

LOK JAGRUTI UNIVERSITY (LJU)
INSTITUTE OF ENGINEERING & TECHNOLOGY

Department of Computer Engineering (701)
Bachelor of Technology (B.E.) – Semester - III

Course Code:	117013392	Teaching Scheme					
Course Name:	Full Stack Development with Javascript-1						
Category of Course:	Engineering Science Course (ESC)	Lecture (L)	Tutorial (T)	Practical (P)	Credit	Total Hours	
		3	0	6	6	30	
Syllabus							
Unit No.	Topic	Prerequisite Topic	Successive Topic		Teaching Hours		
01	Introduction to Web and Web design 1.1 Basics of WWW, HTTP Protocol: Features, Request and Response, Various status codes, URL, Client Server architecture	---	---		1 (5%)		
	1.2 Concepts of Effective Web Design:Website Planning, Web design issues: Browser Compatibility, Bandwidth and Cache, Display Resolution, Look and Feel of Website, Page Layout and Linking, Designing Effective Navigation	---	---				
02	HTML Structure and Core Tags 2.1 Basics of HTML: HTML Page Structure, Building Blocks of HTML:<html>,<head>,<title>,<body>, Editors(NotePad, NotePad++, Sublime Text, VS Code)	---	---				
	2.2 Semantic and Non-Semantic HTML Tags, Block and Inline Elements, Document Structure Tags: <html>,<head>,<body>,<title>,<link>,<favicon>,<script>,<style><meta>: name, content, charset, http-equiv, viewport, description, keywords, author Layout & Sectioning Tags: <div>,,<header>,<footer>,<main>,<section>,<article>,<aside>,<nav> Content & Text Tags: <h1> to <h6>,<p>,<pre>, ,<hr> Text Formatting Tags: ,,<i>,,<u>,<mark>,,<ins>,<sub>,<sup>,<abbr>	---	---		3 (10%)		
	2.3 Media Tags: ,<figure>,<figcaption>,<audio>,<video>,<source> <iframe>: map, youtube, any web resources List tags: ,, Attributes: type, start, reversed Table tags: <table>,<tr>,<td>,<th>,<thead>,<tbody>,<tfoot>,<caption> Attributes: colspan, rowspan	---	---				
	Forms, Graphics, and Interactive Elements in HTML 3.1 Form & Input Tags: <form>,<fieldset>,<legend>,<input>,<textarea>,<button>,<label>,<datalist>,<select>,<option>,<optgroup> <input> type: text, password, email, number, tel, checkbox, radio, submit, reset, button, file, hidden , date, range, color Attributes: action, method, type, name, id, value, placeholder, required, readonly, disabled, checked, maxlength, minlength, step, min, max, multiple, accept, autocomplete, autofocus, rows, cols, selected, list	---	---		3 (10%)		
03	3.2 SVG: Line, Circle, Rectangle , Logo, Polygon(Star)	---	---				
	3.3 HTML Image Maps: <map> and <area>	---	---				
	Introduction to CSS						
04	4.1 Significance of CSS,Types of CSS-Inline, Internal, External	---	---				
	4.2 Various CSS Selectors: Id, Class, Attribute, Universal, Descendant, Child , grouping selector, Pseudo class, Pseudo element CSS Specificity explanation	---	---				
	4.3 Background Properties: background-color, background-image, background-repeat, background-position, background-size, background-attachment, background-clip, background shorthand Text Properties: color, text-align, text-indent, text-transform, text-decoration, letter-spacing, word-spacing, line-height, text-shadow Font Properties: font-family, font-size, font-style, font-weight, font-variant, font , Google Fonts (via <link> or @import)	---	---		3 (10%)		
	4.4 Border: border-style, border-width, border-color, border Boxes: margin, padding, width, height, box-sizing, box-shadow Display: inline, block, inline-block, none, flex, grid Flexbox : flex-direction, justify-content, align-items, flex-wrap, gap, order, flex (shorthand) Grid Layout : grid-template-columns, grid-template-rows, gap (grid-gap), grid-column, grid-row Positioning: position (static, relative, absolute, fixed), top, right, bottom, left, z-index	---	---				
	CSS Effects, Animations & Responsive Design						
05	5.1 Multiple column: column-count, column-gap, column-rule-style, Style images: Rounded Images, Thumbnail, Responsive Images, Transparent Images Gradients: Linear, Radial, Conic Transformations: transform (rotate(), scale(), scaleX(), scaleY()), translate(), translateX(), translateY(), skew(), skewX(), skewY()) Transitions: transition-property, transition-duration, transition-timing-function , transition-delay Animations: @keyframes, animation-name, animation-duration, animation-timing-function, Iteration Count, Direction	---	---		4 (10%)		
	5.2 CSS Variables: :root, var(), Media Queries: Syntax, Media Types	---	---				

