CSCI 571: Web Technologies
Term: Spring 2025
Units: 4

Lecture: Tue, Thu 5:30p.m.-7:20p.m., SGM 124 (30378DR)
Tue, Thu 7:30p.m.-9:20p.m., SGM 124 (30322R)
Tue, Thu 5:30p.m.-7:20p.m., DEN@Viterbi (30016D)
The lectures will also be on Zoom and D2L Brightspace
for DEN students only.

Instructor: Marco Papa, Ph.D.
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Course Producers and Graders: Listed in D2L
Brightspace and Piazza

Course Description

This course focuses on the World Wide Web. Its focus is to present many of the core technologies that the Web is based upon. These core technologies include:

- HTML (HyperText Markup Language) and CSS (Cascading Style Sheets)
- HTTP (HyperText Transfer Protocol) 1.1/2/3
- Web servers, their configuration and performance properties
- Client-side Programming using JavaScript
- Ajax (Asynchronous JavaScript & XML) and JSON (JavaScript Object Notation)
- Server-side Programming using Python and JavaScript

In addition, the course will also cover the following subsidiary topics:

- Web Services (REST)
- Web Security and Privacy Tools
- Web Technologies for Mobile Phones (Android and iOS)
- Responsive Website Design
- Cloud Computing (Amazon Web Services, Google Cloud Platform and Microsoft Azure)
- Angular, React and Node.js
- Serverless Applications, Microservices, Containers
- AWS Lambda, Google Cloud Functions, and Azure Functions
- Diceware, TOR, and the Dark Web
- Cloud/REST access to NoSQL databases (MongoDB Atlas)
- HTML5 New technologies

The course is recommended for students with deep knowledge of at least two programming languages (JavaScript, Java, Python, C#, C++).

Learning Objectives

Course Outcomes. By the end of the semester, you will be able to:

i	Write RESTful API applications;
ii	Set up Cloud services;
iii	Design and code back-end scripts in Python and JavaScript;
iv	Design and code front-end Web Applications;
v	Design and code Mobile Apps in Swift/SwiftUI or Java/Kotlin;
vi	Design and code web front-end asynchronous applications using AJAX;
vii	Design and code responsive web apps;
viii	Write front-end programs using JavaScript;
ix	Design graphical user interfaces using HTML and CSS;
x	Read Web Services API documentation and use it in building Web applications;
xii	Write Microservices and Containers.
xiii	Use a NOSQL database like MongoDB Atlas

Students completing this course will have the ability to:

1	Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
2	Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements.
3	Communicate effectively in a variety of professional contexts.
4	Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.

Prerequisite(s): None.

Course Notes

The lectures will be given live, in-person, but the 5:30p.m. lecture will also be available live on Zoom and recorded on-demand and made available on D2L Brightspace exclusively to DEN students. D2L Brightspace will be used for hosting the course materials (slides and homework assignments) and grades, and Zoom will be used for live streaming the lectures to DEN students. D2L Brightspace will be used by students for uploading completed assignments and taking exams.

In-person and Online Lectures

Lectures will be held live, in-person, and on Zoom exclusively for DEN-enrolled students. Zoom meeting link will be available on D2L Brightspace.

Technological Proficiency and Hardware/Software Required

We will be using HTML, CSS, JavaScript, Python, Swift/SwiftUI (for iOS) or Java/Kotlin (for Android) in this class. Those pieces of software are available for free and will run on macOS, Windows and Linux (except for Swift/SwiftUI that will only run on Xcode on macOS). **Students are required to have a laptop**, running Windows, macOS or Linux, for exams. A laptop with more than 8GB of memory is recommended to run Xcode and Android Studio. Laptops are available, for 4 hours at a time, through the USC Computing Center Laptop Loaner Program. USC Technology Support Links: Zoom information for students, D2L Brightspace.

Required Readings and Supplementary Materials

The course does not use any textbook.

