Metropolitan College

Computer Science Department

CS 401 and CS 601 | Web Development Development | On Campus

Course Instructor

Andrew Sheehan | asheehan@bu.edu

Class Location(s):

Office hours by appointment.

Tuesday's Class (Section A1)

871 Commonwealth Avenue, Boston, MA 02215, United States; CGS 515

Thursday's Class (Section A2)

675 Commonwealth Avenue, Boston, MA 02215, United States; CAS 116

Course Description

You will learn how to build modern web applications every week. This class involves a mix of lectures combined with hands-on laboratories. You wil learn essential front-end development skills, starting with foundational Javascript techniques; such as DOM manipulation and event handling.

You will be exposed to asynchronous operations using fetch and axios. Learn to craft responsive designs using Flexbox, Bootstrap and Media Queries. A comprehensive exploration of TypeScript and its main features will also be covered. The course concludes with in-depth coverage of ReactJS, covering core architectural concepts, functional methods (hooks) alongside state management.

Books

*"HTML and CSS: Design and Build Websites" * Optional*

Author: Jon Duckett | ISBN-13: 978-1118008188 | https://www.amazon.com/HTML-CSS-Design-Build-Websites/dp/1118008189

*"Responsive Web Design with HTML5 and CSS: Build future-proof responsive websites using the latest HTML5 and CSS techniques " **4th Edition** * Optional*

Author: Ben Frain | ISBN-13: 978-1803242712 | https://www.amazon.com/Responsive-Web-Design-HTML5-CSS-ebook-dp-B0B25BX7CW/dp/B0B25BX7CW/ref=dp_ob_title_def

Courseware

All students will use onlinecampus.bu.edu to gain access to course materials

Academic Calendar

Please know the academic calendar and its affect with our schedule: https://www.bu.edu/reg/calendars/

Class Policies

- Homework will not be accepted after its due date unless the student has a very good reason and does not consistently submit their solutions/work after its due date.
- If you miss a quiz, it may bnot be rescheduled or made-up. Quizzes are random and must be completed on the day & time it was administered.
- Attendance is part of your grade. I do watch to see who shows up and participates in class. If you never show up in class and I have no record or recollation of talking with you in class or in emails, it will be taken into consideration during grading.

Academic Conduct Code

Cheating and plagiarism will not be tolerated in any Metropolitan College course. Caught cheating? It will result in no credit for whatever it is and may lead to disciplinary actions. Your Professor uses Beyond Compare to compare your work between you and your fellow students as well as AI tools the university uses. No two project or source files should ever be the same or 95% the same. Please take the time reviewing our Student Academic Conduct Code. It does change once in a while with updates.
http://www.bu.edu/met/metropolitan_college_people/student/resources/conduct/code.html

These statements above should not be understood as a discouragement in your discussions with other students in the class. On the contrary, you should share your thoughts, questions and solutions. Naturally, if you choose to work in a group, you will be expected to come up with original solutions rather than the same mistakes as everyone that was involved in the discussions.

Statement on the use of AI technologies

I understand today's world when it comes to AI. However, as a Professional Software Engineer/Web Designer, you cannot solely rely on the completeness or quality of AI-generated code. I do not recommend using AI to do your homework, laboratories or examinations. If we continue allowing AI to do our work for us, then you are not actively learning.

Grading Criteria (1000 points)

- Collectively: homework, laboratories and quizzes = 700 points.
- The Midterm Examination is 100 points and Final Examination = 100 points.
- The Term Project = 100 points

Class Schedule: Tuesday

Dates	Focus Area(s)	Deliverables & Milestones
Semester Begins January 21	**Lecture Topics:** • Setup: Tooling and setting up your development environment • HTML: Document structure; elements and attributes • HTML: inline & block elements; Headers; Images • HTML: Links (internal & external), Lists (ordered & unordered) **Laboratories** • Our first web page: "Hello World" • Creating a HTML page that talks about your background & history; Your hobbies; links to YouTube videos of your favorite music.	By the end of your first week of school, you should have your machine configured for development.
January 28	**Lecture Topics:** • HTML: tables and forms • Javascript: inline vs. embedded vs. linked • Javascript: Variables, expressions and control structures • Javascript: Introduction to inline (static) event binding • Javascript: Declared functions; Finding elements with getElementById() • CSS: Basics (id and class selectors); Using linked, embedded and inline **Laboratories** • Using tables and forms	Start thinking about what you intend to build for your term project. Email your Professor with your questions, if any.
February 4	**Lecture Topics:** • HTML: embedding video and audio elements • HTML: Understanding all the different types of measurements • Javascript: More on DOM Events; Use of DOMContentLoaded, querySelector() and querySelectorAll() • Javascript: Expressed & Lambda Functions • CSS: More use and focus on selectors **Laboratories** • Using audio and video elements	
February 11	**Lecture Topics:** • HTML: Building Web Applications with Media Queries • Understanding JSDoc • Testing with Jest	

Dates	Focus Area(s)	Deliverables & Milestones
	Laboratories • Building a responsive applications using media queries	
No Class February 18	Substitute Monday Schedule (President's Day)	
February 25	**Lecture Topics:** • Javascript: ES6 Module system • Javascript: Understanding the Object Literal • JavaScript: sessionStorage & localStorage **Laboratories** • Practice with ES6 modules • The password strength application • Using HTML, local and session storage	
March 4	**Lecture Topics:** • Introduction to Typescript • Using Vite.dev (A build tool for Typescript) • CSS: CSS Frameworks - Bootstrap and Flexbox **Laboratories** • Using data structures, Flexbox and Bootstrap.	Term Project Proposal Submitted For Review
No Class March 11	Spring Recess (Saturday, 8-March through Sunday, 16-March)	
Exam Week March 18	Midterm	
March 25	**Lecture Topics:** • Javascript: Promises; async & await • Javascript: Ajax with fetch and axios **Laboratories** • Creating a web application with Ajax	
April 1	**Lecture Topics:** • Javascript: ES6 Classes and Interfaces • Javascript: Rest and spread operators • Javascript: Data Structures: Set & Map **Laboratories**	Term Project: Submit whatever you have completed to your

Dates	Focus Area(s)	Deliverables & Milestones
	• Creating a web application with using Set and Map.	Professor for review.
April 8	**Lecture Topics:** • Introduction to React • ReactjS: Component-based vs. Functional (Hooks) • CSS: pseudo-class and pseudo-elements **Laboratories** • Creating a web application	
April 15	**Lecture Topics:** • Creating Notifications with Toastr More: https://cdnjs.com/libraries/toastr.js • ReactJS: useState & useEffect • ReactJS: Routing **Laboratories** • Building a React application	
April 22	**Lecture Topics:** • Course Review - Building a complete solution (Student's choice: React or Standard HTML)	
Presentation Week April 29	Presentations & Course Review	
Exam Week May 6	Finals	