	Introduction to Bootstrap & Utility Classes			
06	6.1 Bootstrap Setup, Containers : Fixed, Fluid, Utility first classes : Spacing, Display, Colors, Sizing, Borders, Positioning, Typography, Shadows, Background, Text, Align, Margin, Padding, Flex Images : Rounded, Circle, Thumbnail, Bootstrap Icons, Table	---	---	3 (10%)
	6.2 Grid System, Alerts, Button, Spinner	---	---	
	6.3 Dropdown, Cards, Collapse, Accordian	---	---	
07	Bootstrap Components: Navigation & Forms			4 (15%)
	7.1 Navbar : Dropdown, Collapsible Sidebar Offcanvas components, Carousel, Modal, Scrollspy	---	---	
08	7.2 Pagination, Forms : Form Validations, Floating labels	---	---	3 (5%)
	Core JavaScript Concepts & Functions			
	8.1 Basics of Javascript and EcmaScript(ES6), Concept of Var, Let and Const Keywords, Template Literals, Datatype and Variables, Array and objects, Array methods : push(), pop(), map(), filter(), forEach(), includes(), find()	---	---	
08	8.2 Loops : for, while, do...while, for...of, for...in, Condition : if...else, switch Functions : declarations, expressions, parameters, return values, Difference between function and arrow function (ES6), Default Parameters : Default Parameter Values, Function Rest Parameter, Spread & Rest Operators	---	---	3 (5%)
	8.3 Pop up Boxes : Alert, Confirm, Prompt	---	---	
09	JavaScript DOM Manipulation & Events			3 (15%)
	9.1 DOM Manipulation : document object, getElementById, getElementsByClassName, querySelector, querySelectorAll, innerHTML, innerText, setAttribute, getAttribute, removeAttribute, style manipulation	---	---	
10	9.2 Event Handling : Events: click, input, submit, mouse, keyboard, basic concept addEventListener, Event Object & Handling Essentials : event.target, event.type, event.key, event.preventDefault	---	---	3 (10%)
	Modern JavaScript: Async, Fetch, and Forms			
10	10.1 Form Validation : required fields, regex, Form Processing, Storage : Local Storage, Session Storage	<form> & <input>(017013392– Unit-3)	---	3 (10%)
	10.2 Asynchronous JavaScript : Introduction to Promises (.then(), .catch(), .finally()), and async/await syntax.	---	---	
	10.3 Explain the fetch API for making HTTP requests to external APIs.	---	---	