Description and Assessment of Assignments

The course includes 4 individual assignments. Assignment #1 covers basic HTML and CSS to build a static web site. Assignment #2 covers a dynamic web front-end and a cloud back-end, written in Python, to access third party REST APIs. Assignment #3 adds additional front-end functionality using Responsive Design and changes the cloud back-end to NodeJS. The Final Project is a comprehensive client-server application, with a native, mobile front-end for iOS or Android, and a cloud back-end on NodeJS. Each assignment serves to measure student performance on at least one or more learning objectives.

Participation

No credit is provided for participation.

Grading Breakdown

Assessment	% of Grade
Assignments (3)	28
Written Exam #1	30
Written Exam #2	30
Final Project	12
TOTAL	100%

Grading Scale

Grades are not curved but based on proficiency with the material. Ranges operates in favor of the students. At the end of the semester, if the average in the class is lower than 80%, the average will become the cut-off between a B- and a C+. Final scores will be rounded up.

x >= 93	A	73 <= x < 77	C
90 <= x < 93	A-	70 <= x < 73	C-
87 <= x < 90	B+	67 <= x < 70	D+
83 <= x < 87	B	63 <= x < 67	D
80 <= x < 83	B-	60 <= x < 63	D-
77 <= x < 80	C+	x < 60	F

Assignments Weights

Assignments and Final Project have different maximum points and weights, contributing to 40% of the total score.

Assignment	Maximum Points	Weight
#1	10	20%
#2	10	20%
#3	15	30%
Final Project	15	30%
TOTAL	50	100%

Assignment Submission Policy

Assignments will be discussed in class and worked on individually. Discussion among students is fine, but no copying of other student's code is allowed. The first 3 assignments need to run online, and grading will only occur if the web applications are able to run online. Assignments running on "localhost" will not be acceptable. The last "mobile" assignment, the final comprehensive project, will be submitted by video during final week. Assignments source code and links to the online web apps will be submitted to D2L Brightspace (instructions will be provided in class and on Piazza) and are due by 11:59p.m. on the due date (see Late Policy below). Grading criteria will be provided with the assignment description. Graders will grade the assignments. All grades will be posted to D2L Brightspace gradebook.

Grading Timeline

Assignments will typically be graded within 7 days of the due date. Exams are usually auto graded by D2L Brightspace Quiz Tool.

Course Specific Policy - Regrading

Once grades are entered into D2L Brightspace gradebook, students will be able to request a regrade if they think a <u>mistake has been made by the grader</u> through the following process:

1. Once an assignment is graded, an online form will be provided on Piazza, to submit a formal regarding request. Note that this is the only request that can be made to regrade that specific assignment, so be sure to include all relevant information. If the request is submitted more than 2 days after form is posted, the request will be denied.
2. The TA will review the request and determine if a regrade will be granted.
   a. If the regrade request is denied, the original grade will stand.
   b. If the regrade request is granted, the TA will forward the request to a grader (possibly a different one than who originally graded it). The grader will conduct a regrade and send the updated score to the TA, who will then enter it, with feedback, into D2L Brightspace.
3. There will be **only one regrade request per assignment**, and the score after the regrade is final. If any questions arise beyond that, the student will need to speak with the professor in person.
4. There is no regrade of the final comprehensive project, due on Final Week.

Course Specific Policy - Late Policy

Each student will have **two (2) grace days** to use during the semester for submitting assignments late. Grace days can only be used on *assignments* (**not** final project, exams, etc.), and the days can be used in any combination. For example, you could use one grace day on assignment 1 and one grace day on assignment 2. All submissions other than for assignments in accordance with this policy must be submitted by 11:59p.m. on the due date or will receive a 0.

After the two grace days have been used, any assignment submitted late will receive a 0. A grace day will be counted for any assignment submitted after 11:59p.m. on the due date. To state that another way, if an assignment is submitted after the due date, at 12:00a.m. (midnight) or later, grace days will be used. The grace days do not need to be approved by the professor, but any exceptions other than grace days will need professor approval. In exceptional circumstances, late submissions will be accepted, with a 30% penalty.

