CODE	COURSE NAME	CATEGORY	L	T	P	CREDIT
ITT301	WEB APPLICATION DEVELOPMENT	PCC	3	1	0	4

Preamble: Web Application Development course is intended to deliver the elementary concepts of Web Application Development with HTML, CSS, JavaScript, JQuery, Node JS and MongoDB thereby equipping them to develop real time web applications.

Prerequisite: Basics of programming

Course Outcome (CO): After completion of the course, the student will be able to

CO No.	Course Outcomes	Bloom's Category
CO1	Identify HTML5 elements in webpages	Level 2: Understand
CO2	Implement Cascading Stylesheet to add style in HTML pages	Level 3: Apply
CO3	Apply JavaScript to add functionality to web pages	Level 3: Apply
CO4	Use Ajax & JQuery to enhance the functioning of web pages	Level 3: Apply
CO5	Develop web applications with HTML, CSS, JavaScript, Node JS and MongoDB	Level 3:Apply

Mapping of Course Outcomes with Program Outcomes   3/2/1: High/Medium/Low

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	2	2		2							
CO2	1	2	2		2							
CO3	2	2	1		2							
CO4	2	2	1		3							1
CO5	2	3	1	1	3							2

Assessment Pattern

Bloom's Category	Continuous Assessment Tests (Marks)		End Semester Examination (Marks)
	1	2	
Remember			
Understand	30	20	40
Apply	20	30	60
Analyze			
Evaluate			
Create			

Mark Distribution

Total Marks	CIE	ESE	ESE Duration
150	50	100	3 hours

Continuous Internal Evaluation Pattern:

Attendance   : 10 marks

Continuous Assessment Test (2 numbers)   : 25 marks

Assignment/Quiz/Course project   : 15 marks

End Semester Examination Pattern: There will be two parts; Part A and Part B. Part A contains 10 questions with 2 questions from each module, having 3 marks for each question. Students should answer all questions. Part B contains 2 questions from each module of which student should answer any one. Each question can have maximum 2 sub-divisions and carry 14 marks.

Sample Course Level Assessment Questions

CO1: Differentiate ordered list and unordered list with example.

CO2: Create a navigation bar in the format shown below using Cascading Stylesheet and HTML:
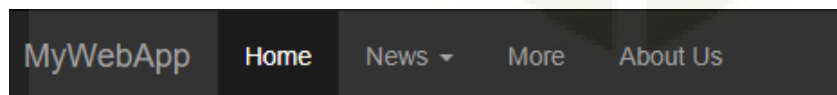
CO3: Demonstrate insertion of new list item in an HTML page utilizing DOM methods.

CO4: Use Ajax & JQuery to enhance the functioning of web pages

CO5: Create a web application for library with HTML, CSS, JavaScript and Node.
The features needed in the website are:

1.   Insert Book
2.   Delete Book
3.   Checkout Book

Model Question Paper

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Course Code: ITT301

Course Name: WEB APPLICATION DEVELOPMENT

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Max.Marks:100   Duration: 3 Hours

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PART A   **(10*3=30)**

(Each question carries 3 marks)

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1. What is the use of href? Give example.
2. Illustrate the usage of alt attribute in an image tag.
3. What are Cascading Style Sheets?
4. Differentiate block and inline elements.
5. What is Document Object Model?
6. Illustrate how JavaScript makes webpages more interactive.
7. Differentiate let, var and const in JavaScript.
8. Illustrate how ajax works?
9. What are the different operations involved in accessing a web page?
10. Explain different features of node.js.

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PART B   **(5*14=70)**

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11. Explain table tag and create the following table using table tag in HTML:

Branch	CGPA/Percentage		Salary
	UG	PG	
IT	105	12	500000
Others	200	225	400000

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OR

</div>

12. Explain various concerns and operations involved in web design starting from ideation to hosting of a website.

13. Differentiate the concepts of inline, internal and external style sheets with examples.

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OR

</div>

14. Illustrate layout and positioning elements in CSS with example.

15. Explain JavaScript: Objects: Math, String, Date, and document Object with example.

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OR

</div>

16. What is events and explain event handling with example.

17. Explain callbacks, promise and async/await with example.

OR

18. What is Ajax, and explain loading JSON with Ajax.

19. Discuss CRUD operation with node express.

OR

20. Explain steps involved in building a node express app with MongoDB.

Syllabus

MODULE 1: INTRODUCTION TO WEB DESIGNING	8 Hrs

Web Design Basics: Who is the Site For?, Why People Visit your Website?, What Information Your Visitors Need?, Site maps, wireframes, Getting your message across using design, Visual hierarchy, grouping and similarity, Designing Navigation, Search Engine Optimization (SEO), Analytics, Domain Names & Hosting, Ftp & Third party tools

HTML5: Introduction to HTML5, Basic Structure for HTML, Basic HTML tags-Headings, Linking, Images, Special Characters and Horizontal Rules, Lists, Tables, Forms, Internal Linking, meta elements, New HTML5 Form input Types, input and data list elements, autocomplete Attribute, Page-Structure Elements

MODULE 2: STYLE WITH CSS	9 Hrs

Introduction to CSS: Introduction to CSS, Block and Inline Elements, Inline Styles, using internal CSS, using external CSS, How CSS rules cascade, inheritance, why use external style sheets?

