



## **CIEE Global Institute - Shanghai**

<b>Course name:</b>	Web Development and Design
<b>Course number:</b>	(GI) CMPS 2002 SHCN
<b>Programs offering course:</b>	Shanghai Open Campus Block
<b>Open Campus Track:</b>	STEM and Society
<b>Language of instruction:</b>	English
<b>U.S. semester credits:</b>	3
<b>Contact hours:</b>	45
<b>Term:</b>	Spring 2020

### **Course Description**

Web Development and Design gives students foundational techniques to plan, design and develop a website using Web-based page languages. They will program and post creative online content, incorporating media to effectively communicate information engagingly and clearly. Students consider efficient use of bandwidth to reach a large audience, regardless of physical or technological limitations. This course includes an introduction and use of Hypertext Markup Language (HTML, XML), Cascading Style Sheet (CSS), JavaScript and user-side technologies such as Dreamweaver to develop create and effective web productions.

### **Learning Objectives**

By the end of this course, students will be able to:

- Apply theories and principles for communicating information through Web application development and design.
- Use Web terminology and technological tools needed for functional Web publishing and design.
- Address the needs of diverse audiences including the culture and social issues of the host country.
- Understand the responsibility, legal issues and security risk surrounding Web publishing.
- Use Web presentation language, including HTML, CSS and JavaScript.
- Demonstrate proficiency in applying basic problem-solving techniques, low level representation of data and fundamental programming language skills.



- Create a fully-functional, engaging and effective web site.
- Upload websites to web servers.

### **Course Prerequisites**

Computer Science basics.

### **Methods of Instruction**

The course will be taught using lectures, class discussions, lecture activities, reading assignments, presentations and a Web design final project. In addition, students will visit national universities and industrial facilities, conducting interviews with local Web developers. Students will work in groups in the development of a Web site. Students are expected to read portions of the textbooks before lectures. Students will work in groups to present current challenges and opportunities of Web development and design at the local community and in the U.S. They should also take full advantage of generous online resources associated with the texts.

### **Assessment and Final Grade**

Weekly Exams (Five)	20 %
Activity Worksheets (Ten)	20 %
Independent Programming Projects (2)	10%
Group Website Design	20 %
Group Presentation	10 %
Participation	20 %
Total	100%

### **Course Requirements**

#### **Participation**

Participation is valued as meaningful contribution in the digital and tangible classroom, utilizing the resources and materials presented to students as part of the course. Meaningful contribution requires students to be prepared in advance of each



class session and to have regular attendance. Students must clearly demonstrate they have engaged with the materials as directed, for example, through classroom discussions, online discussion boards, peer-to- peer feedback (after presentations), interaction with guest speakers, and attentiveness on co- curricular and outside-of-classroom activities.

### **Weekly Exams**

Each week, students will take an exam based upon the previous week's material. These exams will include standard exam formats of True/False, Multiple Choice, Short Answer and Problem Solving. Each exam will take approximately 20 minutes and comprise 5% of the final course evaluation.

### **Activity Worksheets**

During and after lectures, students will have a series of tasks, discussions and demonstrations related to the lecture material. They will work both individually and in groups to complete the tasks, handing in answers to a series of questions, working with simple code or debugging simple program script before leaving the class.

### **Independent Programming Projects**

Short programs will be written by individual students to demonstrate knowledge of HTML, CCS and JavaScript programming languages. A second project will use Dreamweaver to design a basic web page.

### **Group Website Design**

The class will be divided into groups of 3-5 students. Students will test the knowledge they acquired in the class by creating their own comprehensive Website. In the Website, they should pick an aspect they find interesting about the host community and try to explain it to other students abroad. Students will create a Website which main function would be to become a bridge between cultures. Further details on study group allocation and the assignment will be provided in class. All students need to participate, contribute and present.

### **Group Presentation**

Students will present and promote their Website to the rest of the class. They will walk everyone through the Website's features and their ideas about its functionality. They will also analyze how they addressed the accessibility of the site for different



audiences, as well as certain aspects of the responsibility, legal issues and security risk. This will be done in groups using information from various sources, including interviewing each other and local people. A 15-minute presentation with a demonstration will be graded on the overall presentation as well as each student's part in it.

**Class Attendance**

Regular class attendance is required throughout the program, and all unexcused absences will result in a lower participation grade for any affected CIEE course. Due to the intensive schedules for Open Campus programs, unexcused absences that constitute more than 10% of the total course will result in a written warning.

Students who transfer from one CIEE class to another during the add/drop period will not be considered absent from the first session(s) of their new class, provided they were marked present for the first session(s) of their original class. Otherwise, the absence(s) from the original class carry over to the new class and count against the grade in that class.

For CIEE classes, excessively tardy (over 15 minutes late) students must be marked absent. Attendance policies also apply to any required co-curricular class excursion or event, as well as to Internship, Service Learning, or required field placement. Students who miss class for personal travel, including unforeseen delays that arise as a result of personal travel, will be marked as absent and unexcused. No make-up or re-sit opportunity will be provided.

