Course Code	Course name	L	T	P	C
CSEG2071	Advanced Web Technologies	3	0	1	4
Total Units to be Covered: 5		Total Contact Hours: 75			
Prerequisite(s):	Web Technologies - CSEG1042	Syllabus version: 1.0			

Course Objectives

1. To Understand the basics of web Designing.
2. To explain the structure and functioning of the world wide web.
3. To create interactive and functional visually appealing web pages.
4. To build dynamic web pages with validation using Java Script objects and by applying different event handling mechanisms.
5. To understand React.js is and its role in modern web development.

Course Outcomes

On completion of this course, the students will be able to

CO1. Understand web application architecture and can develop basic websites using HTML and Cascading Style Sheets.

CO2. Format and optimize media for the web.

CO3. Determine engineering structural design of XML and can write a well-formed / valid XML document.

CO4. Gain skills in different programming control structures and functions for development of dynamic client-side web applications.

CO5. Understand the programming model provided by the React framework.

CO-PO Mapping

Program Outcomes Course Outcomes	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PSO1	PSO2	PSO3
CO1	1	-	2	-	1	-	-	-	2	-	-	2	3
CO2	1	-	2	-	1	-	-	-	2	-	-	2	3

CO3	1	-	2	-	1	-	-	-	2	-	-	2	3
CO4	1	-	2	-	1	-	-	-	2	-	-	2	3
CO5	1	-	2	-	1	-	-	-	2	-	-	2	3
Average	1	-	2	-	1	-	-	-	2	-	-	2	3

1 – Weakly Mapped (Low) **2 – Moderately Mapped (Medium)**
3 – Strongly Mapped (High) **"_" means there is no correlation**

Syllabus

Unit I: Introduction to jQuery **9 Lecture Hours**

What is jQuery? Setting up jQuery code environment, linking to a jQuery file on a CDN server, understanding jQuery selectors to target HTML elements, jQuery Filters, Event Handling (Click, hover, submit etc.), creating animations with jQuery, Applying CSS properties.

Unit II: Front End Development using Angular JS **9 Lecture Hours**

Introduction to Angular JS – Role of angular JS in web development, basic architecture and core concepts, creating a simple angular JS application, Angular JS Directives – built-in directives and custom directives, two-way data binding and basic usage of filters for data formatting, Controllers, angular forms and events, form validation, Debugging AngularJS applications using developer tools.

Unit-III: Server-Side Development using Node JS **9 Lecture Hours**

Introduction: What is Node JS? Advantages of Node JS, Traditional Web Server Model, Node.js Process Model, Environment Setup, Installing on Windows, Node JS console, Node JS modules and its types, Functions, Buffer, Understanding Node event driven framework, Event Emitter class, Events and Event Loop, inheriting events, Node Package Manager.

Unit-IV: State Management and Working with Data **9 Lecture Hours**

Sessions and Cookies: Introduction to session control, creating and destroying sessions and session variables, starting a session, registering session variables, what is a Cookie? Setting up Cookies, Deleting Cookies, Query string. Introduction to MongoDB: Setting up MongoDB, hosting and authenticating into database, Model Creation, Managing Database Connections, and Performing basic operations.

Unit-V: Data visualization with D3.js **9 Lecture Hours**

Overview of Object-Oriented Concepts, Object Model of ODMG, Object Definition Language, Object Query Language, Object Database Conceptual Design, Distributed Database Concepts, Data Fragmentation, Replication and Allocation Techniques for Distributed Design, Types of Distributed Database Systems, Query Processing in Distributed Databases, Overview of Concurrency Control and recovery techniques in Distributed Databases.

