Course Code: CSE3150	Course Title: Front-end Full Stack Development Discipline Elective		L- T-P- C	2	0	2	3
Version No.	1.0						
Course Pre-requisites	WEB TECHNOLOGIES-CSE2067						
Anti-requisites	NIL						
Course Description	This intermediate course enables students to perform front-end full stack development, with emphasis on employability skills. The course covers key technologies and architectures that enables the student to design and implement front-end. On successful completion of this course, the student shall be able to pursue a career in full-stack development. The students shall develop strong problem-solving skills as part of this course.						
Course Objectives	The objective of the course is to familiarize the learners with the concepts of **Front-end Full Stack Development** and attain **Employability Skills** through E**xperiential Learning** techniques.						
Course Outcomes	On successful completion of the course the students shall be able to: CO1. Design and develop static web pages using HTML5 elements and CSS3 [Apply] CO2.Develop responsive web pages using CSS, JavaScript and bootstrap. [Apply] CO3.Demonstrate the concepts of Angular.js to develop a web front-end. [Apply] CO4.Illustrate the concepts of React.js to develop a web front-end. [Apply]						
Course Content:							

Module 1	Introduction to web technology	Project	Programming	15Sessions [7L +8P]

Topics:
HTML5 – Syntax,Attributes, Events, Web Forms 2.0, Web Storage, Canvas, Web Sockets;

CSS3 – Colors, Gradients, Text, Transform.

Module 2	Responsive web design	Project	Programming	15 Sessions [7L+8P]

Topics:
BootStrap for Responsive Web Design; JavaScript – Core syntax,JavaScript – Core syntax,HTML DOM, objects, classes,HTML DOM, objects, classes, Async; Ajax ,jQuery Introduction.
Assignment: Design and develop a website that can actively keep track of entry-exit information of a housing society.

Module 3	JavaScript Frameworks	Project	Programming	20Sessions [10L+10P]

Topics:

Setting up Development & Build Environment: Node.js and NPM; Introduction to TypeScript;
Working with OOP concepts with TypeScript; Angular Fundamentals; Angular CLI; Introduction to TypeScript;
Debugging Angular applications;Components& Databinding in Depth; Angular Directives; Using Services &
Dependency Injection; Angular Routing; Observables; Handling Forms in Angular Apps; Output transformation using
Pipes; Making Http Requests; Authentication & Route Protection; Dynamic Components;Angular Modules &
Optimizing Angular Apps;AngularAnimations;Adding Offline Capabilities with Service Workers; React.js ;
Developing single page application

Assignment: Develop a software tool to do inventory management in a warehouse.

Module 4	Fundamentals of DevOps and Project Management	Project	Programming	10 Sessions [6L+4P]

Topics:

Introduction to Agile Methodology; Scrum Fundamentals; Scrum Roles, Artifacts and Rituals; Scrum Fundamentals;
Scrum Roles, Artifacts and Rituals;DevOps – Architecture, Lifecycle, Workflow & Principles; DevOps Tools Overview –
Jenkins, Docker, Kubernetes. Review of GIT source control. Deploying an Angular/React App; Unit Testing in Angular
Apps (Jasmine, Karma).

Assignment: Develop a web-based application to book movies/events (like bookmyshow).

List of Laboratory Tasks:(7 X 2= 14 Sessions)

Experiment No. 1: [3 + 1 Practical Sessions]

- **Level 1:** Familiarization of HTML and CSS basics.
- **Level 2:** Create an HTML webpage showcasing biodata with CSS styling.

Experiment No. 2: [3 + 1 Practical Sessions]

- **Level 1:** Design an interactive web page for a new restaurant using CSS3 features.
- **Level 2:** Create a simple web form to gather user information.

Experiment No. 3: [4 + 1 Practical Sessions]

- **Level 1:** Practice basic JavaScript exercises, including creating a canvas drawing application.
- **Level 2:** Implement JavaScript exercises for form validation.

Experiment No. 4 [3 + 1 Practical Sessions]

- **Level 1:** Create a student registration form using JavaScript.
- **Level 2:** Design an RSVP form using Bootstrap form controls.

Experiment No. 5 [3 + 1 Practical Sessions]

- **Level 1:** Create a responsive image grid using Bootstrap 5.
- **Level 2:** Write a JavaScript program using AJAX to dynamically load content and implement jQuery effects like fading.

Experiment No. 6 [3 + 1 Practical Sessions]

- **Level 1:** Create an AngularJS application module and controller in app.js.
- **Level 2:** Design an "AngularJS Solar System Explorer" for planet data visualization.

Targeted Application & Tools that can be used:

Application Area is to Design and Analyzing the efficiency of Algorithms. This fundamental course is used by all application developers.

Professionally Used Software: Replit

Project work/Assignment:
1. **Problem Solving: Design of Algorithms and implementation of programs.**
2. **Programming: Implementation of given scenario using Java.**

Text Book:

T1. Fender, Young, "*Front-end Fundamentals",* Leanpub, 2015

T2. Northwood, Chris, "*The Full Stack Developer: Your Essential Guide to the Everyday Skills Expected of a Modern Full Stack Web Developer",* APress, 2018

References:

R1. Flanagan D S, "*Javascript : The Definitive Guide*" 7th Edition. 7th ed. O'Reilly Media; 2020.

R2. Alex Libby, Gaurav Gupta, and AsojTalesra. "*Responsive Web Design with HTML5 and CSS3 Essentials",* Packt Publishing, 2016

R3. Duckett J Ruppert G Moore J. "*Javascript&Jquery : Interactive Front-End Web Development.";* Wiley; 2014.

R4. Greg Sidelnikov, "*React.js Book_ Learning React JavaScript Library"*, 1 edition, Scratch-River Tigris LLC 2016

R5. Web Reference:
https://www.youtube.com/watch?v=JGNTYXkVCVY&list=PLd3UqWTnYXOkTSBCBNyyhxo_jxlY_uTWA&index=2

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Recommended by the Board of Studies on	BOS NO: 17 th. BOS held on 22/12/22
Date of Approval by the Academic Council	Academic Council Meeting No.x , Dated xx/xx/23