

A. Course Handout (Version 1.0) | Last updated on 21st February, 2022

Institute Name	Chitkara University Institute of Engineering & Technology		
Department Name	Department of Computer Science & Engineering		
Programme Name	Bachelor of Engineering (B.E.)-Computer Science & Engineering		
Course Name	Advanced Web Development	Session	2021-2022
Course Code	CS163	Semester/Batch	2nd/2021
Lecture/Tutorial/Practical (Per Week)	2-0-4	Course Credit	4
Course Coordinator Name	Dr. Chetna		

1. Scope and Objectives of the Course

The course provides a wide scope of learning & understanding of the subject. The main objectives of the course are to:

- To provide knowledge of Front-End Technologies like Advance JavaScript concepts, JQuery and React js to enable students to build user friendly websites.
- To provide the required skills and project-based experience needed for entry into web design and development careers.
- To provide knowledge of variety of strategies and tools to create well-designed websites.

2. Course Learning Outcomes

After completion of the course, students will be able to do the following:

CLO01: Understand the JavaScript advance concepts, JQuery, AJAX and ReactJS to develop web pages and retrieve data from the server.

CLO02: Apply different attributes to change the layout and position of elements on web pages.

CLO03: Analyse the dynamic changes and responses using advanced web concepts.

CLO04: Design the minor project and generate report using Front End Technologies.

CLO-PO mapping grid | Program outcomes (POs) are available as a part of Academic Program Guide (APG) at

Course Learning Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CLO1	H	M					L					
CLO2	H		M		L							
CLO3	M		H									
CLO4			H		L							H

3. Recommended Books (Reference Books/Textbooks)

RB1: 'Learning web designing: a beginner's guide to HTML, CSS, JavaScript, and web graphics' by Niederst Robbins, 4th Edition, Oreilly Publication, 2012

RB2: 'jQuery In Action' by De Rosa, Aurelio, et al. United States, Manning Publications, 2015.

RB3: 'React JS Fundamental: Learn fundamental React JS Single Page Application with Fetching Data from API and useContext', Onesinus Saut Parulian, 2019.

RB4: 'React. Js Book: Learning React JavaScript Library from Scratch' by Sidelnikov, Greg., Independently Published, 2017.

4. Other readings and relevant websites:

Serial No	Link of Journals, Magazines, Websites and Research Papers
1.	https://www.w3schools.com/jquery/
2.	https://www.javascript.com/
3.	https://reactjs.org/
4.	https://www.ics.uci.edu/~goodrich/teach/cs161/notes/

5. Recommended Tools and Platforms

Sublime Text/Notepad++/Visual Studio

Coding Ninjas (online platform- <https://www.codingNinjas.com/>)

6. Course Plan:

Lecture No.	Topic	Detailed Contents
1-3	JavaScript Advanced concept/closure	<ul style="list-style-type: none"> ● Revising basic concept of JavaScript ● Function Hoisting ● Function within Function ● Function Expressions ● Passing function as arguments ● Mouse and Keyboard Events ● Propagation of Event ● Closures, const and let ● Let in for loops ● Arrow Functions ● Bindings in Arrow Function
4-6	Constructors and Classes	<ul style="list-style-type: none"> ● This Keyword ● This in Strict Mode ● Function to create Objects ● Object constructor ● Adding Behaviour to Objects ● Objects ● Class, Properties and Methods ● Class Expressions and Hoisting ● Exports and Imports declaration

7-8	Regular Expressions	<ul style="list-style-type: none"> • Using the Test method, Match Literal Strings, Extract Matches, Match Anything with Wildcard Period, Match Single Characters Not Specified, Match Beginning String Patterns, Match Everything, Match Letters and Numbers, Match Whitespace, Check for All or None, Remove Whitespace from Start and End. • Form Validation: Data validation and constraint validation in HTML forms
9-12	JQuery-1	<ul style="list-style-type: none"> • Introduction to JQuery • Writing Code Using JQuery Modifying CSS Using Query • Event Handling Using JQuery: Understanding an Event, "Firing" Events, Event Handler Registration, Working with Event Handlers (Adding and Removing), Removing Event Handlers, Event Propagation. • Animation • DOM in JQuery
13-16	AJAX	<ul style="list-style-type: none"> • Client server communication • Ajax- understanding the name • HTTP, API and JSON • Ajax Request • Ajax Request with JQuery • Handling Errors • Courses API • Authenticated API requests
17-21	Introduction to React	<ul style="list-style-type: none"> • What is React. • What are components? • SPA vs MPAs • React vs others • Tools and Installation of tools • The terminal • Using React-I • Using React-II • Create-react-app • Folder structure • Installing react developer tools • Understanding JSX • JSX Restrictions • Creating a Functional Component
22-24	Styling React components and elements	<ul style="list-style-type: none"> • Working with Components & Re-Using Them • Outputting Dynamic Content • Working with Props • Understanding the "children" Prop • Understanding & Using State • Props & State • Handling Events with Methods • Events Listening • Manipulating the State • Function Components Naming • Using the useState() Hook for State Manipulation • Stateless vs Stateful Components • Passing Method References Between Components • Adding Two Way Binding • Adding Styling with Stylesheets