Sr No.	Practical Title	Link to Theory Syllabus																			
1	<p>Write HTML script to generate following design.</p> <table border="1"> <thead> <tr> <th rowspan="2"></th> <th colspan="2">average</th> <th rowspan="2">other category</th> </tr> <tr> <th>height</th> <th>weight</th> </tr> </thead> <tbody> <tr> <td>males</td> <td>1.9</td> <td>0.003</td> <td>yyy</td> </tr> <tr> <td>females</td> <td>1.7</td> <td>0.002</td> <td>xxx</td> </tr> </tbody> </table>		average		other category	height	weight	males	1.9	0.003	yyy	females	1.7	0.002	xxx	Unit-2					
	average		other category																		
	height	weight																			
males	1.9	0.003	yyy																		
females	1.7	0.002	xxx																		
2	<p>Write HTML code to display following irregular table.</p> <table border="1"> <thead> <tr> <th rowspan="2">A</th> <th>B</th> <th>C</th> <th>D</th> <th>E</th> </tr> <tr> <th>F</th> <th>G</th> <th>I</th> <th></th> </tr> </thead> <tbody> <tr> <td>O</td> <td>J</td> <td>K</td> <td>H</td> <td>L M N</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td>Q</td> </tr> </tbody> </table>	A	B	C	D	E	F	G	I		O	J	K	H	L M N					Q	Unit-2
A	B		C	D	E																
	F	G	I																		
O	J	K	H	L M N																	
				Q																	
3	<p>Design a simple form to register for new user information and use fieldset and legend to differentiate personal details and educational details. Personal Details should contain Full Name, Email, Mobile number, Gender, Birth Date and Hobbies. and Educational Details should contain SSC Percentage, HSC Percentage, Branch(dropdown-CE,IT,CSE,CST,AIML). Add Submit and reset buttons.</p>	Unit-3																			
4	<p>Write an HTML code to embed a video in a web document.</p>	Unit-3																			
5	<p>Write an HTML script to draw a tricolor according to Indian National flag with Ashok Chakra as a simple circle in between.</p>	Unit-3																			
6	<p>Draw SVG Logo on a circle filled with orange color (shaded part) as shown in figure below.</p> 	Unit-3																			
7	<p>Apply following CSS using external CSS.</p> <p>1) Write one paragraph using <p> tag. Color of first line of paragraph should be green and text should be in italic.</p> <p>2) When you select any text of heading, background color of selected text will become grey.</p> <p>3) Create one ordered list which starts with capital Roman letters. color of list should be green and font-size should be 30px.</p>	Unit-4																			
8	<p>Create a flex container with 4 child boxes. Use flex-direction: row. Apply justify-content: space-between. Center items vertically using align-items. Give the third box order: -1 so it appears first.</p>	Unit-4																			
9	<p>Write the following styles in separate CSS file and also show how to link this CSS file in HTML file and show use of styles.</p> <p>i) The headings should have normal font style and font's size should be 120%.</p> <p>ii) Define class c1 for paragraph which defines font style bold having 3cm spacing for paragraph initialization.</p> <p>iii) Apply background color orange and apply a background image "nature.jpg" and it should be repeated horizontally only.</p>	Unit-4																			
10	<p>Write down HTML/CSS code that will change both the background-color and the position of the <div> element when the animation is 25% complete, 50% complete, 75% complete and again when the animation is 100% complete. also has a 2 seconds delay before starting the animation. an animation should be played backwards first, then forwards, the animation continue for ever. initial background color is red, then it converts to yellow, green and blue gradually.</p>	Unit-5																			
11	<p>Create a button and perform the tasks as asked below. On hover, its background color should smoothly change from blue → orange in 2 seconds. Use transition-property, transition-duration, and transition-timing-function (ease-in-out). Add a 1 second delay before the transition starts.</p>	Unit-5																			
12	<p>Write down HTML/CSS code that shows how to create a linear gradient (from left to right) with the colors of the rainbow and some text like "Rainbow".</p>	Unit-5																			
13	<p>Write down HTML/CSS code that changes the background-color to blue if the viewport is 250 pixels wide or wider (if the viewport is less than 250 pixels, the background-color will be pink)</p>	Unit-5																			

Sr No.	Practical Title	Link to Theory Syllabus
14	<p>Design card as shown below using Bootstrap 5.</p>  <p>Card title Some quick example text to build on the card title and make up the bulk of the card's content. Go somewhere</p>	Unit-6
15	<p>Write a script to design 3 FAQs with question and answer. Initially it shows all 3 questions only. By clicking particular question, it should display answer of that question only. If user clicks any other question, then respective answer should be opened and previous answer should disappear.</p>	Unit-6
16	<p>Write a script using HTML/CSS and bootstrap to create following pagination. Make Link 1 as active & link 4 as disable.</p> <p style="text-align: center;">Prev 1 2 3 4 Next</p>	Unit-7
17	<p>Design following using Bootstrap5 form validation.</p> <p>Form Validation</p> <p>Try to submit the form.</p> <p>Username: <input type="text" value="Enter username"/> 0 Please fill out this field.</p> <p>Password: <input type="text" value="Enter password"/> 0 Please fill out this field.</p> <p><input type="checkbox"/> I agree on blabla. Check this checkbox to continue.</p> <p>Submit</p>	Unit-7
18	<p>Write an HTML using bootstrap-5 to make a set of a slide show of any three random images with buttons having a caption. It must have buttons to jump on next/previous slides also.</p>	Unit-7
19	<p>Create an HTML page with a <div> and a button. Write an ES6 function with two default parameters a and b. The function should also take two arguments c and d when called. On button click, the function should calculate the equation: Result=(a×b)+c-d Display the result inside the <div>.</p>	Unit-8
20	<p>Write a JavaScript that handles following mouse events. Add necessary elements.</p> <p>(i) JavaScript gives the key code for the key pressed. (ii) If the key pressed is "a","e","i","o","u", the script should announce that vowel is pressed. (iii) When the key is released background should change to blue.</p>	Unit-9
21	<p>Write a JavaScript to handle following mouse events.</p> <p>i.If mouse clicked on heading, content of heading changed to "Hello World" with italic effect & 50px size. ii.If button named red is clicked then heading should change to red color & button named blue is clicked then heading should change to blue color.</p>	Unit-9
22	<p>Create an HTML page with one heading <h1>, one paragraph <p>, a button, and an unordered list . When the button is clicked, change the text of the heading. Change the color of all paragraphs to red. Change the background color of the first paragraph. Underline all list items inside the .</p>	Unit-9
23	<p>Create a calculator with two number inputs, an operation dropdown (+ - * /), and a button. On button click, perform the calculation using a Promise. Resolve with result if inputs are valid, reject if invalid (e.g., not numbers or division by zero). Use .then() to show result, .catch() for errors, and .finally() to display "Calculation Finished".</p>	Unit-10
24	<p>Design a login form using HTML & JavaScript with following validations on username and password fields.</p> <p>1. Password length must be 6 to 12 characters 2. Username should not start with _, @ or number. 3. Both should not be blank.</p>	Unit-10