Attendance

There is no lecture attendance requirement that counts towards your grade in the class. However, students who do not attend the lectures are responsible for all material covered in the lectures. The course uses the Piazza online forum platform to efficiently simulate and manage class discussions. Discussions are limited to course materials, assignments, and exams. Following all postings on Piazza is also required.

Exams

Exam #1	Tuesday, February 25, 2025.	5:30p.m. or 7:30p.m. (40 min)
Exam #2	Thursday, May 1, 2025.	5:30p.m. or 7:30p.m. (40 min)

The written exams consist of theoretical questions and may include code to be analyzed. No code will be required to be written. All exams are in-person, using the **D2L Brightspace Quiz Tool**. Access to the classroom to take the exams will be provided only after having your student USC ID scanned by smartphone and its ID number verified and checked against a spreadsheet of the roster.

An exam can only be taken on the scheduled date and at the scheduled starting time. Accommodations for students with letters from OSAS will be provided, though the exam will still need to be taken on the scheduled date and start time, unless a specific accommodation has been granted by OSAS, and approved by the instructor. There are no makeup exams. If you miss an exam due to an emergency, official written documentation, whatever that may be based on the situation, will need to be submitted to me as soon as you are physically able (before the exam if possible). Approval will be solely based on my discretion though it should be based on a documented illness or emergency. Based on the exam, here are the rules that will be followed:
- If an excuse is not approved, you will be given a 0 on the exam.
- If there is an approved excuse for written exam #1, the percentage for that exam will be added to the percentage for written exam #2.
- If there is an approved excuse for written exam #2, you will receive an Incomplete grade in the course and must make up the exam based on the conditions of an Incomplete.

Academic Integrity

The University of Southern California is foremost a learning community committed to fostering successful scholars and researchers dedicated to the pursuit of knowledge and the transmission of ideas. Academic misconduct is in contrast to the university's mission to educate students through a broad array of first-rank academic, professional, and extracurricular programs and includes any act of dishonesty in the submission of academic work (either in draft or final form).

This course will follow the expectations for academic integrity as stated in the USC Student Handbook. All students are expected to submit assignments that are original work and prepared specifically for the course/section in this academic term. You may not submit work written by others or "recycle" work prepared for other courses without obtaining written permission from the instructor(s). Students suspected of engaging in academic misconduct will be reported to the Office of Academic Integrity.

Other violations of academic misconduct include, but are not limited to, cheating, plagiarism, fabrication (e.g., falsifying data), knowingly assisting others in acts of academic dishonesty, and any act that gains or is intended to gain an unfair academic advantage.

The impact of academic dishonesty is far-reaching and is considered a serious offense against the university and could result in outcomes such as failure on the assignment, failure in the course, suspension, or even expulsion from the university.

For more information about academic integrity see the [student handbook](#) or the [Office of Academic Integrity's website](#), and university policies on [Research and Scholarship Misconduct](#).

Please ask me if you are unsure about what constitutes unauthorized assistance on an exam or assignment, or what information requires citation and/or attribution.

Collaboration. In this class, you are expected to submit work that demonstrates your individual mastery of the course concepts.

Group work. Unless specifically designated as a 'group project,' all assignments are expected to be completed individually.

Accordingly, all assignments #1 through #4 are individual assignments.

Computer programs. Plagiarism includes the submission of code written by, or otherwise obtained from someone else, including a source like ChatGPT.

If found responsible for an academic violation, students may be assigned university outcomes, such as suspension or expulsion from the university, and grade penalties, such as a zero on the assignment, exam, and/or "F" in the course.

Use of Generative AI in this Course
Generative AI permitted but limited as follows: In this course, you are permitted to use artificial intelligence (AI)-powered programs to help you, but only on assignments that explicitly indicate a permitted use of AI. However:
- You should also be aware that AI text generation tools may present incorrect information, biased responses, and incomplete analyses; thus, their answers may not meet the standards of this course.
- To adhere to our university values, *you must cite any AI-generated material (e.g., text, images, program code and other content) included or referenced in your work and provide the prompts used to generate the content*. Using an AI tool to generate content without proper attribution will be treated as plagiarism and reported to the Office of Academic Integrity. Cite and credit AI-generated material using *MLA Style* as described in [USC Libraries AI Generators Citation Guidance](#).