		<ul style="list-style-type: none"> • Working with Inline Styles • Working with list and conditions • Outlining the Problem Set • Setting Styles Dynamically • Setting Class Names Dynamically • Adding and Using Radium • Using Radium for Media Queries • Introducing Styled Components • More on Styled Components • Styled Components & Dynamic Styles • Working with CSS Modules • CSS Modules & Media Queries • React Hooks
25-26	Mini project-starting the project	Practice-project

7. Lab Plan

Sr. No.	Lab Number	Experiment Topics	Platform	Learning Resource
1	1-4	Java scripting Advanced concept/closure	Coding Ninjas	https://www.tutorialspoint.com/javascript/index.htm https://www.tutorialspoint.com/javascript/javascript_events.htm https://www.tutorialspoint.com/javascript/javascript_nested_functions.htm
2	3-8	Constructors and Classes	Coding Ninjas	https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Classes
3	9-14	Regular Expressions	Coding Ninjas	https://developer.mozilla.org/en-US/docs/Web/JavaScript/Guide/Regular_Expressions
4	15-16	JQuery-1	Coding Ninjas	https://www.tutorialspoint.com/jquery/index.htm https://www.tutorialspoint.com/jquery/jquery-events.htm
5	17-32	AJAX	Coding Ninjas	https://www.tutorialspoint.com/ajax/index.htm https://developer.mozilla.org/en-US/docs/Web/Guide/AJAX/Getting_Started
6	33-38	Introduction to React	Coding Ninjas	https://www.javatpoint.com/react-introduction



7	39-42	Create-react-app	Coding Ninjas	https://reactjs.org/docs/create-a-new-react-app.html
8	43-44	Styling React components and elements	Coding Ninjas	https://reactjs.org/docs/faq-styling.html
9	45-46	Handling Events with Methods, Events Listening, Manipulating the State, Function Components Naming	Coding Ninjas	https://reactjs.org/docs/handling-events.html
10	47-48	Using the useState() Hook for State Manipulation, Stateless vs Stateful Components, Passing Method References Between Components, Adding Two Way Binding, Adding Styling with Stylesheets	Coding Ninjas	https://codedcreatures.com/2019/12/24/using-the-usestate-hook-for-state-manipulation-in-react-js/ https://www.geekstrick.com/lesson/passing-method-references-between-components/ https://reactjs.org/docs/two-way-binding-helpers.html https://medium.com/technofunnel/4-ways-to-add-styles-to-react-component-37c2a2034e3e

8. Delivery/Instructional Resources

Lecture No.	Topics	PPT	Industry Expert Session	Web References	Audio-Video
1-3	Java scripting Advanced concept/closure			https://www.tutorialspoint.com/javascript/index.htm https://www.tutorialspoint.com/javascript/javascript_events.htm https://www.tutorialspoint.com/javascript/javascript_nested_functions.htm	Coding Ninjas Videos
4-6	Constructors and Classes			https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Classes	Coding Ninjas Videos
7-8	Regular Expressions			https://developer.mozilla.org/en-US/docs/Web/JavaScript/Guide/Regular_Expressions	Coding Ninjas Videos



9-12	JQuery-1			https://www.tutorialspoint.com/jquery/index.htm https://www.tutorialspoint.com/jquery/jquery-events.htm	Coding Ninjas Videos
13-16	AJAX			https://www.tutorialspoint.com/ajax/index.htm https://developer.mozilla.org/en-US/docs/Web/Guide/AJAX/Getting_Started	Coding Ninjas Videos
17-21	Introduction to React			https://www.javatpoint.com/react-introduction https://reactjs.org/docs/jsx-in-depth.html https://reactjs.org/docs/create-a-new-react-app.html	Coding Ninjas Videos
22-24	Styling React components and elements			https://reactjs.org/docs/faq-styling.html https://reactjs.org/docs/handling-events.html https://codedcreatures.com/2019/12/24/using-the-usestate-hook-for-state-manipulation-in-react-js/ https://www.geekstrick.com/lesson/passing-method-references-between-components/ https://reactjs.org/docs/two-way-binding-helpers.html https://medium.com/technofunnel/4-ways-to-add-styles-to-react-component-37c2a2034e3e	https://www.youtube.com/watch?v=j5P9FHiBVNo https://www.youtube.com/watch?v=e1IQAIBJiHQ

9. Action plan for different types of learners

Slow Learners	Average Learners	Fast Learners
<ul style="list-style-type: none"> • Remedial Classes on Saturdays • Encouragement for improvement using Peer Tutoring • Use of Audio and Visual Materials • Use of Real-Life Examples 	<ul style="list-style-type: none"> • Formative Exercises used to highlight concepts and notions • Pre-coded algorithms to illustrate concepts and notions • E-notes and E-exercises to read ahead of the pedagogic material. 	<ul style="list-style-type: none"> • Design solutions for complex problems • Presentation on topics beyond those covered in CHO • Engaging students to hold hands of slow learners by creating a Peer Tutoring Group

10. Evaluation Scheme & Components:

Evaluation Component	Type of Component	No. of Assessments	Weightage of Component	Mode of Assessment
Component 1	Formative Assessments (FAs)	03*	20%	Online
Component 2	Subjective Test/Sessional Tests (STs)	03**	30%	Online
Component 3	End Term Examinations	01	50%	Online
Total		100%		

*Out of 03FAs, the ERP system will automatically pick marks of the best 02 FAs for final marks evaluation of FAs.

