

COURSE CODE:CS3215**COURSE NAME:WEB TECHNOLOGY****Course Prerequisites:** Computer Networks**Course Objectives:**

1. To describe most commonly used HTML5 and CSS3 tags and attributes for website development.
2. To associate event handling with HTML5 forms and CSS3 using javascript as a front-end technology for website development.
3. To extend HTML5 and CSS3 and javascript front end technologies with PHP and Mysql as a serverside and backend technologies for website development.
4. To simplify website development using REST API and Spring boot as server-side technologies.
5. To build single page applications using REACT as a reusable UI component technology as client-side technology
6. To assemble REACT as a front-end technology and Node js as a server-side technology to develop enterprise applications

Credits: 4.....**Teaching Scheme Theory: 2 Hours/Week****Tutorial: 1 Hours/Week****Lab: 2 Hours/Week**

Course Relevance: The key technology of the information age is global communication. Web technology is a truly global area of study as it enables global communication with the help of web sites. Web technologies are the backbone of all IT infrastructures and their applications in the world. These technologies and applications often emerge in communication within countries of countries and spread rapidly around the world. The main objective of the course is present the basic web technology concepts that are required for developing web applications. The key technology components are descriptive languages, server-side program elements and client-side program elements. In addition, the course gives specific contents that are beneficial for developing web-based solutions, like relational data-base communication basics and information security principles and approaches. Most of the jobs available in the IT industries are web technology related.

SECTION-I**Topics and Contents:****Unit-I Front End Tools [CO1→PO1, PO2, PO5 – CO Strength 3,2,2]**

Introduction to web technology, internet and www, Web site planning and design issues. HTML5: structure of html document, HTML elements: headings, paragraphs, line break, styles, colors, fonts,

links, frames, lists, tables, images and forms, CSS, Bootstrap, XML, JSON. [4 Hrs]

Unit-II Client-Side Technologies [CO2→PO1, PO2, PO3, PO5, PO12 – CO Strength 3,2,2,1,3]

JavaScript: Overview of JavaScript, Data types, Control Structures, Arrays, Functions and Scopes, HTML5 forms Validation, Objects in JS, DOM: DOM levels, DOM Objects and their properties and methods, Manipulating DOM. JQuery: Introduction to JQuery, Loading JQuery, selecting elements, changing styles, creating elements, appending elements, removing elements, handling events. [6 Hrs]

Unit-III Server-Side Technologies

[CO3→ PO1, PO2, PO3, PO4, PO6 - CO Strength 2,3,3,2,3]

PHP: Introduction to PHP, Features, sample code, PHP script working, PHP syntax, conditions & Loops, Functions, String manipulation, Arrays & Functions, Form handling, Cookies & Sessions, File Handling, Exception Handling, E-mail validations, MySQL with PHP [4 Hrs]

SECTION-II

Topics and Contents:

Unit-IV Spring Boot [CO4→PO1, PO2, PO3, PO7, PO10, PSO4 – CO Strength 3, 2, 3, 3, 3, 3]

Overview of Spring Boot, Spring Framework, Installing Spring Boot, Build Tool Maven/Gradle/Ant, Core Features, Spring Security, Web Applications, JPA for database connectivity, working with SQL and NoSQL, Messaging, Testing, Deploying Spring Boot Applications, Monitoring. [6 Hrs]

Unit-V React [CO5→ PO1, PO2, PO4, PO5, PO8, PO11, PSO1, PSO3–CO Strength 3, 3, 2, 3, 3, 3, 3]

Introduction to React, React component, JSX, Render function, Component API, Component lifecycle, State, Props, Mixins, Component composition, Pass data from parent to child, Pass data from child to parent, Component styling, Forms, Events, Refs, Keys, Router, Flux. [4 Hrs]

Unit-VI Node JS [CO6→PO1, PO2 PO4 PO9 – CO Strength 3, 2, 2, 3]

Introduction to Node JS, Installation of Node JS, Node JS Modules, Node Package Manager (npm), Creating Web server, File System, Express JS, Serving Static Resources, Database connectivity. [4 Hrs]

Tutorials:**List of Tutorials (Any Thirteen)****Unit-I Front End Tools [CO1, CO2]**

