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

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

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