Attendance policies also apply to any required class excursion, with the exception that some class excursions cannot accommodate any tardiness, and students risk being marked as absent if they fail to be present at the appointed time.

Unexcused absences will lead to the following penalties:

<i>Percentage of Total Course Hours Missed</i>	<i>Equivalent Number of Open Campus Semester classes</i>	<i>Minimum Penalty</i>
Up to 10%	1 content classes, or up to 2 language classes	Participation graded as per class requirements
10 – 20%	2 content classes, or 3-4 language classes	Participation graded as per class requirements; <b>written warning</b>
More than 20%	3 content classes, or 5 language classes	Automatic <b>course failure</b> , and possible expulsion

**Weekly Schedule**



NOTE: this schedule is subject to change at the discretion of the instructor to take advantage of current experiential learning opportunities.

## **Week 1      Introductory Concepts**

### Session 1.1    Introduction to Web Development and Design

This session will form the introduction to the class; we will outline the course requirements and formal aspects of participation and engagement in class. This will be followed by the introduction to the Internet and an introduction to general terminology that will be used throughout the course such as Internet Protocol (IP), Transmission Control Protocol (TCP), Domain Name System, World Wide Web, Hypertext Markup Language (HTML), Hyper Text Transfer Protocol (HTTP), browser, Uniform Resource Identifier (URI) and Uniform resource Locator (URL). Students will be instructed in the setting up of online tools that will be used for Web design and development. They will learn to get their own domain server and to find a host for their sites.

Readings: Castro and Hyslop 2013, Introduction and Chapter 1

Due: Activity Worksheet 1

## **Week 2      Website Elements and Structure**

### Session 2.1    Web Page Elements

This session will introduce the concepts of elements, attributes and values and demonstrate the difference between text and non-text content. It will also compare and contrast HTML and XHTML. In this session, students will explore different types of Websites and brainstorm about the functions and themes they would like to add to their own Website for the class.

Exam 1 (covers material from Week 1)

Readings: Castro and Hyslop 2013, Chapter 2



Due: Activity Worksheet 2

## Session 2.2 Creating a Basic Web Page

During this session, students will learn how to organize the coding for creating a simple Web Page. They will get familiar with Document Type Definition, tags and elements, and the basic syntax for xhtml tags and attributes `<tag attribute="value"> </tag>`. They will also learn basic commands to define text content inside a Webpage such as `<meta>`, `<p>`, `<br/>`, `<h1>` to `<h6>`, `<em>`, `<strong>`, `<!-- and -->`, `<blockquote>`, among others.

Readings: Castro and Hyslop 2013, Chapters 3 and 4

Due: Activity Worksheet 3

## Week 3 Hypertext Markup Language (HTML)

### Session 3.1 Text and Images

In this session, we will introduce the difference between block-level and inline elements for blocks of text. Students will learn more about attributes and how they can modify tags. They will become familiar to common attributes such as `id`, `class`, `style`, `title`, `lang`, `dir`, `accesskey` and `tabindex`. Students should also be familiar with formatting text in Webpages and they should be able to insert images to better communicate information through a Website. This session will teach students how to choose an Image Editor, how to scale an image, as well as how to add space around images.

Exam 2 (covers material from Week 2)

Readings: Castro and Hyslop 2013, Chapter 5

Due: Activity Worksheet 4, Individual Programming Project



## Session 3.2 Lists and Tables

The professor will introduce the concepts of ordered and unordered lists. After this class, students will be able to customize list display through “type” attribute and to define them using `<dl>`, `<dt>` and `<dd>`. As well, students will learn how to display information in the form of a table `<table>` that is composed of rows `<tr>` and cells `<td>`. They will learn basic coding such as “table header” `<th>`, `<caption>`, `<colgroup>`, `<thead>`, `<tfoot>` and `<tbody>`

Readings: Castro and Hyslop 2013, Chapters 15 and 16

## Session 3.3 Links

The best Websites are able to provide interactive resources to users such as links and hyperlinks to a different Website or a different section of the same Website. This lesson will introduce the code needed to program links inside a Webpage. Students will learn how to use the tag `<a>` to create external and internal links.

Readings: Castro and Hyslop 2013, Chapter 6

Due: Activity Worksheet 5

## **Week 4 Cascading Style Sheet (CSS)**

### Session 4.1 Introduction to CSS

CSS is a mechanism for adding and changing the style of Web pages. In this session, students will learn about internal style sheets, selectors and declaration blocks. They will learn the syntax for coding CSS and the three different scopes of CSS: local, internal, external and precedence.

Exam 3 (covers material from Week 3)

Readings: Castro and Hyslop 2013, Chapters 7 and 8



Due: Activity Worksheet 6

#### Session 4.2 Coding CSS

During this session, students will learn more about different selector types such as tag, class and advance that are used to change the style of specific tags. The professor will introduce unit identifiers that determine the font number and height as well as other length specifications, percentages, URLs, colors and strings. They will also learn how to code box model's properties, text properties and positioning and background properties.

