CHITKARA UNIVERSITY

Course Handout

Institute/School Name	Chitkara University Institute of Engineering and Technology		
Department Name	Department of Computer Science & Engineering		
Programme Name	Bachelor of Engineering (B.E.) - Computer Science & Engineering		
Course Name	Introduction to Web Technologies	Session	2025-2026
Course Code	25CSE0101	Semester/Batch	1st /2025
L-T-P (Per Week)	2-0-2	Course Credits	03
Pre-requisite	NA	NHEQF Level	4.5
Course Coordinator	Dr. Chetna Sharma	SDG Number[4]	4, 9

1. Objectives of the Course

Introduction to Web Technologies course objective is to equip students with the knowledge and skills to design, develop, and deploy responsive, interactive, and visually appealing web applications by mastering foundational and advanced web technologies including HTML, CSS, Bootstrap, and deployment tools.

The main objectives of the course are:

- To understand the fundamentals of the web, including its history, architecture, protocols, and domain management. By mastering these core concepts, learners can develop a solid foundation for building and managing modern web applications.
- To create well-structured and semantic web pages using HTML, incorporating forms, media, and validation techniques. This enables students to design functional and interactive web pages that enhance usability and accessibility.
- To style and enhance web pages using CSS, applying layouts, animations, and responsive design principles. By learning these skills, students can produce visually appealing and adaptable designs for diverse devices and screen sizes.
- To utilize Bootstrap and other web frameworks for developing modern, user-friendly interfaces. By leveraging these tools, learners can accelerate development while maintaining design consistency and responsiveness.
- To deploy and maintain functional websites using hosting services and version control platforms like GitHub Pages. This ensures students gain the practical skills needed to manage live projects and collaborate effectively in professional environments.

2. Course Learning Outcomes (CLOs)

Student should be able to:

	CLOs	Program Outcomes (PO)	NHEQF Level Descriptor	No. of Lectures
CLO01	Understand and explain how the internet works, including concepts like HTTP, DNS, domain names, hosting, and browsers.	PO1, PO2	Q1, Q2, Q3	4
CLO02	Analyse and construct well-structured HTML documents using various HTML tags.	PO1, PO3	Q1, Q2	10
CLO03	Apply CSS styling techniques, including selectors, box model, positioning, flexbox, animations, gradients, and pseudo-elements, to create visually appealing and consistent web pages.	PO3, PO5	Q2, Q3	12
CLO04	Develop responsive and adaptive web designs using measurement units, viewport settings, media queries, and mobile-first or desktop-first approaches.	PO3, PO5, PO6	Q2, Q3	8
CLO05	Utilize Bootstrap components, grid system, breakpoints, and utility classes to design modern, responsive, and user-friendly interfaces.	PO3, PO5	Q3, Q4, Q5	6
CLO06	Deploy functional websites using GitHub Pages, applying version control best practices, and perform live testing for usability and performance.	PO4, PO5, PO8, PO9, PO10, PO11	Q3, Q4, Q5, Q6	4
Total Contact Hours				**44**

CLO-PO Mapping

CLO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	Type of Assessment's
CLO01	M	M										Formative, Summative
CLO02			M		H							Formative, Summative
CLO03			M		M	H						Formative, Summative
CLO04			H		M							Formative, Summative
CLO05							M		H			Formative, Summative
CLO06				L	M			H	M	M	L	Formative, Summative

H=High, M=Medium, L=Low

3. Recommended Books:

B01: 'Web Enabled Commercial Application Development using HTML, JavaScript, DHTML and PHP' by Ivan Bayross, 4th Edition, BPB Publications.

B02: 'The Complete Reference HTML & XHTML' by Thomas Powell, 5th Edition, Tata McGraw-Hill Company Limited.

B03: 'HTML 4.0' by E. Stephen Mack, Janan Platt, Anaya Multimedia publication.

B04: 'Mastering HTML, CSS & JavaScript Web Publishing' by Laura Lemay, Rafe Coburn, Jennifer Kyrnin, 7th edition, SAMS publication.