** Out of 03STs, the ERP system will automatically pick marks of the best 02 STs for final marks evaluation of STs.

11. Details of Evaluation Components:

Evaluation Component	Description	Syllabus Covered (%)	Timeline of Examination	Weightage (%)
Component 01	FA1	Up to 25%	Week 4	20%
	FA2	26%-55%	Week 9	
	FA3	55%-85%	Week 14	
Component 02	ST 01	Up to 30%	6 th April'22	30%
	ST 02	31% - 70%	11 th May'22	
	ST 03	71% - 100%	8 th June'22	
Component 03	End Term Examination*	100%		50%
Total				100%

*As per Academic Guidelines minimum of 75% attendance is required to become eligible for appearing in the End Semester Examination

Evaluation Components

Type of Assessment	Time of Conduction	Total Marks	Question Paper Format			
			1 Mark MCQ	2 Mark MCQ	5 Mark Algorithm/Coding	10 Mark Algorithm/Coding
Formative Assessment 1	Week 4	20	15	-	1	-
Sessional Test 1	29 th April'22	30	5	5	1	1
Formative Assessment 2	Week 9	20	15	-	1	-
Sessional Test 2	6 th April'22	30	5	5	1	1
Formative Assessment 3	Week 14	20	15	-	1	-
Sessional Test 3	8 th June'22	30	5	5	1	1
End Term Examination		50	10	5	4	1

12. Syllabus of the Course:

Lecture Number	Topic (s)	Content of Lectures	Weightage%
1-5	JavaScript Advanced concept/closure	<ul style="list-style-type: none"> Revising basic concept of JavaScript Function Hoisting Function within Function Function Expressions Passing function as arguments Mouse and Keyboard Events Propagation of Event Closures, const and let Let in for loops Arrow Functions Bindings in Arrow Function 	10%
6-10	Constructors and Classes	<ul style="list-style-type: none"> This Keyword This in Strict Mode Function to create Objects Object constructor Adding Behaviour to Objects Objects Class, Properties and Methods Class Expressions and Hoisting Exports and Imports declaration 	10%
11-15	Regular Expressions	<ul style="list-style-type: none"> Using the Test method, Match Literal Strings, Forms Extract Matches, Match Anything with Wildcard Period, Match Single Characters Not Specified, Match Beginning String Patterns, Match Everything But Letters and Numbers, Match Whitespace, Check for All or None, Remove Whitespace from Start and End. Form Validation: Data validation and constraint validation in HTML 	10%
16-25	JQuery-1	<ul style="list-style-type: none"> Introduction to JQuery Writing Code Using JQuery Modifying CSS Using Query Event Handling Using JQuery Explore JQuery! Animation DOM 	20%
26-30	AJAX	<ul style="list-style-type: none"> Client server communication Ajax- understanding the name HTTP, API and JSON Ajax Request Ajax Request with JQuery Handling Errors Courses API Authenticated API requests 	10%

31-34	Introduction to react	<ul style="list-style-type: none"> • What is React. • What are components? • SPA vs MPAs • React vs others • Tools and Installation of tools • The terminal 	5%
35-37	Hello world	<ul style="list-style-type: none"> • Using React-I • Using React-II • Create-react-app • Folder structure • Installing react developer tools • Understanding JSX • JSX Restrictions • Creating a Functional Component 	10%
38-48	Styling components and elements	<ul style="list-style-type: none"> • Working with Components & Re-Using Them • Outputting Dynamic Content • Working with Props • Understanding the "children" Prop • Understanding & Using State • Props & State • Handling Events with Methods • Events Listening • Manipulating the State • Function Components Naming • Using the useState() Hook for State Manipulation • Stateless vs Stateful Components • Passing Method References Between Components • Adding Two Way Binding • Adding Styling with Stylesheets • Working with Inline Styles • Working with list and conditions • Outlining the Problem Set • Setting Styles Dynamically • Setting Class Names Dynamically • Adding and Using Radium • Using Radium for Media Queries • Introducing Styled Components • More on Styled Components • Styled Components & Dynamic Styles • Working with CSS Modules • CSS Modules & Media Queries • React Hooks 	25%
49-52	Mini project	Practice- project	--

This Document is approved by:

Designation	Name	Signature
Course Coordinator	Dr. Chetna	
Head Academic Delivery	Dr. Vikas Khullar	
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