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CLIENT SIDE SCRIPTING **Course Code : 316005**

Programme Name/s	**: Computer Technology/ Computer Engineering/ Computer Science & Engineering/ Information Technology/ Computer Science & Information Technology/ Computer Science**
Programme Code	**: CM/ CO/ CW/ IF/ IH/ SE**
Semester	**: Sixth**
Course Title	**: CLIENT SIDE SCRIPTING**
Course Code	**: 316005**

I. RATIONALE

Client-side scripting plays a fundamental role in modern web development by enhancing user interactions and improving the overall experience of websites and applications. Web developers utilize it extensively to accomplish tasks like creating dynamic webpages, reacting to events, making interactive forms, verifying information entered by visitors, managing the browser, and more. Using these characteristics, this course assists students in creating highly dynamic web pages.

II. INDUSTRY / EMPLOYER EXPECTED OUTCOME

The aim of this course is to help the student to attain the following industry identified outcomes through various teaching learning experiences :
Develop web application using AngularJS and React Framework.

III. COURSE LEVEL LEARNING OUTCOMES (COS)

Students will be able to achieve & demonstrate the following COs on completion of course based learning

- CO1 - Develop web page using client side scripting technology.
- CO2 - Design dynamic web pages using AngularJS.
- CO3 - Implement the built-in functions and objects in AngularJS.
- CO4 - Develop web application using React.
- CO5 - Apply event handling in React Framework.

IV. TEACHING-LEARNING & ASSESSMENT SCHEME

Course Code	Course Title	Abbr	Course Category/s	Learning Scheme					Credits	Assessment Scheme												
				Actual Contact Hrs./Week			SLH	NLH		Paper Duration	Theory				Based on LL & TL				Based on SL		Total Marks
															Practical							
				CL	TL	LL					FA-TH	SA-TH	Total		FA-PR		SA-PR		SLA		
											Max	Max	Max	Min	Max	Min	Max	Min	Max	Min	
316005	CLIENT SIDE SCRIPTING	CSS	AEC	2	-	4	-	6	3	-	-	-	-	-	25	10	25@	10	-	-	50

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Total IKS Hrs for Sem. : 0 Hrs
Abbreviations: CL- ClassRoom Learning , TL- Tutorial Learning, LL-Laboratory Learning, SLH-Self Learning Hours, NLH-Notional Learning Hours, FA - Formative Assessment, SA -Summative assessment, IKS - Indian Knowledge System, SLA - Self Learning Assessment
Legends: @ Internal Assessment, # External Assessment, *# On Line Examination , @$ Internal Online Examination
Note :

1. FA-TH represents average of two class tests of 30 marks each conducted during the semester.
2. If candidate is not securing minimum passing marks in FA-PR of any course then the candidate shall be declared as "Detained" in that semester.
3. If candidate is not securing minimum passing marks in SLA of any course then the candidate shall be declared as fail and will have to repeat and resubmit SLA work.
4. Notional Learning hours for the semester are (CL+LL+TL+SL)hrs.* 15 Weeks
5. 1 credit is equivalent to 30 Notional hrs.
6. * Self learning hours shall not be reflected in the Time Table.
7. * Self learning includes micro project / assignment / other activities.

V. THEORY LEARNING OUTCOMES AND ALIGNED COURSE CONTENT

Sr.No	Theory Learning Outcomes (TLO's)aligned to CO's.	Learning content mapped with Theory Learning Outcomes (TLO's) and CO's.	Suggested Learning Pedagogies.
1	TLO 1.1 Explain purpose of scripting language. TLO 1.2 Differentiate between static and dynamic web pages. TLO 1.3 Describe the evolution of scripting technologies. TLO 1.4 Illustrate the AJAX architecture. TLO 1.5 Create JSON objects for accessing data in JavaScript program. TLO 1.6 Explain feature of Django and Flask framework.	**Unit - I Fundamental of Client Side Scripting** 1.1 Introduction to the Scripting: Basic web architecture, Role of the client and server, Static vs. dynamic web pages 1.2 History of Scripting Technologies: HTML as a foundation, Early use of inline scripting, Limitations of static HTML, JavaScript 1.3 Introduction to AJAX : AJAX Architecture, Actions 1.4 Basics of JSON: Objects, Scheme 1.5 Webpage with Python: Django and Flask framework	Lecture Using Chalk-Board Presentations Hands-on