Readings: Castro and Hyslop 2013, Chapters 9, 10 and 11

Due: Activity Worksheet 7

#### Session 4.3 CSS Selector Type

The first part of the session will be devoted to understanding when the URL needs to be specified. Students will also learn about type, class, ID, grouping, universal and descendant selectors.

During the second part of the session, students will visit a Web designer from the host country. Students are expected to use this interview as a way to understand the challenges real-life designers have to deal with and to use this information in their own Website and group presentation. Students will discuss the importance of being able to access a wide audience in an inclusive way. They will also be introduced to basic legal concerns and responsibility of publishing a Website.

Readings: Castro and Hyslop 2013, Chapters 12, 13 and 14 and Gregory, B. 2018. Designing for Cognitive Differences. User Experience, Accessibility <https://alistapart.com/article/designing-for-cognitive-differences>

Due: Activity Worksheet 8





## **Week 5      JavaScript**

### **Session 5.1    Introduction to JavaScript**

JavaScript is a scripting programming language that enables interactive Web pages. It is an introduction to client-side Web development. This session will introduce some features that are possible to program with JavaScript. Students will learn how to add the current date and time, how to set a new window's size, how to change an image when a visitor points and how to load images into cache. They will learn about JavaScript's variables and operators.

Quiz 5 (covers material from Week 5)

Readings: Castro and Hyslop 2013, Chapter 20 and "JavaScript Web APIS" <https://www.w3.org/standards/webdesign/script.html>

### **Session 5.2    Popups, Functions and Loops with JavaScript**

Popup boxes are used to make sure that information is reaching the users since it has a requirement to click "OK" to proceed. Students will learn to use alert boxes, confirm boxes and prompt boxes. JavaScript functions contain code that will be executed by a specified event. Students will become familiar with the syntax of a function. A loop is used to execute repeatedly a block of code for a defined number of times. Students will learn about "for" loops, "while" loops and "do...while" loops.

Due: Activity Worksheet 9

### **Session 5.3    Debugging, Objects and Guidelines with JavaScript**

The JavaScript "try...catch" statement allows Web developers to test a block of code for errors. Students will become familiar with the term debugging and they will check for errors with the "try...catch" statement. An object is a special kind of data that can be built with JavaScript. Students will learn about properties of an object and methods that can be



performed on objects. They will also learn some other guidelines for JavaScript when they are writing code.

Activity Worksheet 10

## **Week 6      Dreamweaver**

### Session 6.1    Introduction to Dreamweaver

Dreamweaver is a Web development tool that uses a visual design surface and a code editor that allows the design, coding and management of Websites. This session will be an introduction to the main features of Dreamweaver. Students will start building a page with Dreamweaver. They will learn how to add text and images and create links. In this session, students will start presenting the Websites they created in groups.

Quiz 5 (covers material from Week 5)

Due: Group Website Design

Due: Group Presentations

Readings: Chapters 1-3 of “Visual Start Guide: Dreamweaver CC”

### Session 6.2    Styling Page Content with Dreamweaver

Students will continue to learn how to use Dreamweaver’s tools. Specifically, they will learn how to use Dreamweaver’s Layout Tools and how these styling features relate to CSS’. They will also learn how to validate their Website’s code. In this session, there will be a general review of the concepts learned through the course and some coding practice exercises will be given so students can prepare for the final exam. Students are expected to bring to class questions and doubts.

Readings: Chapters 7, 8 and 12 of “Visual Start Guide: Dreamweaver CC”



Due: Independent Dreamweaver Project

### Session 6.3 More Features of Dreamweaver

This final session will be a wrap-up of all the topics explored during the course. Students will also learn more features of Dreamweaver such as the insert bar, properties inspector, document toolbar, panel groups, site map and how to modify page properties. They will learn to create templates, library items and photo albums. Finally, they will learn about dynamic elements with JQuery and CSS3 Transitions. During the second half of this session, the students will present their final projects.

Readings: Chapters 14, 16 and 17 of “Visual Start Guide: Dreamweaver CC”

Due: Final Projects and Final Project Presentations



## **Course Materials**

### **Course Textbooks**

Castro, Elizabeth and Bruce Hyslop. 2013. *HTML and CSS: Visual QuickStart Guide*. 8<sup>th</sup> Edition.

Lagerstrom, Larry Randles. *Programming the Web Using XHTML and JavaScript*.  
<http://www.mhhe.com/webdev/lagerstrom>

Negrino, Tom & Dori Smith. 2014. *Dreamweaver CC: Visual Quickstart Guide*. Peachpit Press. <http://www.peachpit.com/store/dreamweaver-cc-visual-quickstart-guide-9780321929518>.

### **Readings**

Gregory, Brandon. 2018. "Designing for Cognitive Differences". *Alistapart*.  
<https://alistapart.com/article/designing-for-cognitive-differences>

"HTML & CSS". W3C. <https://www.w3.org/standards/webdesign/htmlcss>

"JavaScript Web APIS". W3C. <https://www.w3.org/standards/webdesign/script.html>

### **Online Resources**

Coding Exercises at w3schools.com tutorials. <https://www.w3schools.com/default.asp>