICS** | | | **6 hours** | | | | | |
| Web development Basics - HTML & Web servers Shell - UNIX CLI Version control - Git & Github  HTML, CSS.  a. Develop a personal portfolio webpage using basic HTML and CSS  b. Initialize a Git repository and push a static web project to GitHub  c. Practice basic Linux/Unix commands using terminal (navigation, file operations)  d. Create a multi-page static website with navigation and layout  e. Demonstrate version control operations: commit, branch, merge, clone | | | | | | | | | | |
| **UNIT II** | | **FRONTEND DEVELOPMENT** | | | **6 hours** | | | | | |
| Javascript basics OOPS Aspects of JavaScript Memory usage and Functions in JS AJAX for data  exchange with server jQuery Framework jQuery events, UI components etc. JSON data format.  a. Write JavaScript programs demonstrating variables, functions, and objects  b. Develop an AJAX-based form to submit and retrieve data from a mock server  c. Build a dynamic form with client-side validation using jQuery  d. Design interactive UI elements using jQuery (sliders, modals, tabs)  e. Work with JSON data for dynamic rendering of content | | | | | | | | | | |
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| **UNIT III** | | **REACT JS** | | | **6 hours** | | | | | |
| Introduction to React React Router and Single Page Applications React Forms, Flow Architecture  and Introduction to Redux More Redux and Client-Server Communication.  a. Set up a basic React project using Create React App  b. Implement routing between pages using React Router  c. Create and manage form data using React state and hooks  d. Use Redux to manage state in a to-do or counter app  e. Fetch and render data from a public API using Axios | | | | | | | | | | |
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| **UNIT IV** | | **JAVA WEB DEVELOPMENT** | | | **6 hours** | | | | | |
| JAVA programming basics, Model View Controller (MVC) Pattern MVC Architecture using Spring  RESTful API using Spring Framework Building an application using Maven.  a. Create a Java console app demonstrating classes, objects, and methods  b. Build a simple web application using Spring MVC pattern  c. Develop RESTful web services using Spring Boot (CRUD operations)  d. Connect frontend to Spring backend with JSON-based communication  e. Use Maven to build, package, and run the Spring Boot application | | | | | | | | | | |
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| **UNIT V** | | **DATABASES & DEPLOYMENT** | | | | | **6 hours** | | | |
| Relational schemas and normalization Structured Query Language (SQL) Data persistence using  Spring JDBC Agile development principles and deploying application in Cloud.  a. Design and normalize a database schema up to 3NF  b. Perform SQL-based CRUD operations on MySQL/PostgreSQL  c. Integrate MySQL with a Spring Boot application using Spring JDBC  d. Plan and manage tasks using Agile tools (Trello, Jira)  e. Deploy a full stack application on a cloud platform (Heroku, AWS, or GitHub Pages) | | | | | | | | | | |
| **Course Outcomes:** | | | | | | | | | | |
| At the end of this course students will demonstrate the ability to  CO1: Demonstrate about the most recent web development technologies.  CO2: Develop two tier and three tier architectural web applications.  CO3: Implement real time web applications.  CO4: Apply suitable client and server-side applications.  CO5: Develop core concept of both front end and back-end programming. | | | | | | | | | | |
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| **Text Books:** | | | | | | | | | | |
| **1.** | Web Design with HTML, CSS, JavaScript and JQuery Set Book by Jon Duckett Professional JavaScript for Web Developers Book by Nicholas C. Zakas | | | | | | | | | |
| **2.** | "Professional JavaScript for Web Developers", Zakas N C, Wiley, 3rd Edition, 2011. | | | | | | | | | |
| **3.** | Learning PHP, MySQL, JavaScript, CSS & HTML5: A Step-by-Step Guide to Creating Dynamic Websites by Robin Nixon | | | | | | | | | |
| **Reference Books:** | | | | | | | | | | |
| **1.** | Full-Stack JavaScript Development by Eric Bush | | | | | | | | | |
| **2.** | Mastering Full Stack React Web Development Paperback – April 28, 2017 by Tomasz Dyl, Kamil Przeorski, Maciej Czarnecki | | | | | | | | | |
| **Mode of Evaluation:** Assignments, Mid Term Tests and End Semester Examination. | | | | | | | | | | |