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Sr.No	Theory Learning Outcomes (TLO's)aligned to CO's.	Learning content mapped with Theory Learning Outcomes (TLO's) and CO's.	Suggested Learning Pedagogies.
2	TLO 2.1 Describe the MVC Architecture. TLO 2.2 State structure of the given AngularJS web page. TLO 2.3 Describe the function of different controls to be used in web form. TLO 2.4 Implement the filters and directives in given page. TLO 2.5 Write AngularJS program to handle the web page events.	**Unit - II Angular Basics** 2.1 Introduction to AngularJS: AngularJS Extends HTML, Expressions, MVC Architecture, Application in AngularJs, Variables Scope 2.2 AngularJS Forms: FORM tag, Form fields: Single line text field, password field, multiple line text area, radio buttons, and check boxes. Pull down menus: SELECT and OPTION tags. Buttons: submit, reset and generalized buttons, Form Validation 2.3 AngularJS Data Binding :Two-way Binding and ng-model directive 2.4 Filters: Built-In Filters, Custom Filter, Chaining Multiple Filters 2.5 AngularJS Events: ng-mousedown, ng-mouseup, ng-click	Lecture Using Chalk-Board Presentations Hands-on
3	TLO 3.1 Identify the table attributes to organize data in web page. TLO 3.2 Write CSS code for applying type of formatting in web page. TLO 3.3 Describe the use of controllers and its method. TLO 3.4 Write AngularJS program using filters. TLO 3.5 Write AngularJS program to show use of external files in controller.	**Unit - III Working with AngularJS** 3.1 AngularJS Tables: Display Data in a Table, Adding style to the Table data, orderBy Filter, uppercase Filter, Table Index, using $even and $odd 3.2 AngularJS Controllers: Initializing the Model with Controllers, Role of a Controller, Controllers & Modules, Controller Business Logic, Presentation Logic and Formatting Data 3.3 Attaching Properties and functions to scope 3.4 Nested Controllers, Using Filters in Controllers 3.5 Controllers in External Files	Lecture Using Chalk-Board Presentations Hands-on
4	TLO 4.1 State the features of React. TLO 4.2 Describe the life cycle of React. TLO 4.3 Explain the use of different components in a form. TLO 4.4 Implement the state of React Hooks.	**Unit - IV Introduction of React Framework** 4.1 Introduction to React Framework, features, architecture & Form 4.2 Components: Functional components, Class components, Passing and using props 4.3 Lifecycle – Mounting, Updating and Unmounting 4.4 React Hooks – useState,useEffect, useContext	Lecture Using Chalk-Board Presentations Hands-on

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Sr.No	Theory Learning Outcomes (TLO's)aligned to CO's.	Learning content mapped with Theory Learning Outcomes (TLO's) and CO's.	Suggested Learning Pedagogies.
5	TLO 5.1 Write JavaScript to design a form to accept input values using React. TLO 5.2 Write event driven program for the given problem using React. TLO 5.3 Explain the use of list and keys in web pages. TLO 5.4 Write CSS for React application.	**Unit - V Working with React Framework** 5.1 Event handling, Binding event handlers, Arrow functions vs. regular functions 5.2 Working with Forms - Adding components, Handling form, Submitting Forms, Form validation 5.3 Lists and Keys - Rendering Lists, List with Key, Using map() to render lists of elements 5.4 Cascading Style Sheets- Different types of Style Sheets, Styling Libraries, Popular CSS frameworks (e.g., Bootstrap, Material-UI)	Lecture Using Chalk-Board Presentations Hands-on