Total lecture Hours 45

References*

Textbooks	1. B. Green and S. Seshadri, AngularJS. "O'Reilly Media, Inc.," 2013. 2. M. Wandschneider, Learning Node.js : a hands-on guide to building Web applications in JavaScript. Upper Saddle River, Nj: Addison-Wesley, 2013. 3. M. Dewar, Getting started with D3. Sebastopol, Ca: O'reilly Media, 2012. 4. iCode Academy, Jquery for Beginners. Independently Published, 2017.
Reference books	1. J. Duckett, G. Ruppert, and J. Moore, JavaScript & JQuery: interactive front-end web development. Indianapolis, In: John Wiley & Sons, 2014. 2. F. Coury, A. Lerner, N. Murray, and C. Taborda, Ng-book : the complete guide to Angular. San Francisco, California: Fullstack.Io, 2018. 3. D. Herron, Node.js Web Development. Packt Publishing Ltd, 2018.
Web Resources	
Journals	
MOOCs, online courses	

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination

Examination Scheme

Components	IA	MID SEM	End Sem	Total
Weightage (%)	50	20	30	100

Advanced Web Technologies Lab

List of Experiments

Experiment 1: Basic jQuery Implementation

1. Write a jQuery to disable the right click menu in html page.
2. Write a jQuery to click on a image to scroll to the top of the page.
3. Write a jQuery to change the color of any paragraph to red on mouseover event.
4. Display and hide message shown in the div tag on click of the buttons.

Experiment 2: jQuery CSS and Events

1. Write a jQuery to add a class to an element.
2. Write a jQuery to access the position of an element.
3. Create a jQuery animation to manipulate multiple CSS properties like padding, color etc.

Experiment 3: Front End Development using AngularJS.

1. Use AngularJS Tables to perform the following.
    - Display a Table
    - Display contents of table with Order by Filter
    - Display Table with even and odd.

Experiment 4: Angular Forms and Events

1. Create a user registration form and perform input validation using angular JS.
2. Create an application for Bill Payment Record using AngularJS.

Experiment 5 and 6: NodeJS basic exercises

1. Create a simple “Hello, World!” server using Node.js and Express.
2. Write a node.js program to replace two or more a's with the letter b on the given string using Regular Expression.
3. Create a basic calculator that can perform arithmetic operations (addition, subtraction, multiplication, and division) through HTTP requests.
4. Write a node.js code to iterate over the given array.

Experiment 7: State Management

1. Write a program to show session management using node.js.
2. Write code to show methods for creating and destroying a session.
3. Write a program to create and delete a cookie using nodejs.

Experiment 8: Working with Data

1. Create a NodeJS application to connect to a MongoDB database.
2. Create an application to store the details of students in a database.
3. Create a search application for finding the students based on given search criteria.
4. Write a program to create an application for a shopping center with all the facilities like add an item, delete an item, update an item detail, stock report, sale etc.

Experiment 9 and 10: Data Visualization - I

1. Create a bar chart using SVG and d3.js.
2. Create circles and rectangles into interactive controls using SVG and D3.js.
3. Write a code to select a particular element and modify the properties using D3.
4. Create an application to fetch data from csv file and populate a graph using SVG and D3.

Total Lab hours 30

References*

Textbooks	1. B. Green and S. Seshadri, AngularJS. "O'Reilly Media, Inc.," 2013. 2. M. Wandschneider, Learning Node.js : a hands-on guide to building Web applications in JavaScript. Upper Saddle River, Nj: Addison-Wesley, 2013. 3. M. Dewar, Getting started with D3. Sebastopol, Ca: O'reilly Media, 2012. 4. iCode Academy, Jquery for Beginners. Independently Published, 2017.
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	Wiley & Sons, 2014. 2. F. Coury, A. Lerner, N. Murray, and C. Taborda, Ng-book : the complete guide to Angular. San Francisco, California: Fullstack.Io, 2018. 3. D. Herron, Node.js Web Development. Packt Publishing Ltd, 2018.
Web Resources	
Journals	
MOOCs, online courses	

Modes of Evaluation: Continuous Assessment

Examination Scheme

Components	Quiz	Performance & Viva	Lab Report	Total
Weightage (%)	30	50	20	100