B05: 'Computer Networking: Principles, Protocols and Practice' by Olivier Bonaventure

B06: 'Pro Git by Scott Chacon and Ben Strob,Apress Available at https://git-scm.com/book/en/v2'

4. Other readings and relevant websites:

Serial No	Link of Journals, Magazines, websites and Research Papers
1.	https://onlinecourses.nptel.ac.in/noc25_cs15/preview
2.	https://developer.mozilla.org/en-US/docs/Web/HTML
3.	https://bennettfeely.com/flexplorer/
4.	https://onlinecourses.swayam2.ac.in/nou24_cs09/preview
5.	https://docs.github.com/en/developers

5. Recommended Tools and Platforms

Any Text Editor like Notepad++, Sublime, Visual Studio Code etc.

6. Course Plan

Theory Plan

Lecture	Topic	Detailed Contents
1	Getting Started with Web Basics, Core Web Architecture	Welcome to Course, History of Web, how does the internet work, Client Server Architecture, Frontend and Backend, What Happens When You Visit a website
2	Communication Protocols and Web Infrastructure	HTTP Protocol, HTTP Methods, Domain Name, what is hosting, DNS and how it works, Browsers and how they work
3-4	Introduction to HTML	HTML Page Structure, Title Tag, Basic HTML Tags, Unordered Lists, Ordered Lists, Adding Lists to Blog page, Adding Image to Blog Page, Adding Header to Blog Page, Learning Anchor Tag, Internal and External links
5-6	More on HTML	Div Tag, Semantic Tags, Adding Internal Links to Web Page, Block vs Inline Elements, Text Formatting Tags, Special Characters, Adding Tables, More Attributes and Tags Related to Table
7-8	Forms and Form Validation	Creating a Simple Form, Input Types, Attributes of form elements, Radio button and Checkbox, Select, Textarea and Button, Form Attributes, Media Tags, Favicon and Meta Tags, Data validation and constraint validation in HTML forms
ST1 (Lect. No. 1-8)		
9-10	Introduction to CSS	CSS Introduction, Blog Page Structure, Adding Styles Using CSS, Adding Styles Using External CSS, Preference of Rules, Chrome Dev Tools, Selector types, Specificity of Selectors, Grouping and Nesting of CSS Selectors
11-12	Styling with CSS	Adding Color, CSS Units, How to Add Border to an Element, Text Styling, Adding Background to an Element, Margins, Padding, Display Property, Aside Section of Blog Page, Position Property, Box Model, Min Max Width
13-14	Flex	Flex Intro, Flex direction, Flex Wrap, Flex Grow and Flex Shrink, Flex justify content, align content, Converting Resume Code to Flex, Resume Skills section and Heading, Creating Skill indicators
15	More on styling	Overflow-Wrap, Gradients, Link Related Pseudo Classes, Light-box Animation, Pseudo Elements, Using Before and After Pseudo elements
16	Responsive Design	What and Why of Responsive Designs, Different ways to make Responsive, Measurement Units for Responsive Designs, Viewport Meta Tag, Media Queries, Desktop First vs Mobile First

17-18	Animations and 3d Space	Transitions and Transforms, creating a Simple Animation, Animation Property, Multiple Animations, Animate.css, Starting with 3D Cube Animation, Building Second Face of Cube
ST2 (Lect. No. 9-18)		
19-20	Bootstrap	What are Front end Frameworks. Getting Started with Bootstrap, Adding Bootstrap to your Project, Bootstrap Breakpoints, Bootstrap Grid System, Code Using Bootstrap Grid System, Margin and Display Utilities, Other Utility Classes, Bootstrap Components, Modals, Collapse Component, Nav, Navbar, Jumbotron Template
21-22	Website Deployment	What is Deployment? Preparing Your Site for Hosting, Introduction to GitHub Pages, Deploying a Website via GitHub Pages, Live Demo and Testing
End Term Exam (Lect No. 1-22)		