Please review the instructions in each assignment for more details on how and when to use AI Generators for your submissions.

Course Content Distribution and Synchronous Session Recordings Policies
USC has policies that prohibit recording and distribution of any synchronous and asynchronous course content outside of the learning environment.

Recording a university class without the express permission of the instructor and announcement to the class, or unless conducted pursuant to an Office of Student Accessibility Services (OSAS) accommodation. Recording can inhibit free discussion in the future, and thus infringe on the academic freedom of other students as well as the instructor. ([Living our Unifying Values: The USC Student Handbook](#), page 13).

Distribution or use of notes, recordings, exams, or other intellectual property, based on university classes or lectures without the express permission of the instructor for purposes other than individual or group study. This includes but is not limited to providing materials for distribution by services publishing course materials. This restriction on unauthorized use also applies to all information, which had been distributed to students or in any way had been displayed for use in relationship to the class, whether obtained in class, via email, on the internet, or via any other media. ([Living our Unifying Values: The USC Student Handbook](#), page 13).

Course Evaluations

Course evaluation occurs at the end of the semester university wide. It is an important review of students' experience in the class. The intent of the end-of-semester evaluation is to provide an evaluation of the course, the instructor, and whether the learning objectives have been achieved. In addition, the instructor will provide an online mid-semester evaluation that will be used for early course correction.

Inclusion

It is my intention that students from all backgrounds and perspectives will be well served by this course, and that the diversity that students bring to this class will be viewed as an asset. I welcome individuals of all ages, backgrounds, beliefs, ethnicities, genders, gender identities, gender expressions, national origins, religious affiliations, sexual orientations, socioeconomic background, family education level, ability – and other visible and nonvisible differences. All members of this class are expected to contribute to a respectful, welcoming, and inclusive environment for every other member of the class. Your suggestions are encouraged and appreciated.

Lived Name / Pronoun

I will gladly honor your request to address you by an alternate name or gender pronoun. Please advise me of this preference early in the semester so that I may make appropriate changes to my records.

Lecture and Exam Schedule

Week	Lecture	Date	Lecture Topic	Assignment Due Dates	Homework Topic
1	1	January 14, 2025	Introduction		*GitHub Pages*
1	2	January 16, 2025	Internet and Web Basics		*GitHub Pages*
2	3	January 21, 2025	HTML		
2	4	January 23, 2025	Style Sheets (CSS)		
3	5	January 28, 2025	JavaScript Basics		
3	6	January 30, 2025	JSON	Assignment #1	
4	7	February 4, 2025	Server-Side Scripts in Python		
4	8	February 6, 2025	Document Object Model (DOM)		
5	9	February 11, 2025	Forms and CGI Mechanism		*Cloud Setup (Python)*
5	10	February 13, 2025	Web Servers		*Cloud Setup (Python)*
6	11	February 18, 2025	JavaScript Advanced		
6	12	February 20, 2025	HTTP and Networking Theory		
7	13	**February 25, 2025**	**Written Exam #1**		
7	14	February 27, 2025	Web Server Performance	Assignment #2	
8	15	March 4, 2025	Web Services and REST		
8	16	March 6, 2025	Ajax		
9	17	March 11, 2025	Responsive Website Design		*Cloud Setup (NodeJS)*
9	18	March 13, 2025	JavaScript Frameworks		*Cloud Setup (NodeJS)*
		March 16-23, 2025	**Spring Recess**		
10	19	March 25, 2025	jQuery		
10	20	March 27, 2025	High Performance Websites		
11	21	April 1, 2025	React and React Native		
11	22	April 3, 2025	Mobile App Development (Android)		
12	23	April 8, 2025	Mobile App Development (iOS)	Assignment #3	
12	24	April 10, 2025	Serverless Applications)		
13	25	April 15, 2025	Cookies and Privacy		
13	26	April 17, 2025	HTML5		
14	27	April 22, 2025	HTML5: New Technologies		
14	28	April 24, 2025	TBD		
15	29	April 29, 2025	Hacking the Web		
15	30	**May 1, 2025**	**Written Exam #2**		
Final	29	**May 8, 2025**	**Final Project** Demonstrations (On video) + Documentation	Refer to the final exam schedule in the USC *Schedule of Classes* at classes.usc.edu	