VI. LABORATORY LEARNING OUTCOME AND ALIGNED PRACTICAL / TUTORIAL EXPERIENCES.

Practical / Tutorial / Laboratory Learning Outcome (LLO)	Sr No	Laboratory Experiment / Practical Titles / Tutorial Titles	Number of hrs.	Relevant COs
LLO 1.1 Create web page using structure tags to display sample message.	1	* Write a program to display " Hello World " using: • Console.log() • document.write( ) • alert ()	2	CO1
LLO 2.1 Create Python script to display sample message.	2	Write a program to display "Welcome " using Python script	2	CO1
LLO 3.1 Write programs a JSON Object with properties and access the object using JSON.	3	Create objects for the given problem with JSON	4	CO1
LLO 4.1 Install Angular software application.	4	1. Setup Angular development environment using: • Installation of Node.js and npm • Installation of Angular CLI 2. Write a program to display "Good Morning " Message on web page	2	CO2
LLO 5.1 Use forms controls.	5	* Write AngularJS program to design form using various controls and apply validations on input	4	CO2
LLO 6.1 Implement data binding in AngularJS.	6	* Write a program to display data model view and display data for given problem	2	CO2
LLO 7.1 Implement data binding synchronization between the model and the view.	7	Write a program to display two - way data binding	2	CO2
LLO 8.1 Use filters in AngularJS.	8	*Write a program to implement different filters in AngularJS	2	CO2
LLO 9.1 Implement various keys and mouse events.	9	* Write a program to implement different events in Angular JS	2	CO2

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Practical / Tutorial / Laboratory Learning Outcome (LLO)	Sr No	Laboratory Experiment / Practical Titles / Tutorial Titles	Number of hrs.	Relevant COs
LLO 10.1 Create a web page to implement table.	10	Write a program displaying data in a table	2	CO3
LLO 11.1 Implement table operation using filters.	11	* Write a program to implement CSS to table data-odd and even rows	2	CO3
LLO 12.1 Develop Angular JS applications using controllers.	12	* Write programs for implementation of different methods of AngularJS Controllers	2	CO3
LLO 13.1 Use concept of controllers external files.	13	* Write programs to demonstrate use of controllers in external files	4	CO3
LLO 14.1 Execute after writing program to handle data using React form.	14	* Write a program to handle data using React form	2	CO4
LLO 15.1 Execute after writing program passing function argument into React component.	15	Write a program to pass function argument into React component	2	CO4
LLO 16.1 Implement the concept of React life cycle.	16	*Write a program to pass function argument into React program and implemnt the life cycle of React	2	CO4
LLO 17.1 Implement states of React Hooks.	17	* Write a program to implement states of React Hooks	4	CO4
LLO 18.1 Use React components to design real time form.	18	Write a program to design real time form using react components	4	CO5
LLO 19.1 Apply validations for React form.	19	Write a program to apply validations for React form	4	CO5
LLO 20.1 Use concept of List using React.	20	* Write a program to manipulate List using key and without key in React	2	CO5
LLO 21.1 Create a page to use map function in React.	21	Write a program to render a list using map function in React	2	CO5
LLO 22.1 Implement different approaches for styling a React web page.	22	* Write a program to apply following approaches of css to a React web page • Inline styling • CSS stylesheets • CSS Modules	2	CO5
LLO 23.1 Carry out a microproject on the given problem statement.	23	* The microproject has to be web based real time application suggested by teacher such as : • Develop a web "Chat Application" having Chat window with send and recive the text,image etc. • Develop a web "Music Player application" where user can get the Album with signer and play the music.	4	CO2 CO3 CO4 CO5

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Practical / Tutorial / Laboratory Learning Outcome (LLO)	Sr No	Laboratory Experiment / Practical Titles / Tutorial Titles	Number of hrs.	Relevant COs

Note : Out of above suggestive LLOs -

- '*' Marked Practicals (LLOs) Are mandatory.
- Minimum 80% of above list of lab experiment are to be performed.
- Judicial mix of LLOs are to be performed to achieve desired outcomes.