Lab Plan

Lab No.	Topic(s)
1-2	1) Explain Client–Server Architecture and Observation of HTTP Requests and Responses using Browser Developer Tools
3-6	2) Create a basic blog webpage that includes a header, paragraph text, and both ordered and unordered lists. 3) Insert an image and add hyperlinks, including both internal (within the same website) and external (to other websites) links. 4) Structure the blog content using semantic HTML tags such as <header>, <main>, and <footer> for better readability and SEO.
7-8	5) Design a contact form that includes a variety of input elements such as text fields, radio buttons, checkboxes, dropdown selections, and a textarea. 6) Construct a product listing section using an HTML table, incorporating borders, cell spacing, and alignment features for proper layout. 7) Enhance the webpage with a favicon and appropriate meta tags to improve SEO and user experience.
9-10	8) Apply internal and external CSS styles to format the blog page, demonstrating control over presentation. 9) Utilize class selectors, ID selectors, and element selectors to style specific components of the webpage. Demonstrate CSS rule precedence and specificity by combining inline, internal, and external styles in one project.
11-12	10) Use CSS to apply text formatting, background colors, borders, padding, and margins to different webpage elements. 11) Illustrate the CSS box model by styling elements with borders and adjusting their spacing properties. 12) Implement a variety of CSS units such as em, rem, %, and px to observe how different units impact design.
13-14	13) Design a responsive navigation bar using Flexbox properties such as justify-content and align-items. 14) Implement media queries to ensure the layout adapts correctly on different screen sizes like mobile and desktop. 15) Apply responsive design techniques using properties like min-width, max-width, and include the viewport meta tag for mobile optimization.
15-16	16) Create interactive hover effects using pseudo-classes like :hover and :active on various elements. 17) Use pseudo-elements ::before and ::after to insert decorative or functional content without modifying HTML. 18) Develop a simple CSS animation (e.g., fading in/out an image or transforming a button on hover).
17-22	19) Develop a Web Page Layout using Bootstrap Grid System and Utility Classes 20) Design and deploy a Static Website to GitHub Pages

7. Delivery/Instructional Resources Theory Plan:

Lect. No.	Topics	CLO	Book No, CH No, Page No	TLM	ALM	Web References	Audio-Video
1-2	Getting Started with Web Basics, Core Web Architecture, Communication Protocols and Web Infrastructure	CLO01	B05, CH 1-2, Page no 5-135	Lecture, Discussion, Questioning	Quiz, Think/ Pair/ Share	https://developer.mozilla.org/en-US/docs/Learn_web_development/Getting_started/Web_standards/How_the_web_works	https://onlinecourses.nptel.ac.in/noc22_ee61/preview https://onlinecourses.nptel.ac.in/noc25_cs15/preview
3-8	Introduction to HTML, HTML Tags, Lists and Image, Forms & Validations	CLO02	B01, CH 2-3, Page no 12-37, CH 10, Page 160-190 B03 CH 1,2-3, Page no 1-99, CH 6, Page no 161-196, CH 12, Page no 387-423 B04 CH 4-5, Page 57-88, CH 7, Page no 121-132, CH 9, Page no 197-240, CH 12, Page no 313-365	Lecture, Discussion, Questioning	One Minute Paper , Quiz/ Test Questions	https://onlinecourses.swayam2.ac.in/nou20_cs05/preview https://developer.mozilla.org/en-US/docs/Web/HTML https://onlinecourses.swayam2.ac.in/aic20_sp11/unit?unit=4&lesson=7	https://onlinecourses.swayam2.ac.in/aic20_sp11/unit?unit=4&lesson=7 https://nptel.ac.in/courses/106106222
9-12	Introduction to CSS, Styling with CSS	CLO03	B02, CH 4-5, Page no 429-533 B03, CH 14, Page no 443-478	Lecture	Quiz, Think/ Pair/ Share	https://developer.mozilla.org/en-US/docs/Web https://css-tricks.com/	https://nptel.ac.in/courses/106106222 https://www.youtube.com/watch?v=h_RftxdJTzs
13-20	Flex, More on styling, Responsive Design, Animations and 3D space, Bootstrap	CLO04, CLO05	B04, CH 16, Page 443-470	Lecture, Discussion	Quiz, Focused Listing	https://developer.mozilla.org/en-US/docs/Web/CSS/CSS_Flexible_Box_Layout/Basic_Concepts_of_Flexbox https://bennettfeely.com/flexplorer/ https://css-tricks.com/snippets/css/a-guide-to-flexbox/	https://www.youtube.com/watch?v=fYq5PXgSsbE https://www.youtube.com/watch?v=7kVeCqQCxlk https://www.youtube.com/watch?v=JJSoEo8JSnc
21-22	Website Deployment	CLO06	B06, CH5, Page 129-165	Lecture, Discussion, Questioning	Think Pair Share, Interactive Demo	https://git-scm.com/book/en/v2	https://git-scm.com/videos

Lab Plan:

Lab No.	Experiment	CLO	TLM	ALM	Web References	Audio-Video
1-2	21) Explain Client–Server Architecture and Observation of HTTP Requests and Responses using Browser Developer Tools	CLO01	Discussion	Test questions	https://developer.mozilla.org/en-US/docs/Learn_web_development/Getting_started/Web_standards/How_the_web_works	https://onlinecourses.nptel.ac.in/noc22_ee61/preview https://onlinecourses.nptel.ac.in/noc25_cs15/preview

3-6	22) Create a basic blog webpage that includes a header, paragraph text, and both ordered and unordered lists. 23) Insert an image and add hyperlinks, including both internal (within the same website) and external (to other websites) links. 24) Structure the blog content using semantic HTML tags such as <header>, <main>, and <footer> for better readability and SEO.	CLO02	Demonstration method using a Simulation or Tool	Practical/ Case Study	https://www.coursera.org/learn/html-css-javascript-for-web-developers https://developer.mozilla.org/en-US/docs/Web/HTML/Reference/Elements/link https://developer.mozilla.org/en-US/docs/Glossary/Semantics	https://www.youtube.com/watch?v=gJWNA3Fduek https://www.youtube.com/watch?v=hVBKHr1fjLk https://youtu.be/DwWtu7VLTwg?si=9aUUZEGq_q1w49N8 https://www.youtube.com/watch?v=Nmaf4ir3QkM
7-8	25) Design a contact form that includes a variety of input elements such as text fields, radio buttons, checkboxes, dropdown selections, and a textarea. 26) Construct a product listing section using an HTML table, incorporating borders, cell spacing, and alignment features for proper layout. 27) Enhance the webpage with a favicon and appropriate meta tags to improve SEO and user experience.	CLO02	Demonstration method using a Simulation or Tool	Practical/ Case Study	https://www.coursera.org/learn/html-css-javascript-for-web-developers https://developer.mozilla.org/en-US/docs/Web/HTML/Reference/Elements/table https://www.coursera.org/learn/duke-programming-web	https://www.youtube.com/watch?v=fNcJuPIZ2WE https://www.youtube.com/watch?v=iDA0kF5lrVk https://www.youtube.com/watch?v=8iXHciqlAdA
9-10	28) Apply internal and external CSS styles to format the blog page, demonstrating control over presentation. 29) Utilize class selectors, ID selectors, and element selectors to style specific components of the webpage. Demonstrate CSS rule precedence and specificity by combining inline, internal, and external styles in one project.	CLO03	Demonstration method using a Simulation or Tool	Practical/ Case Study	https://www.coursera.org/learn/html-and-css-in-depth	https://nptel.ac.in/courses/106106222 https://www.youtube.com/watch?v=h_RftxdJTzs
11-12	30) Use CSS to apply text formatting, background colors, borders, padding, and margins to different webpage elements. 31) Illustrate the CSS box model by styling elements with borders and adjusting their spacing properties. 32) Implement a variety of CSS units such as em, rem, %, and px to observe how different units impact design.	CLO03	Demonstration method using a Simulation or Tool	Practical/ Case Study	https://www.coursera.org/learn/html-and-css-in-depth	https://nptel.ac.in/courses/106106222 https://www.youtube.com/watch?v=h_RftxdJTzs
13-14	33) Design a responsive navigation bar using Flexbox properties such as justify-content and align-items. 34) Implement media queries to ensure the layout adapts correctly on different screen sizes like mobile and desktop. 35) Apply responsive design techniques using properties like min-width, max-width, and include the viewport meta tag for mobile optimization.	CLO03	Demonstration method using a Simulation or Tool	Practical/ Case Study	https://www.coursera.org/learn/duke-programming-web https://www.coursera.org/learn/html-and-css-in-depth	https://nptel.ac.in/courses/106106222 https://www.youtube.com/watch?v=h_RftxdJTzs https://archive.nptel.ac.in/courses/106/106/106106156/
15-16	36) Create interactive hover effects using pseudo-classes like :hover and :active on various elements. 37) Use pseudo-elements ::before and ::after to insert decorative or functional content without modifying HTML. 38) Develop a simple CSS animation (e.g., fading in/out an image or transforming a button on hover).	CLO04	Demonstration method using a Simulation or Tool	Practical/ Case Study	https://www.coursera.org/learn/duke-programming-web https://www.coursera.org/learn/html-and-css-in-depth	https://archive.nptel.ac.in/courses/106/106/106106156/ https://nptel.ac.in/courses/106106222

17-22	39) Develop a Web Page Layout using Bootstrap Grid System and Utility Classes 40) Design and deploy a Static Website to GitHub Pages	CLO05, CLO06	Demonstration method using a simulation tool	Quiz, Group discussion	https://git-scm.com/book/en/v2	https://git-scm.com/videos

8. Remedial Classes

Based on the students' performance in STs, a remedial class will be planned, different types of learners will be identified and the schedule will be shared accordingly.