Statement on Academic Conduct and Support Systems

Academic Conduct
Office of Academic Integrity – (213) 764-4163
academicintegrity.usc.edu
Plagiarism – presenting someone else's ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in The USC Student Handbook, in the section titled "Integrity and Accountability". Other forms of academic dishonesty are equally unacceptable. The course uses the MOSS tool to check for plagiarism. All incidents of plagiarism will be reported to the *Office of Academic Integrity*.

Students and Disability Accommodations:

USC welcomes students with disabilities into all of the University's educational programs. The Office of Student Accessibility Services (OSAS) is responsible for the determination of appropriate accommodations for students who encounter disability-related barriers. Once a student has completed the OSAS process (registration, initial appointment, and submitted documentation) and accommodations are determined to be reasonable and appropriate, a Letter of Accommodation (LOA) will be available to generate for each course. The LOA must be given to each course instructor by the student and followed up with a discussion. This should be done as early in the semester as possible as accommodations are not retroactive. More information can be found at osas.usc.edu. You may contact OSAS at (213) 740-0776 or via email at osasfrontdesk@usc.edu.

Support Systems:

Counseling and Mental Health - (213) 740-9355 – 24/7 on call
Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

988 Suicide and Crisis Lifeline - 988 for both calls and text messages – 24/7 on call
The 988 Suicide and Crisis Lifeline (formerly known as the National Suicide Prevention Lifeline) provides free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week, across the United States. The Lifeline is comprised of a national network of over 200 local crisis centers, combining custom local care and resources with national standards and best practices. The new, shorter phone number makes it easier for people to remember and access mental health crisis services (though the previous 1 (800) 273-8255 number will continue to function indefinitely) and represents a continued commitment to those in crisis.

Relationship and Sexual Violence Prevention Services (RSVP) - (213) 740-9355(WELL) – 24/7 on call
Free and confidential therapy services, workshops, and training for situations related to gender- and power-based harm (including sexual assault, intimate partner violence, and stalking).

Office for Equity, Equal Opportunity, and Title IX (EEO-TIX) - (213) 740-5086
Information about how to get help or help someone affected by harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants.

Reporting Incidents of Bias or Harassment - (213) 740-5086 or (213) 821-8298
Avenue to report incidents of bias, hate crimes, and microaggressions to the Office for Equity, Equal Opportunity, and Title for appropriate investigation, supportive measures, and response.

The Office of Student Accessibility Services (OSAS) - (213) 740-0776
OSAS ensures equal access for students with disabilities through providing academic accommodations and auxiliary aids in accordance with federal laws and university policy.

USC Campus Support and Intervention - (213) 740-0411

Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

[Diversity, Equity and Inclusion](#) - (213) 740-2101
Information on events, programs and training, the Provost's Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

[USC Emergency](#) - UPC: (213) 740-4321, HSC: (323) 442-1000 – 24/7 on call
Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

[USC Department of Public Safety](#) - UPC: (213) 740-6000, HSC: (323) 442-1200 – 24/7 on call
Non-emergency assistance or information.

[Office of the Ombuds](#) - (213) 821-9556 (UPC) / (323-442-0382 (HSC)
A safe and confidential place to share your USC-related issues with a University Ombuds who will work with you to explore options or paths to manage your concern.

[Occupational Therapy Faculty Practice](#) - (323) 442-2850 or otfp@med.usc.edu
Confidential Lifestyle Redesign services for USC students to support health promoting habits and routines that enhance quality of life and academic performance.