- 1) Examples of html and CSS
- 2) Examples of Bootstrap and XML

Unit-II Client-Side Technologies [CO2]

- 3) Examples of html form validation (a)Email Validation (b)Mob No Validation
- 4) Examples of JavaScript and JQuery

Unit-III Server-Side Technologies [CO3]

- 5) Examples of PHP

Unit-IV Spring Boot [CO4]

- 6) Examples of MySQL
- 7) Examples of Springboot

Unit-V React [CO5]

- 8) Examples of React

Unit-VI Node JS [CO6]

- 9) Examples of Node js

Practical's:**List of Practical's (Any Six)****Unit-I Front End Tools [CO1, CO2]**

- 1) Installation and configuration and testing working of XAMPP server for local host.
- 2) Develop a basic web page using the HTML tags you learned in class. (Develop a responsive web page for your CV using multiple column layout.)

Unit-II Client-Side Technologies [CO1, CO2, CO3]

- 3) Create an admission Template form for VIT admission Process? Perform the validation for email and phone no fields (Develop a responsive web site for your CV having video background for first page and perform the validation using email or mobile number as username and a password of min length 11 consisting at least one uppercase letter one digit and one special character.)

4) Create an one IT company Template with video in Background (The Web Page must be Responsive and the page contains video in Background)

5) Write a JavaScript program to reverse the elements of a given array.

6) Develop a website using toggleable or dynamic tabs or pills with bootstrap and JQuery

Unit-III Server-Side Technologies [CO1, CO2, CO3]

7) Assume we have a file named "webtech.txt", write the correct syntax to open and read the file content.

8) Write a program to calculate Electricity bill in PHP (a) You need to write a PHP program to calculate electricity bill using if-else conditions. (b) Conditions For first 50 units – Rs. 3.50/unit For next 100 units – Rs. 4.00/unit For next 100 units – Rs. 5.20/unit for units above 250 – Rs. 6.50/unit You can use conditional statements.

Unit-IV Spring Boot [CO1, CO3CO4, CO5]

9) Create three MySQL database tables and write php scripts to read, insert & delete data through web interface.

10) Design and implement a website using REST API and Spring Boot.

Unit-V React [CO1, CO4, CO5]

11) Design and implement a website using REST API, Spring Boot and MySQL/Oracle.

12) Design and implement a website using REACT, Spring Boot and MySQL/Oracle.

Unit-VI Node JS [CO1, CO4, CO5, CO6]

13) Design and implement a website using REACT, Node Js and MySQL/Oracle.

Course Projects:

List of Course Project Topics

1. Develop a Website with NLP as a backend
2. Student Grievance System
3. Workflow Management System for MNC
4. Browser-based Game Website using HTML, CSS, JavaScript, Bootstrap

5. Develop an web application that help to farmers to solve their farming problems
6. GST Billing Software for Small Business
7. Online Crime Reporting System using PHP
8. Develop an Online College Voting System
9. Develop an Online Loan Processing System for Farmers.

Seminars:**List of Course Seminar Topics**

1. Evolution of Web Technology
2. CSS and Bootstrap
3. JavaScript and JQuery
4. JSON and AJAX
5. Cookies & Sessions
6. PHP and MySQL
7. Angular JS
8. Java Servlets
9. Java Server Pages (JSP)
10. JSP and Servlets
11. JavaBeans
12. Model-View_Controller (MVC) Paradigm
13. Web Services
14. Strut
15. SOAP

Group Discussion:**List of Group Discussion Topics**

1. Evolution of web technologies
2. HTML v/s XML
3. JavaScript and PHP
4. 21st Century Web Technologies
5. Sql Vs MangoDB[
6. Internet Privacy
7. Ruby
8. Rails
9. Groovy
10. Grails
11. EJB

List of Home Assignments:**List of Design Based Home Assignments**

- 1) Website for restaurant
- 2) Website for e-book shop
- 3) Website for on-line music store
- 4) Website for guest visiting your society
- 5) Website for web search engine

List of Case Study Based Home Assignments

- 1) Emerging Web Technologies
- 2) Databases for Servers
- 3) A case study of JQuery used in any real-time healthcare web application

- 4) SOAP
- 5) Angular versions

List of Blog Based Home Assignment

- 1) Front End Technologies
- 2) Client-Side Technologies
- 3) Server-Side Technologies
- 4) Web Services
- 5) EJB Applications

List of Survey Based Home Assignments

- 1) Survey on Front End Technologies
- 2) Survey on Client-Side Technologies
- 3) Survey on Server-Side Technologies
- 4) Component based technologies

Suggest an assessment Scheme:

Suggest an Assessment scheme that is best suited for the course. Ensure 360-degree assessment and check if it covers all aspects of Bloom's Taxonomy.