Action Plan for different types of learners:

Learner Type-I	Learner Type- II	Learner Type- III
Remedial Classes, Doubt Sessions, Guided Tutorials	Workshop, Doubt Session	Coding Competitions, Project

9. Self-Learning

Assignments to promote self-learning, survey of contents from multiple sources.

S.No	Topics	CLO	ALM	References/MOOCS
1	HTML, CSS	CLO01- CLO04	Leading Question, Test Questions	Coursera- HTML, CSS for Web Developers https://www.coursera.org/learn/html-css-javascript-for-web-developers
2	More on styling, Responsive Design, Animations and 3D space	CLO02- CLO05	Leading Question, Test Questions, Brain Storming	Coursera- Responsive Website Development and Design Specialization https://www.coursera.org/specializations/website-development

10. Delivery Details of Content Beyond Syllabus

S.No	Advanced Topics, Additional Reading, Research papers	CLO	POs	ALM	References/MOOCS
1	Introduction to Javascript	CLO05, CLO06	PO7, PO10, PO11	Think Pair Share, Interactive Demo	https://nptel.ac.in/courses/106105084 https://www.youtube.com/watch?v=qoSksQ4s_hg

11. Evaluation Scheme & Components:

Assessment Type	Evaluation Component	Type of Component	No. of Assessments	% Weightage of Component	Max. Marks	Mode of Assessment	CLO
Formative	Component1	Continuous Lab Evaluations	01*	20%	20	Practical, Viva, File	CLO01-CLO06
Summative	Component2	Sessional Tests(STs)	02**	30%	30	Computer Based Test	CLO01-CLO06
Summative	Component3	End Term Examination	01***	50%	50	Computer Based Test	CLO01-CLO06
	Total		**100%**				

Component	Requirement to Pass
Internal Assessments (Component 1 & Component 2)	Minimum 50% of the total internal marks (STs and other internal evaluations)
End-Term Examination (Component 3)	Minimum 50% of the total end-term marks
Overall Requirement	Must pass both components individually

** Continuous Evaluation (CE) is a mandatory evaluation taken once in a semester.*

***All 02 STs are mandatory and taken 2 times in a semester.*

****As per academic guidelines, a minimum of 75% attendance is required to appear in the end-of-semester examination.*

Note: A student securing less than **50%** in either internal or end-term exam will be considered **fail**, even if the combined aggregate is **50% or above**.

*Note: * Continuous Evaluation (CE) is a mandatory evaluation taken once in a semester.*
***As per academic guidelines, a minimum of 75% attendance is required to appear in the end-of-semester examination.*

12. Syllabus of the Course:

Subject : **Introduction to Web Technologies**			
S.No.	**Topic (s)**	**No. of Lectures**	**Weightage %**
1	Getting Started with Web Basics, Core Web Architecture, Communication Protocols and Web Infrastructure	2	9%
2	Introduction to HTML, HTML Tags, Lists and Image, Forms & Validations	6	28%
3	Introduction to CSS, Styling with CSS	4	18%
4	Flex, More on styling, Responsive Design, Animations and 3D space	6	27%
5	Bootstrap, Website Deployment	4	18%

13. Academic Integrity Policy:

Education at Chitkara University builds on the principle that excellence requires freedom where Honesty and integrity are its prerequisites. Academic honesty in the advancement of knowledge requires that all students and Faculty respect the integrity of one another's work and recognize the importance of acknowledging and safeguarding intellectual property. Any breach of the same will be tantamount to severe academic penalties.

This Document is approved by:

Designation	**Name**	**Signature**
Course Coordinator	Dr. Chetna Sharma	
Program Incharge	Dr. Preetinder Singh Brar	
Pro Vice Chancellor	Dr. Jaiteg Singh	
Date (DD/MM/YYYY)	23/08/2025	