Major Components/ Equipment	
Sr. No.	Component/Equipment
1	Computer
2	Software: code: blocks, Editor, Bootstrap libraries

Proposed Theory + Practical Evaluation Scheme by Academicians (% Weightage Category Wise and it's Marks Distribution)

L: 3 T: 0 P: 6

Note : In Theory Group, Total 4 Test (T1+T2+T3+T4) will be conducted for each subject. Each Test will be of 25 Marks.

Each Test Syllabus Weightage: Range should be 20% - 30%

Group (Theory or Practical)	Group (Theory or Practical) Credit	Total Subject Credit	Category	% Weightage	Marks Weightage
Theory	3	6	MCQ	20%	40
Theory			Theory Descriptive (Mainly Queries or Programme)	30%	60
Theory			Formulas and Derivation	0%	0
Theory			Numerical	0%	0
Expected Theory %	50%		Calculated Theory %	50%	100
Practical	3		Individual Project	13%	25
Practical			Group Project	13%	25
Practical			Internal Practical Evaluation (IPE)	35%	50
Practical			Viva	0%	0
Practical			Seminar	0%	0
Expected Practical %	50%		Calculated Practical %	50%	100
Overall %	100%			100%	200

Course Outcome

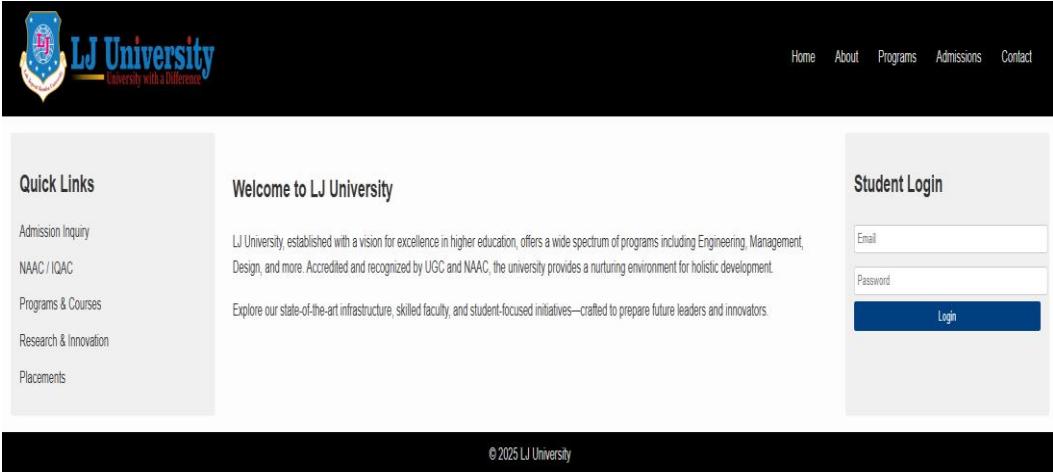
- Understand the concepts Of WWW, HTTP Protocol and Client-Server architecture and HTML.
- Explore the new features of CSS to define and apply CSS rules in the Web Pages for rich User Interface.
- Determine how to build responsive web design using Bootstrap.
- Use JavaScript to create dynamic and interactive web applications.

