GUJARAT TECHNOLOGICAL UNIVERSITY, AHMEDABAD, GUJARAT

Course Curriculum
DYNAMIC WEBPAGE WITH SCRIPTING LANGUAGE
(Code: 3360705)

Diploma Programmes in which this course is offered	Semester in which offered
Computer Engineering (Elective Group: Web Development, Elective: II)	Sixth

1.   RATIONALE

Responsiveness of any device is demand of the present era. World has been changing from static text data to interactive dynamic data. Moreover, people want to see and interact with webpage on their computer, mobile or even TV sets. The situation is made further complex by use of different operating systems and technology being used in devices of different makes. To design an application suitable for all kind of devices is a challenge of current technology. This course provides the knowledge necessary to develop dynamic web pages using Javascript, jQuery and AJAX. It introduces students to Javascript & jQuery and how the languages can be used to turn static HTML pages into dynamic, interactive web pages. Students will learn the syntax of the Javascript & jQuery languages and how client-side scripts interact with server-side with validations. The students of this course will be able to develop dynamic web based applications with multimedia elements. Hence the industries demand to develop interactive web pages/ web based applications is also satisfied by this course content.

2.   COMPETENCY

The course content should be taught and implemented with the aim to develop required skills in the students so that they are able to acquire following competency:

- **Develop dynamic Web based applications using html, CSS3, JavaScript, jQuery and Ajax.**

3.   COURSE OUTCOMES (COs):

The theory should be taught and practical should be carried out in such a manner that students are able to acquire different learning out comes in cognitive, psychomotor and affective domain to demonstrate following course outcomes.

i.   Create and modify dynamic web assets using Canvas and CSS
ii.   Develop web page using Java script
iii.   Develop web page using object models in JavaScript
iv.   Develop web based application using jQuery
v.   Develop web based application using AJAX

4.   TEACHING AND EXAMINATION SCHEME

Teaching Scheme (In Hours)			Total Credits (L+T+P)	Examination Scheme				Total Marks
				Theory Marks		Practical Marks		
L	**T**	**P**	**C**	**ESE**	**PA**	**ESE**	**PA**	200
3	0	4	7	70	30	40	60	

Legends: **L**-Lecture; **T** – Tutorial/Teacher Guided Theory Practice; **P** - Practical; **C** – Credit **ESE** - End Semester Examination; **PA** - Progressive Assessment.

5.   COURSE CONTENT DETAILS

Unit	Major Learning Outcomes (in cognitive domain)	Topics and Sub-topics
Unit – I **Form Designing using Canvas and CSS**	1a. Write HTML script using enlisted Elements	1.1 Advanced Elements in HTML : Semantic Page Elements: address, article, hgroup, menu, nav section Inline semantic elements : Command, details, dfn, figcaption, figure, summary/details, time, wbr Media elements : canvas, embed, source, svg Event List :Onabort, Onafterprint, Onplay,Onpause, Onprogress, Onscroll, Onunload,Onvolumechange, Onwaiting
	1b. Develop HTML documents using CANVAS tag	1.2 Working with Canvas : canvas Basic concepts, Controlling file and stroke styles (colors, gradients, patterns), drawing essential shapes (drawing rectangles, drawing text, enhancing shapes with shadows), Drawing more complex shapes (Line-drawing options, Making arcs and circles, making quadratic curves, producing a bezier curve)

Unit	Major Learning Outcomes (in cognitive domain)	Topics and Sub-topics
	1c. Explain various CSS formatting styles and apply it to created HTML documents	1.3 Formatting with CSS 1.4 Basics of style sheet: define CSS, use of CSS, types of CSS, syntax, margi, padding, text, font, links 1.5 Employing local styles & making use of ids and classes with Example 1.6 Using floating positioning and absolute positioning
	1d. Explain improved CSS3 elements and apply CSS3 formatting to HTML Documents	1.7 CSS3' new selection tools : attribute selection, not, nth-child, new pseudo-classes (link,visited,active,hover,focus,first-letter,first-line,first-child,before,after, language), @font-face, column support, text-stroke, text-shadow 1.8 Flexible Box layout Model : creating a flexible box layout, viewing a flexible box layout 1.9 New visual Elements: opacity, box-shadow, border-radius, Key Frames, Color values, gradients, image borders, reflections, rounded corners, shadows, transformations, transition animation, transparency 1.10 Medial Query – Responsive Design/Web page
Unit– II Working with JavaScript	2a . List data types, operators and control flow statements in JavaScript.	2.1 JavaScript concept, Origin of JavaScript, Advantages of java script, Java script syntax. 2.2 Variables, Data Types, Operators, Literals, Array and Functions 2.3 JavaScript Control Statements
Unit – III Object Models in JavaScript	3a. Discuss various object models in JavaScript.	3.1 Java script document object model: Learning DOM , Introducing object in Model, Form object, Window object, Document object, Browser object, , Navigator object, The String Objects, Date and Math Object, use of Built in object, User defined object 3.2 The Document Object: Basic, Writing to Documents, Dynamic Documents

Unit	Major Learning Outcomes (in cognitive domain)	Topics and Sub-topics
	3b. Explain form objects and write application using enlisted form objects.	3.3 Form Object - Forms and Forms-based Data: The Form Object , Working With Form Elements and Their Properties, Button Object, Text Objects, Text Area Objects, Hidden Objects, Check Box Objects, Radio Button Objects, Selecting Objects
	3c. Describe importance of validation and write applications based on it.	3.4 Form Validation : Form Validation: A Process , Testing Data , Preparing Data for Validation and Reporting Results, Trapping Empty Fields, Finding Invalid Values, Intercepting the Submit Button, Validating Non-text Form Objects
	3d. Explain window objects and write applications using enlisted window objects.	3.5 Window Object : The window object, Dialog Boxes, Status Bar Messages, Window Manipulations 3.6 Dates and Math Objects : The Date Object, Using and manipulating dates, Displaying the date and time, Time Zones, Extracting the Date, Extracting the Hrs., The Math Object and its constants
Unit– IV Working with jQuery	4a. Discuss various types of jQuery events 4b. Write application based on enlisted events.	4.1 jQuery Events: Define events 4.2 Mouse Events: Click, dblclick,hover 4.3 Keyboard Events : keypress, keydown , Keyup,Keyrelease 4.4 Form Events : submit ,Onload 4.5 Document/Window Events : load , resize , scroll, unload 4.6 bind() and Event Helper Method with Example
Unit –V Working with Ajax	5a. List Applications of Ajax. 5b. Create a Simple Ajax application 5c. Differentiate between AJAX and Non-Ajax Applications 5d. Develop a webpage	5.1 Ajax Basic :The purpose of basic, The XML Http Web Application, Callback function, Traditional Application, Web page Application, Use of HTML and Xml in Ajax 5.2 Passing Data : XML- Creating child function, Dynamic Table, Object Literals – Array, Object, Array in Objects, Objects in Array , JSON Introduction – Syntax, Advantages, Disadvantages

Unit	Major Learning Outcomes (in cognitive domain)	Topics and Sub-topics
	using AJAX	5.3 Ajax Application: Login Form, Preloaded Data, Feedback from using validation, Live search, Dynamic Dependable Dropdown using Ajax- Country, state and city Examples. 5.4 Jquery in Ajax

6.   SUGGESTED SPECIFICATION TABLE WITH HOURS & MARKS (Theory)

Unit No.	Unit Title	Teaching Hours	Distribution of Theory Marks			
			R Level	U Level	A Level	Total Marks
I	Form Designing using Canvas and CSS	08	04	04	05	13
II	Working with JavaScript	06	04	04	05	13
III	Object Models in JavaScript	10	05	05	05	15
IV	Working with jQuery	08	04	05	05	14
V	Working with Ajax	10	05	05	05	15
Total Hours/Marks		**42**	**22**	**23**	**25**	**70**

Legends: R = Remember; U = Understand; A = Apply and above levels (Bloom's Revised taxonomy)

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

7.   SUGGESTED LIST OF EXERCISES/PRACTICALS

The practical should be properly designed and implemented with an attempt to develop different types of skills (**outcomes in psychomotor and affective domain**) so that students are able to acquire the competencies/programme outcomes. Following is the list of practical exercises for guidance.

Note: Here only outcomes in psychomotor domain are listed as practical. However, if these practical are completed appropriately, they would also lead to development of certain outcomes in affective domain which would in turn lead to development of Course Outcomes related to affective domain. Thus over all development of Programme Outcomes (as given in a common list at the beginning of curriculum document for this programme) would be assured.

Faculty should refer to that common list and should ensure that students also acquire outcomes in affective domain which are required for overall achievement of Programme Outcomes/Course Outcomes.

Sr. No.	Unit No.	Practical Exercises (Outcomes in Psychomotor Domain)	Approx Hours. Required
1	I	Write, test and debug small applications with previous HTML tags, input tags, input types.	02
2	I	Write, test and debug small applications with HTML5 Semantic Page Elements, inline semantic elements, media semantic elements.	02
3	I	Write, test and debug small applications with Basic CSS.	02
4	I	Write, test and debug small applications with CSS by employing local styles & making use of ids and classes, managing appearance, absolute and float positioning.	02
5	I	Write, test and debug small applications Using HTML5 and CSS3tag	02
6	I	Write, test and debug small applications with CSS3 using flexible box layout model.	04
7	I	Write, test and debug small applications/template and linking page.	02
8	I	Write, test and debug small applications with Canvas tag.	02
9	II	Write test and debug a JavaScript program illustrating the use of variables and its data types.	02
10	III	Write test and debug a JavaScript program illustrating the importance of Document Object Model.	02
11	III	Write, test and debug a form and implement java script showing all the major form validations.	02
12	III	Write test and debug a JavaScript program illustrating the importance of Window Object Model.	02
13	III	Write test and debug a JavaScript program illustrating the Date and math Objects.	04
14	IV	Write test and debug a jQuery program representing the use of hide(), show() and toggle() functions.	04
15	IV	Write test and debug a program implementing jQuery fading methods.	04
16	IV	Write test and debug a program implementing mouse and	04