VII. SUGGESTED MICRO PROJECT / ASSIGNMENT/ ACTIVITIES FOR SPECIFIC LEARNING / SKILLS DEVELOPMENT (SELF LEARNING) : NOT APPLICABLE

VIII. LABORATORY EQUIPMENT / INSTRUMENTS / TOOLS / SOFTWARE REQUIRED

Sr.No	Equipment Name with Broad Specifications	Relevant LLO Number
1	Computer system with all necessary peripherals and internet connectivity Node.js and npm Angular CLI OR Visual Studio Code IDE	All

IX. SUGGESTED WEIGHTAGE TO LEARNING EFFORTS & ASSESSMENT PURPOSE (Specification Table)

Sr.No	Unit	Unit Title	Aligned COs	Learning Hours	R-Level	U-Level	A-Level	Total Marks
1	I	Fundamental of Client Side Scripting	CO1	5	0	0	0	0
2	II	Angular Basics	CO2	6	0	0	0	0
3	III	Working with AngularJS	CO3	6	0	0	0	0
4	IV	Introduction of React Framework	CO4	6	0	0	0	0
5	V	Working with React Framework	CO5	7	0	0	0	0
Grand Total				**30**	**0**	**0**	**0**	**0**

X. ASSESSMENT METHODOLOGIES/TOOLS

Formative assessment (Assessment for Learning)

- Continous assessment based on process and product related performance indicators.Each practical will be assessed considering-

-60% weightage to process
-40% weightage to product

Summative Assessment (Assessment of Learning)

- End Semester Examination (Lab. performance),Viva-voce

XI. SUGGESTED COS - POS MATRIX FORM

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Course Outcomes (COs)	Programme Outcomes (POs)							Programme Specific Outcomes* (PSOs)		
	PO-1 Basic and Discipline Specific Knowledge	PO-2 Problem Analysis	PO-3 Design/ Development of Solutions	PO-4 Engineering Tools	PO-5 Engineering Practices for Society, Sustainability and Environment	PO-6 Project Management	PO-7 Life Long Learning	PSO-1	PSO-2	PSO-3
CO1	1	-	1	1	-	-	1			
CO2	2	2	2	2	1	-	1			
CO3	2	2	3	3	2	-	1			
CO4	2	2	2	3	2	-	1			
CO5	2	2	3	3	2	-	1			

Legends :- High:03, Medium:02,Low:01, No Mapping: -
*PSOs are to be formulated at institute level

XII. SUGGESTED LEARNING MATERIALS / BOOKS

Sr.No	Author	Title	Publisher with ISBN Number
1	Thomas A. Powell	HTML & CSS: The Complete Reference	McGraw Hill Education; 5th edition (1 July 2017), ISBN-13 : 978-0070701946
2	Valeri Karpov, Diego Netto	Professional AngularJS (WROX)	Wiley (1 January 2015), ISBN-13 : 978-8126556434
3	Brad Green, Shyam Seshadri	AngularJS: Less Code, More Fun, And Enhanced Productivity With Structured Web Apps (Greyscale Indian Edition)	Shroff/O'Reilly; First Edition (1 January 2013), ISBN-13 : 978-9351101260
4	Mayur Patil	React.js For Beginners	Notion Press (11 January 2023), ISBN-13 : 979-8889355106
5	Alex Banks	Learning React: Modern Patterns for Developing React Apps	Shroff/O'Reilly; Second edition (16 July 2020), ISBN-13 : 978-9385889158

XIII . LEARNING WEBSITES & PORTALS

Sr.No	Link / Portal	Description
1	https://www.tutorialspoint.com/angular/index.htm	Designing web page using AngularJS. (All contents)
2	https://www.w3schools.com/angular/	AngularJS Tutorial for beginners
3	https://www.w3schools.com/REACT/DEFAULT.ASP	React Tutorial for beginners
4	https://www.tutorialspoint.com/reactjs/index.htm	Designing web page using React.(All contents)
5	https://javascript.info/	The Modern JavaScript Tutorial
6	https://www.javascripttutorial.net/react-tutorial/	Providing React,AngularJS and Javascript contents.
7	https://www.youtube.com/watch?v=NSWzs-Jt65w	Angular JS for Beginners

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Sr.No	Link / Portal	Description

Note :

- Teachers are requested to check the creative common license status/financial implications of the suggested online educational resources before use by the students

MSBTE Approval Dt. 04/09/2025 **Semester - 6, K Scheme**