CSEN3071	WEB APPLICATION DEVELOPMENT AND SOFTWARE FRAMEWORKS	L	T	P	S	J	C
		3	0	2	0	0	4
Pre-requisite	None						
Co-requisite	None						
Preferable exposure	None						

Course Description:

This course enables the students to learn developing web applications right from web application design, web content development, client-side scripting, server-side scripting and creation of responsive web pages. The course imparts knowledge of relevant architectures and technologies required for web application development.

Course Educational Objectives:

- Design static web page using Markup languages.
- Design and implement web pages using style sheets.
- Implement with java script web applications with dynamic web pages.
- Understand working of Web servers
- Develop web applications using frameworks.

UNIT 1 Introduction to Web Application Designing 9 hours, P- 6 hours

Introduction: Building a Web Application, Components – Client Side, Server-side Components, 2 tier, n-tier architectures, Networks, Protocols. MVC Pattern.

HTML5: Basic syntax, HTML document structure, text formatting, images, lists, links, tables, forms, frames. Cascading Style Sheets (CSS3): Levels of style sheets, style specification formats, selector forms, font properties, list properties, colour properties, alignment of text, background images, The Box Model.

UNIT 2 Client-Side Scripting 9 hours, P- 6 hours

JavaScript: Introduction, Functions, Arrays, DOM, Built-in Objects, Regular Expression, Event handling, Validation, Dynamic documents.

UNIT 3 XML, JSON 9 hours, P- 6 hours

Syntax of XML, document structure, and document type definition, namespaces, XML schemas, document object model, presenting XML using CSS, XSLT, XPath, XQuery, FLOWR. **JSON**: Features, JSON vs. XML, JSON Data Types, JSON Objects, JSON Arrays, JSON HTML.

UNIT 4 Server-side processing with Java 9 hours, P- 6 hours

Introduction to Servlet, Life cycle of Servlet, Servlet methods, Java Server Pages.

Working with tomcat webserver Database connectivity – Servlets, JSP, JDBC, Practice of SQL Queries

UNIT 5 Web Application Frameworks 9 hours, P- 6 hours

Introduction to Web application development frameworks, Types of Frameworks. ReactJS. Angular JS. Angular JS: Introduction, Angular JS Expressions, Modules, Data Binding, Controllers, DOM, Events, Forms, Validations.

ReactJS: Introduction, components, Styling, Form programming, Building and Deployment

LAB Experiments:

1. Design static web pages required for any online services web site.
2. Apply Cascading Style Sheets to the Web pages.
3. Design dynamic webpages using Java script.
4. Write JavaScript to validate input fields
5. Write an XML file to display various contents.
6. Write a XSD to validate an XML file.
7. Design a web application and deploy on Tomcat webserver

8. Connect to a Database (MySQL/SQLServer/Oracle/MongoDB) and create data and query data using JDBC

9. Implement a Simple Application using JSON

10. Develop a Complete Web Application for a simple case study using ReactJS /AngularJS

Lab Infrastructure:

SQL Server, Tomcat Server, Notepad++ editor, Eclipse, Opensource – ReactJS, AngularJS

Textbooks:

1. Programming the World Wide Web, 7th Edition, Robert W Sebesta, Pearson, 2013.
2. Pro Mean Stack Development, 1st Edition, ELad Elrom, Apress O'Reilly, 2016
3. Java Script & jQuery the missing manual, 2nd Edition, David sawyer mcfarland, O'Reilly, 2011.
4. Web Hosting for Dummies, 1st Edition, Peter Pollock, John Wiley & Sons, 2013.
5. RESTful web services, 1st Edition, Leonard Richardson, Ruby, O'Reilly, 2007.
6. FULL STACK REACT – The complete guide to ReactJS and Friends ,1st Edition, Anthony Accomazzo, Leanpub,2020.

References:

1. Dietel and Nieto, Internet and World Wide Web - How to program, PHI/Pearson Education, 2006.
2. Web Technologies, HTML, JavaScript, PHP, Java, JSP, XML and AJAX, Black book, 1st Edition, Dream Tech, 2009
3. Web Technologies, 1st Edition 7th impression, Uttam K Roy, Oxford, 2012

Course Outcomes:

After successful completion of the course the student will be able to:

1. Understand the fundamentals of web application development and frameworks.

2. Design interactive web pages with client and server side scripting

3. Apply validations on user input using Javascript

4. Compare and analyse XML and JSON documents.

5. Create and deploy Web Applications over web server.

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3					1							2		
CO2			3	2					2					2	
CO3		2	2												1
CO4		3											2		
CO5			3		2							2		2	

Note: 1 - Low Correlation 2 - Medium Correlation 3 - High Correlation

APPROVED IN:

BOS : 06-09-2021 **ACADEMIC COUNCIL: 01-04-2022**

SDG No. & Statement:

SDG 8 “Economic growth”: In an increasingly automated world with computers, web applications help connect businesses with customers and other businesses, leading to economic growth.

SDG 4 “Education”: Web applications can help enable online learning, taking free and good education to the doorstep of those who cannot access or afford it.

SDG Justification: