GUJARAT TECHNOLOGICAL UNIVERSITY (GTU)

Competency-focused Outcome-based Green Curriculum-2021 (COGC-2021) Semester-I

Course Title: Web Development Practices
(Course Code: C4313203)

Diploma Programme in which this course is offered	Semester in which offered
Information and Communication Technology	First

1. RATIONALE

Internet is widely used in different areas such as banking, e-commerce, education and many others. Different technologies are used to develop web applications but HTML is the core component in all types of applications for formatting and presenting the web content. This course will impart skill sets related to designing HTML web pages, using cascading style sheets and embedding Java script using open-source compiler. This course will also serve as a pre- requisite for the advanced web development technologies, which students will learn in the upcoming semester.

2. COMPETENCY

The purpose of this course is to help the student to attain the following industry identified competency through various teaching learning experiences:

- **Develop web pages using HTML, JavaScript and CSS.**

3. COURSE OUTCOMES (COs)

The practical exercises, the underpinning knowledge and the relevant soft skills associated with this competency are to be developed in the student to display the following COs:

a) Create structured webpages using Hypertext Markup Language.
b) Apply CSS to style and define the layout of the web pages.
c) Use JavaScript to develop interactive simple webpages.
d) Develop a professional web page using JavaScript and CSS.

4. TEACHING AND EXAMINATION SCHEME

Teaching Scheme (In Hours)			Total Credits (L+T+P/2)	Examination Scheme				
				Theory Marks		Practical Marks		Total Marks
L	T	P	C	CA	ESE	CA	ESE	
0	-	4	2	0	0	25*	25	50

(*): For this practical only course, 25 marks under the practical CA has two components i.e. the assessment of micro-project, which will be done out of 10 marks and the remaining 15 marks are for the assessment of practical. This is designed to facilitate attainment of Cos holistically, as there is no theory ESE.

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

5. SUGGESTED PRACTICAL EXERCISES

The following practical outcomes (PrOs) that are the sub-components of the Cos. *Some of the **PrOs** marked **'*'** are compulsory, as they are crucial for that particular CO at the 'Precision Level' of Dave's Taxonomy related to 'Psychomotor Domain'*.

S. No.	Practical Outcomes (PrOs)	Unit No.	Approx. Hrs. required
1	Write various web terminologies	I	02
2	Use and configure different web browsers and navigate different websites through it.	I	02
3	Use formatting tags to create web page as per given sample.	II	02
4	Use hyper link tag to navigate through different web pages as per given sample.	II	02
5	Use sorted & unsorted list to create web page as per given sample page.	II	02
6	Design a web page and embed various multimedia features in the page.	II	02
7	Use semantic tags to organize web page contents as per given sample.	II	02
8	Use table tag to format web page. Also create the Time Table of your class using table tag.	II	02
9	a. Create a registration webpage using different HTML form elements. b. Create a feedback form using different HTML form elements.	II	02+02
10	Use inline, internal and external style sheets for the student registration form and bank account form created in previous practical.	III	02+02

11	a. Use different CSS elements to create and format your Profile Page (Note: use CSS Background, Text, Font, Tables, Links, Images, Margin etc) b. Create and format your class time table Page Using Different CSS Elements (Note: use CSS Background, Text, Font, Tables, Links, Images, Margin etc)	III	02+02
12	Use JavaScript to perform the following operations: a. find roots of quadratic equation b. find the highest from given three values	IV	02+02
13	Use built in JavaScript functions to perform various operations.	IV	02
14	Use JavaScript to check whether given character is vowel or consonant using switch case.	V	02
15	Use JavaScript to print first 10 even numbers.	V	02
16	Use JavaScript to calculate power of given number.	V	02
17	Use JavaScript to print multiplication table of given number.	V	02
18	Use JavaScript to perform the following operations: a. takes input of student name and address and display in a dialog box. b. change background color of webpage as selected by user from a list of colors given in combo box.	V	02+02
19	Use JavaScript to perform the following operations: a. Calculate the factorial of a given number entered into a textbox. Display the result in another textbox. b. Perform arithmetic operations on two numbers entered into textboxes. Use Radio buttons to select arithmetic operations (Addition, Subtraction, Multiplication and Division). Display the result in another textbox	V	02+02
20	Use JavaScript to perform the following operations: a. Calculate the factorial of a given number entered into a textbox. Display the result in another textbox. b. Perform arithmetic operations on two numbers entered into textboxes. Use Radio buttons to select arithmetic operations (Addition, Subtraction, Multiplication and Division). Display the result in another textbox.	V	02+02
	TOTAL		**56**

Note

*i. More **Practical Exercises** can be designed and offered by the respective course teacher to develop the industry relevant skills/outcomes to match the COs. The above table is only a suggestive list.*

*ii. The following are some **sample** 'Process' and 'Product' related skills (more may be added/deleted depending on the course) that occur in the above listed **Practical Exercises** of this course required which are embedded in the COs and ultimately the competency.*

S. No.	Sample Performance Indicators for the PrOs	Weightage in %
1	Identify suitable approach to design a webpage	10
2	Make a use of HTML Tags to develop a webpage	20
3	Use HTML, CSS to build a simple webpage	20
4	Using scripting language design, an interactive webpage	25
5.	Using scripting language, HTML and CSS tool design a professional web pages	25
Total		**100**

6. MAJOR EQUIPMENT/ INSTRUMENTS REQUIRED

These major equipment with broad specifications for the PrOs is a guide to procure them by the administrators to usher in uniformity of practicals in all institutions across the state.

S. No.	Equipment Name with Broad Specifications	PrO. No.
1	Computer system with operating system and browser that supports JavaScript.	All
2	HTML IDEs and Code Editors	All

7. AFFECTIVE DOMAIN OUTCOMES

The following ***sample*** Affective Domain Outcomes (ADOs) are embedded in many of the above-mentioned COs and PrOs. More could be added to fulfil the development of this competency.

a) Work as a leader/a team member.
b) Follow ethical practices.
c) Practice environmental friendly methods and processes. (Environment related).

The ADOs are best developed through the laboratory/field-based exercises. Moreover, the level of achievement of the ADOs according to Krathwohl's 'Affective Domain Taxonomy' should gradually increase as planned below:

i. 'Valuing Level' in 1st year ii. 'Organization Level' in 2nd year.
iii. 'Characterization Level' in 3rd year.

8. UNDERPINNING THEORY

Only the major Underpinning Theory is formulated as higher level UOs of *Revised Bloom's taxonomy* in order development of the COs and competency is not missed out by the students and teachers. If required, more such higher level UOs could be included by the course teacher to focus on attainment of COs and competency.

Unit	Unit Outcomes (UOs) (4 to 5 UOs at Application and above level)	Topics and Sub-topics
Unit – I Web Development Basics	1a. Explain website basics and overall website development, usability and accessibility features	1.1 Overview of Web Design Concepts 1.2 Web Development Teams 1.3 Web Project Management Fundamentals 1.4 Web Site Development Process 1.5 Web Page Layout and Elements 1.6 Web Site Usability and Accessibility 1.7 Configure Browsers Setting 1.8 Navigation Concepts 1.9 Web Graphics 1.10 Multimedia and the Web
Unit – II Hyper Text Markup Language (HTML)	2a. Design a static website using various HTML features	2.1 HTML and the Evolution of Markup languages 2.2 HTML formatting tags 2.3 Create Hyperlink, Tables 2.4 Create Web Forms 2.5 Multimedia Inserting Techniques 2.6 Create Frames 2.7 GUI HTML Editors 2.8 Site Content and Metadata
Unit– III Cascading Style Sheets	3a. Design a uniform formatted website by implementing CSS Justify the application of the	3.1 Cascading Style Sheets for Web page design 3.2 Creating CSS rules in Dreamweaver
Unit	**Unit Outcomes (UOs)** (4 to 5 UOs at Application and above level)	**Topics and Sub-topics**
	given type of feedback	3.3 Format Text with CSS 3.4 Use of CSS Selectors 3.5 Embed Style Sheets 3.6 Attach External Style Sheets

Unit – IV Introduction to JavaScript	4a. Explain basic syntax of JavaScript. 4b. Apply operators to perform different calculations. 4c. Describe the functions available in JavaScript.	4.1 Introduction to JavaScript 4.2 Basic Syntax - Statements, Comments, Data types, Variables 4.3 Operators- Arithmetic, logical, comparison 4.4 Working with built-in functions alert (), prompt (), parsing functions, eval ().
Unit– V **User Defined Function and decision making in JavaScript**	5a. Write steps to apply conditional and loop statements for logical decision making and repetition. 5b. Write procedure to create the user defined function that performs a specific task. 5c. Write process to develop event- oriented web pages.	5.1 Conditional statements 5.2 Loop statements 5.3 Working with user defined functions. 5.4 Document Object Model – Accessing HTML elements into JavaScript (Window, Document, Form, Input elements, no script tag) HTML Events (onchange, onclick, onmouseover, onmouseout, onkeydown, onload).

***Note**: The UOs need to be formulated at the 'Application Level' and above of Revised Bloom's Taxonomy' to accelerate the attainment of the COs and the competency.*

9. SUGGESTED SPECIFICATION TABLE FOR QUESTION PAPER DESIGN

Unit No.	Unit Title	Teaching/ Practical Hours	Distribution of Theory Marks			
			R Level	U Level	A Level	Total Marks
I	Web Development Basics	04	----Not Applicable---			
II	Hyper Text Markup Language (HTML)	18				
III	Cascading Style Sheets	08				
IV	Introduction to JavaScript	06				
V	User Defined Function and decision making in JavaScript	20				
Total		**56**				

10. SUGGESTED STUDENTS' ACTIVITY

Other than the classroom and laboratory learning, following are the suggested student- related ***co-curricular*** activities which can be undertaken to accelerate the

attainment of the various outcomes in this course: Students should perform following activities in group and prepare reports of about 5 pages for each activity. They should also collect/record physical evidences for their (student's) portfolio which may be useful for their placement interviews:

a) Identify tools used for web page development and present its features.
b) Undertake course "HTML" available on Swayam online platform. (https://onlinecourses.swayam2.ac.in/aic20_sp11/preview)
c) Undertake course "JavaScript for Beginners Specialization" available on coursera online platform. (https://www.coursera.org/specializations/javascript-beginner) or any other such site.
d) Undertake course "HTML, CSS, and Javascript for Web Developers" available on coursera online platform. (https://www.coursera.org/learn/html-css-javascript-for- web-developers) or any other such site.