CSS3 Basics: CSS selectors, *color:* foreground color, background color, contrast, opacity; *text:* Typeface terminology, Specifying Typefaces, font-size, font-weight, font-style, text-transform, text-decoration, line-height, letter-spacing, word-spacing, text-align, vertical-align, text-indent, text-shadow; responding to users; *box:* box dimensions, limiting width, limiting height, overflow; *border margin and padding*, centering content, change inline/blocks, hiding boxes, box shadows, rounded corners; *list tables and forms:* list-style, table properties, styling forms, styling text input

Layout and positioning: *layout:* key concepts in positioning elements, *controlling the position of elements:* relative positioning, absolute positioning, fixed positioning, z-index, float, clear, creating multi column layout with float, fixed width layout, liquid layout, layout grids, *Images:* controlling size of images in CSS, aligning images using CSS, centering

images using CSS, background images, gradients, Media Queries

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MODULE 3: INTRODUCTION TO JAVASCRIPT 9 Hrs

JavaScript: How JavaScript makes the webpages more interactive, examples of JavaScript in browser, *Basic JavaScript instructions:* statements, comments, variable, data types, arrays, expressions, operators; *functions methods and objects:* function, anonymous function, variable scope, object, this, arrays are objects, browser object model, document object model, *Global objects:* string, number, math, date.

Decision making and Loops: *decision making:* if statement, if…else statement, switch statement, *loops:*key loop concepts, for loops, while loops, do while loops;

DOM: Document Object Model (DOM), the DOM tree as a model of a web page, working with DOM tree, accessing elements, nodelists, selecting elements: using class attribute, tag name, CSS selectors; repeating actions for an entire nodelist, looping through a nodelist, traversing the DOM, adding or removing html content, update text and markup, adding/removing elements

Event handling: different event types and ways to bind an event to an element: using DOM event handlers, using event listeners, using parameters with event listeners; the event object, event delegation, user interface events, event bubbling

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Module 4: JAVASCRIPT ADVANCED 10 Hrs

ECMA Script: ECMA Script versions, ES5 Features, ES6 introduction, Var Declarations and Hoisting, let declaration, Constant declaration, function with default parameter values, default parameter expressions, unnamed parameters, the spread operator, arrow functions, object destructuring, array destructuring, sets and maps, Array.find(), Array.findIndex(), template strings, Javascript classes, callbacks, promises, async/await

AJAX: What is Ajax? , Why use Ajax?, How Ajax works?, Handling Ajax request and response, data formats: XML, JSON; Working with JSON data, Loading HTML with Ajax, Loading XML with Ajax, Loading JSON with Ajax, working with data from other servers

JQuery : What is JQuery ?, A basic JQuery example, Why use JQuery ?, finding elements, JQuery selection, getting element content, updating elements, changing content, inserting elements, adding new content, getting and setting attributes, getting and setting CSS properties, using .each(), events, event object, effects, animating CSS properties, using animation, traversing the DOM, working with forms, JavaScript libraries, JQuery   and

Ajax

Module 5: BACK END DEVELOPMENT	**9 Hrs**
Web Servers: Introduction, HTTP Transactions, Multitier Application Architecture, Client-Side Scripting versus Server-Side Scripting, Accessing Web Servers. **Server Side Scripting with Node.js:** Getting to know node, node.js changed JavaScript forever, features of node, when to use and not use node, asynchronous callbacks, the NoSql movement, node and MongoDB in the wild, Hello World in Node, package.json, modules, *Built-in Modules:* FS Module, HTTP Module, Events; Node Package Manager(npm), web server using http, node.js with express, middleware, routing in express, CRUD operations in express, web server using express, making it live on Heroku **Node.js with MongoDB**: basics of MongoDB, MongoDB CRUD Operations, Building a data model with MongoDB and Mongoose, Defining simple mongoose schemas, build node express app with MongoDB	

Text Books

1. Paul J. Deitel, Harvey M. Deitel, Abbey Deitel, "Internet and World Wide Web How To Program", 5/E, Pearson Education, 2012.