		keyboard events.	
17	V	Create a Registration form with validation using Ajax	02
18	V	Write a program to creating image slider using javascript	02
19	V	Form validation program using jquery	04
20	V	Ajax Example with JavaScript to get content of another file	02
21	V	JQuery Ajax method to get content of another file	02
22	V	Write a program to swapping two images using javascript	02
Total Hours			**56**

8.   SUGGESTED LIST OF STUDENT ACTIVITIES

Following is the list of proposed student activities such as:

  i.   Survey of various animated websites and latest tools available to create animated website
  ii. Seminar on various readymade examples of HTML5/CSS3 website available
  iii. Make small interactive website in the group
  iv. Demonstration of individual assigned project

9.   SPECIAL INSTRUCTIONAL STRATEGIES (if any)

  i.   Concepts should be introduced in classroom input sessions and by giving demonstration through projector.
  ii. More focus should be given on practical work which will be carried out in laboratory sessions. If possible some theory sessions may be conducted in labs so that theory and practice can go hand in hand.
  iii. Group Discussion and presentation of relevant websites
  iv. Faculty should allow students to use their creativity and let them struggle to learn on their own during practical sessions. However, faculty should remain around the students and should help them when they are stuck

10.   SUGGESTED LEARNING RESOURCES

A)   List of Books

Sr No.	Title of Book	Author	Publication
1.	Head First JavaScript Programming	Eric T. Freeman , Elisabeth Robson	O'Reilly Media
2.	Head First HTML and CSS 2nd Edition	Elisabeth Robson and Eric Freeman	O'Reilly Media ,2012

Sr No.	Title of Book	Author	Publication
3.	Speaking JavaScript	Axel Rauschmayer	O'Reilly Media
4.	HTML 5 for dummies Quick Reference	Andy Harris	Wiley Publishing, Inc., 2011
5.	Head First jQuery	Ryan Benedetti and Ronan Cranley	O'Reilly Media
6.	Learning jQuery	Jonathon chaffer and Karl Swedberg	O'Reilly Media

B) **List of Major Equipment/ Instrument with Broad Specifications**
   i. Computer System with latest configuration and memory, laptops, servers
   ii. Open source Free software for animations /editors for html5/CSS3
   iii. Multimedia projector
   iv. Internet Access
   v. Access to library resources

C) **List of Software/Learning Websites**
   i. Software: Microsoft windows operating system from xp/vista7/8 to latest version available in market, Adobe Photoshop CS5 or higher version, HTML5 and CSS3 code editors, html5 and CSS3 compatible browsers
   ii. http://udacity.com
   iii. http://www.codecademy.com/learn
   iv. https://www.udemy.com/learn-html5-programming-from-scratch/
   v. http://www.microsoftvirtualacademy.com/training-courses/html5-CSS3-fundamentals-development-for-absolute-beginners
   vi. http://www.w3schools.com
   vii. https://developer.mozilla.org/en/learn/javascript
   viii. http://www.learn-javascript-tutorial.com/
   ix. http://www.html5rocks.com/en/
   x. http://it-ebooks.info/book/884/

11.   COURSE CURRICULUM DEVELOPMENT COMMITTEE

Faculty Members from Polytechnics

- **Prof. K. N. Raval,** H.O.D Computer Department, R. C. Technical Institute, Ahmedabad
- **Prof. P. P. Kotak**, H. O. D Computer Department, A. V. P. T. I., Rajkot
- **Prof. R. M. Shaikh**, H.O.D Computer Department, K. D. Polytechnic, Patan
- **Prof. (Ms.) Manisha. P. Mehta,** Sr. Lecturer in Computer Engineering, K. D. Polytechnic, Patan
- **Prof. R. M. Shah,** Sr. Lecturer in Computer Engineering, Government Polytechnic, Ahmedabad
- **Ms. J. J. Karagthala,** Lecturer in Computer Engineering, Government Polytechnic for Girls, Ahmedabad.
- **Ms. R. K. Vaghela,** Lecturer in R.C.T.I. Ahmedabad.

Coordinator and Faculty Members from NITTTR Bhopal

- **Dr. Sanjay Agarwal, Professor,** Department of Computer Engineering and Applications**.**
- **Dr. Shailendra Singh, Professor Head,** Department of Computer Engineering and Applications**.**