Suggested Reference Books

- HTML 5 Black Book 2Ed, By Kogent Learning Solutions Inc.
- Javascript For Impatient Programmers By Dr. Axel Rauschmayer
- Full Stack Javascript By Azat Mardan, Apress Publilcation
- Spurlock Jake, Bootstrap: Responsive Web Development. O'Reilly Media, Inc.
- Charlton Ting And R Allen Wyke, Pure Javascript By Jason D. Gilliam, Techmedia

List of Open Source Software/Learning website

- www.geeksforgeeks.org
- www.tutorialspoint.com
- www.programiz.com
- www.codingninjas.com

Practical Project/Hands On Project																												
Sr. No.	List of Practical Projects	Linked with Unit																										
1	<p>Design following form.</p> <p style="text-align: center;">Registration form</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">Enter your first name</td> <td><input type="text" value="enter your first name"/></td> </tr> <tr> <td>Enter your last name</td> <td><input type="text"/></td> </tr> <tr> <td>Enter your password</td> <td><input type="password"/></td> </tr> <tr> <td>ReEnter your password</td> <td><input type="password"/></td> </tr> <tr> <td>Enter your email</td> <td><input type="text"/></td> </tr> <tr> <td>Enter your mobile</td> <td><input type="text"/></td> </tr> <tr> <td>Enter your address</td> <td><input type="text"/></td> </tr> <tr> <td>Select your gender</td> <td>male <input type="radio"/> female <input type="radio"/></td> </tr> <tr> <td>Select your hobbies</td> <td><input type="checkbox"/> hobby1 <input type="checkbox"/> hobby2 <input type="checkbox"/> hobby3 <input type="checkbox"/></td> </tr> <tr> <td>Select your DOB</td> <td><input type="text" value="dd-mm-yyyy"/></td> </tr> <tr> <td>Select your Country</td> <td><input type="text"/></td> </tr> <tr> <td>Upload your pic</td> <td><input type="file" value="Choose File"/> <input type="button" value="No file chosen"/></td> </tr> <tr> <td colspan="2" style="text-align: center; padding-top: 5px;"> <input type="button" value="Save My Data"/> <input type="button" value="Reset Data"/> </td> </tr> </table>	Enter your first name	<input type="text" value="enter your first name"/>	Enter your last name	<input type="text"/>	Enter your password	<input type="password"/>	ReEnter your password	<input type="password"/>	Enter your email	<input type="text"/>	Enter your mobile	<input type="text"/>	Enter your address	<input type="text"/>	Select your gender	male <input type="radio"/> female <input type="radio"/>	Select your hobbies	<input type="checkbox"/> hobby1 <input type="checkbox"/> hobby2 <input type="checkbox"/> hobby3 <input type="checkbox"/>	Select your DOB	<input type="text" value="dd-mm-yyyy"/>	Select your Country	<input type="text"/>	Upload your pic	<input type="file" value="Choose File"/> <input type="button" value="No file chosen"/>	<input type="button" value="Save My Data"/> <input type="button" value="Reset Data"/>		Unit 2,3
Enter your first name	<input type="text" value="enter your first name"/>																											
Enter your last name	<input type="text"/>																											
Enter your password	<input type="password"/>																											
ReEnter your password	<input type="password"/>																											
Enter your email	<input type="text"/>																											
Enter your mobile	<input type="text"/>																											
Enter your address	<input type="text"/>																											
Select your gender	male <input type="radio"/> female <input type="radio"/>																											
Select your hobbies	<input type="checkbox"/> hobby1 <input type="checkbox"/> hobby2 <input type="checkbox"/> hobby3 <input type="checkbox"/>																											
Select your DOB	<input type="text" value="dd-mm-yyyy"/>																											
Select your Country	<input type="text"/>																											
Upload your pic	<input type="file" value="Choose File"/> <input type="button" value="No file chosen"/>																											
<input type="button" value="Save My Data"/> <input type="button" value="Reset Data"/>																												
2	<p>Design following layout:</p> 	Unit 4,5																										
3	Create a webpage using Bootstrap with a button that toggles an offcanvas sidebar. The sidebar should slide in from the left or right and contain:	Unit 6,7																										
4	<p>Do as directed: Write a JavaScript that handles following mouse events. Add necessary elements. (i) If the mouse is over the heading, that heading should turn yellow and if the mouse goes out of the heading it should turn black. (ii) If find time button is clicked show time and date information. If button named “red” is clicked, background should change to red and If button named “green” is clicked, background should change to green.</p>	Unit 8,9																										
5	<p>Create a simple contact form with fields for username, email, and message. When the form is submitted: Save the entered data into localStorage. Retrieve and display the stored data below the form.</p>	Unit-10																										