2. Jon Duckett , "HTML and CSS: Design and Build Websites", Wiley

3. Jon Duckett , "JavaScript and JQuery : Interactive Front–End Web Development", Wiley

4. Nicholas C. Zakas, "Understanding ECMAScript 6: The Definitive Guide for JavaScript Developers"

Reference Books

1. Alex Young, Marc Harter, "Node js in practice", Manning.

2. Json Krol , "Web Development with MongoDB and node js", Packt

3. Krishna Rungta , "Node JS: learn in one day

Course Contents and Lecture Schedule

No.	Topic	No. of Lectures (in hours)
1	**Introduction to web designing**	**8**
1.1	**Web Design Basics:** Who is the Site For?, Why People Visit your Website, What Information Your Visitors Need?, Site maps, wireframes, Getting your message across using design, Visual hierarchy, grouping and similarity, Designing Navigation, Search Engine Optimization (SEO), Analytics, Domain Names & Hosting, Ftp & Third party tools	2
1.2	**HTML5:** Introduction to HTML5, Basic Structure for HTML, Basic HTML tags-Headings, Linking, Images, Special Characters and Horizontal Rules	2
1.3	Lists, Tables, Forms, Internal Linking, meta elements, New HTML5 Form input Types	2
1.4	input and data list elements, autocomplete Attribute, Page-Structure Elements	2
2	**Style with CSS**	**9**
2.1	**Introduction To CSS:** Introduction to CSS, Block and Inline Elements, Inline Styles, Using internal CSS, Using external CSS, How CSS rules cascade, inheritance, why use external style sheets?	2
2.2	**CSS3 Basics:** CSS selectors, *color:* foreground color, background color, contrast, opacity; *text:* Typeface terminology, Specifying Typefaces, font-size, font-weight, font-style, text-transform, text-decoration, line-height, letter-spacing, word-spacing, text-align, vertical-align, text-indent, text-shadow; responding to users; *box:* box dimensions, limiting width, limiting height, overflow; *border margin and padding*, centering content, change inline/blocks, hiding boxes, box shadows, rounded corners	2
2.3	*list tables and forms:* list-style, table properties, styling forms, styling text input	1
2.4	**Layout and positioning:** *layout:* key concepts in positioning elements, *controlling the position of elements:* relative positioning, absolute positioning, fixed positioning, z-index, float, clear, creating multi column layout with float, fixed width layout, liquid layout, layout grids,	2

2.5	*Images:* controlling size of images in CSS, aligning images using CSS, centering images using CSS, background images, gradients, Media Queries	2
3	**Introduction To JavaScript**	**9**
3.1	**JavaScript:** How JavaScript makes the webpages more interactive, examples of JavaScript in browser, *Basic JavaScript instructions:* statements, comments, variable, data types, arrays, expressions, operators; *functions methods and objects:* function, anonymous function, variable scope, object, this, arrays are objects, browser object model, document object model, *Global objects:* string, number, math, date;	2
3.2	**Decision making and Loops:** *decision making:* if statement, if…else statement, switch statement, *loops:* key loop concepts, for loops, while loops, do while loops;	2
3.3	**DOM:** Document Object Model (DOM), the DOM tree as a model of a web page, working with DOM tree, accessing elements, nodelists, selecting elements: using class attribute, tag name, CSS selectors; repeating actions for an entire nodelist, looping through a nodelist,	2
3.4	traversing the DOM, adding or removing html content, update text and markup, adding/removing elements	1
3.5	**Event handling:** different event types, three ways to bind an event to an element, using DOM event handlers, using event listeners, using parameters with event listeners, the event object, event delegation, user interface events, event bubbling	2
4	**JavaScript Advanced**	**10**
4.1	**ECMA Script:** ECMA Script versions, ES5 Features, ES6 introduction, Var Declarations and Hoisting, let declaration, Constant declaration, function with default parameter values, default parameter expressions, unnamed parameters, the spread operator, arrow functions, object destructuring, array destructuring, sets and maps, Array.find, Array.findIndex, template strings	2
4.2	JavaScript classes, callbacks, promises, async/await	1
4.2	**AJAX:** What is Ajax?, Why use Ajax?, How Ajax works?, Handling Ajax request and response, data formats: XML, JSON; Working with JSON data, Loading HTML with Ajax,	2

4.3	Loading XML with Ajax, Loading JSON with Ajax, working with data from other servers	1
4.4	**JQUERY :** What is JQuery ?, A basic JQuery example, Why use JQuery ?, finding elements, JQuery selection, getting element content, updating elements, changing content, inserting elements, adding new content, getting and setting attributes	2
4.5	getting and setting CSS properties, using .each(), events, event object, effects, animating CSS properties, using animation, traversing the DOM, working with forms, JavaScript libraries, JQuery and Ajax	2
5	**Back End Development**	**9**
5.1	**Web Servers:** Introduction, HTTP Transactions, Multitier Application Architecture, Client-Side Scripting versus Server-Side Scripting, Accessing Web Servers.	2
5.2	**Server Side Scripting with Node.js:** Getting to know node, node.js changed JavaScript forever, features of node, when to use and not use node, asynchronous callbacks, the NoSql movement, node and MongoDB in the wild, Hello World in Node, package.json, modules,	2
5.3	*Built-in Modules:* FS Module, HTTP Module, Events; Node Package Manager(npm), web server using http, node.js with express, middleware, routing in express, CRUD operations in express, web server using express, making it live on Heroku	2
5.4	**Node.js with MongoDB**: basics of MongoDB, MongoDB CRUD Operations, Building a data model with MongoDB and Mongoose	2
5.5	Defining simple mongoose schemas, build node express app with MongoDB	1