MSE, ESE, Seminar, Group Discussion, Home Assignments, Course Project, Lab evaluation, CVV

Text Books: (As per IEEE format)

1. Kumar, A., *Web technologies*, CRC press, 2019
2. Gupta, R., *Internet & Web Technologies*, Engineering Handbook, 2019
3. Martin, M.G., *Programming for Beginners: 6 Books in 1 – Swift+PHP+Java+Javascript+Html+CSS: Basic Fundamental Guide for Beginners*, independently published, 2018
4. *Learning PHP, MySQL & JavaScript: With jQuery, CSS & HTML5*, O'Reilly Media; 5th edition, 2018
5. Kohli, S., *Web Technologies*, PPB Publications, 2015
6. Adam Bretz & Colin J Ihrig, *"Full Stack Javascript Development with MEAN"*, SPD, First Edition 2015, Indian Reprint September 2015
7. Giulio Zamboni, *"Beginning JSP, JSF and Tomcat"*, Apress Publication, Second Edition, 2013
8. Jeremy McPeak & Paul Wilton, *"Beginning JavaScript"*, Wrox Publication, Fifth Edition, 2015
9. Jeffrey C. Jackson, *"Web Technologies: A Computer Science Perspective"*, Second Edition,

Pearson Education, 2007, ISBN 978-0131856035.

10. *Robert W. Sebesta: Programming the World Wide Web, 4th Edition, Pearson education, 2008*

Reference Books: (As per IEEE format)

7. *Marty Hall, Larry Brown, "Core Web Programming", Second Edition, Pearson Education, 2001, ISBN 978-0130897930.*
8. *H.M. Deitel, P.J. Deitel and A.B. Goldberg, "Internet & World Wide Web How To Program", Third Edition, Pearson Education, 2006, ISBN 978-0131752429.*
9. *Chris Bates: Web Programming Building Internet Applications, 3rd Edition, Wiley India, 2006.*
10. *Xue Bai et al: The web Warrior Guide to Web Programming, Thomson, 2003*

MOOCs Links and additional reading material:

2. <https://www.w3.org/html>
3. HTML, The Complete Reference
4. <http://www.htmlref.com/>
5. <http://w3schools.org/>
6. <http://php.net/> <https://jquery.com/>
7. <https://developer.mozilla.org/en-US/docs/AJAX>
8. <http://www.tutorialspoint.com/css/>

Course Outcomes:

On the completion of course, student will able to

1. Create front end web pages using HTML5 and CSS3 tags and attributes
2. Provide validation mechanism and event handling in a website using javascript as a front end technology
3. Integrate front end with serverside and backend technologies for commercial websites using PHP and Mysql
4. Write Web API/RESTful API application programming interface to communicate with Spring boot as a serverside technology.
5. Build single page applications using REACT as a reusable UI component technology as client side technology and Spring boot and Node Js as server side technologies
6. Design and develop three tier enterprise application using client side, server side and back end

CO-PO Map:

	Program Outcomes (PO)												PSO			
	PO 1	PO 2	PO 3	PO 4	PO5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3	PSO 4
CS3215.1	3	2			3											
CS3215.2	3	2	2		1							3				
CS3215.3	2	3	3	2		3										
CS3215.4	3	2	3				3			3						3
CS3215.5	3	3		2	3			3			3		3		3	
CS3215.6	3	2		2					3							
Average	2.8	2.3	2.7	2.0	2.3	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0

CO attainment levels:

Attainment Levels: 1, 2, 3, 4, 4, 5

Future Course Mapping:

Mention other courses that can be taken after completion of this course

Mobile Application Development

Job Mapping:

What are the Job opportunities that one can get after learning this course

Software Engineer, Web Developer, IT Engineer, UI Developer