11. SUGGESTED SPECIAL INSTRUCTIONAL STRATEGIES (if any)

These are sample strategies, which the teacher can use to accelerate the attainment of the various outcomes in this course:

a) Massive open online courses (***MOOCs***) may be used to teach various topics/sub topics.
b) Guide student(s) in undertaking micro-projects.
c) ***'L' in section No. 4*** means different types of teaching methods that are to be employed by teachers to develop the outcomes.
d) About ***20% of the topics/sub-topics*** which are relatively simpler or descriptive in nature is to be given to the students for ***self-learning***, but to be assessed using different assessment methods.
e) With respect to ***section No.11***, teachers need to ensure to create opportunities and provisions for ***co-curricular activities***.
f) Guide students on how to address issues on environ and sustainability
g) Guide students for using data manuals.

13. SUGGESTED MICRO-PROJECTS

Only one micro-project is planned to be undertaken by a student that needs to be assigned to him/her in the beginning of the semester. In the first four semesters, the micro-project is group-based (group of 3 to 5). However, **in the fifth and sixth semesters**, the number of students in the group should ***not exceed three.***

The micro-project could be industry application based, internet-based, workshopbased, laboratory-based or field-based. Each micro-project should encompass two or more COs which are in fact, an integration of PrOs, UOs and ADOs. Each student will have to maintain dated work diary consisting of individual

contribution in the project work and give a seminar presentation of it before submission. The duration of the microproject should be about **14**- **16** ***(fourteen to sixteen) student engagement hours*** during the course. The students ought to submit micro-project by the end of the semester to develop the industry-oriented COs.

A suggestive list of micro-projects is given here. This has to match the competency and the COs. Similar micro-projects could be added by the concerned course teacher:

a) Construct departmental website
b) Develop any domain specific website (Food, Automobiles, Educational,Business etc.)
c) Develop a website showcasing information about electronic wastes and its dumping process.

14. SUGGESTED LEARNING RESOURCES

S. No.	Title of Book	Author	Publication with place, year and ISBN
1	HTML 5 Blackbook	DT Editorial services	Dreamtech press, New Delhi, ISBN : 9789351199076
2	HTML & CSS: The Complete Reference	Thomas Powell	Tata McGrew Hills, New Delhi, 2010 ISBN : 9780070701946
3	JavaScript the Complete Reference	Thomas Powell	Tata McGrew Hills, New Delhi, 2004 ISBN : 9780070590274

15. SOFTWARE/LEARNING WEBSITES

1. www.w3schools.com/html/
2. www.csstutorial.net/
3. https://www.w3schools.com/css/default.asp
4. https://www.w3schools.com/js/default.asp
5. https://www.thesitewizard.com/kompozer/index.shtml
6. https://www.tutorials4u.com/editors/using-komposer-web-editor.htm

16. PO-COMPETENCY-CO MAPPING

Semester II	Web Development Practices (Course Code: 1313203)						
	POs and PSOs						
Competency & Course Outcomes	PO 1 Basic & Discipline specific knowledge	PO 2 Problem Analysis	PO 3 Design/ development of solutions	PO 4 Engineering Tools, Experimentation &Testing	PO 5 Engineering practices for society, sustainability & environment	PO 6 Project Management	PO 7 Lifelong learning
Competency Develop web pages using HTML, JavaScript and CSS.							
Course Outcomes Create structured webpages using Hypertext Markup Language.	3	1	1	-	-	-	1
Apply CSS to style and define the layout of the web pages.	3	2	2	-	-	-	1
Use JavaScript to develop interactive simple webpages.	3	2	2	1	1	-	1
Develop a professional web page using JavaScript and CSS.	3	2	2	1	1	-	1

Legend: '**3'** for high, '**2**' for medium, **'1'** for low or **'-'** for the relevant correlation of each competency, CO, with PO/ PSO

17. COURSE CURRICULUM DEVELOPMENT COMMITTEE

GTU Resource Persons

S. No.	Name and Designation	Institute	Contact No.	Email
1	Shree T.P.Chanpura HOD, BOS member of ICT	Government Polytechnic for Girls, Ahmedabad	9824280515	tchanpura@gmail.com
2	Smt. M. P. Mehta HOD	Government Polytechnic, Gandhinagar	9879578273	manishamehtain@gmail.com

3	Shree M.R.Panchal	Government Polytechnic for Girls, Ahmedabad	9723340568	Panchalmihir031@gmail.com