



## INFO 6250 Web Development Tools and Methods

### Course Information

Course Title: Web Development Tools and Methods

Course Number: INFO 6250

Term and Year: Fall 2024

Credit Hour: 4

CRN: 12145

Course Format: On-Ground

### Instructor Information

Full Name: Brett Ritter

Email Address: b.ritter@northeastern.edu

### Teaching Assistant Information

TBD - See Canvas once the class begins

### Course Prerequisites

Graduate level INFO 5100 Minimum Grade of B- or Graduate level CSYE 6200 Minimum Grade of B-

### Course Description

Introduces the concepts of different website development methodologies: server-side vs client-side HTML generation, service oriented architectures (SOA) and different service paradigms. Focuses on information architecture and concepts that optimize for quality and maintainable code.

HTML and CSS experience is not required but is recommended

### Required Tools and Course Textbooks.

There is no textbook for the class. Students will be provided with online resources to consult for the material.

Students will have to install and configure required software as directed in the course, available for all major platforms (Windows PC, Mac OS X, Unix/Linux distributions). In particular, the course requires

- The Chrome browser (You can use other browsers, but grading will be conducted using Chrome)
- A github.com account and git software for your platform

- NodeJS and npm
- An editor/IDE of student's choice (VSCode recommended)

Basic instruction for using the software is provided in class, but the student is expected to resolve any difficulties installing and using the software on their systems and with their accounts.

### **Course Schedule/Topics Covered**

The course consists of 3 sections. Most classes involve a lecture, a weekly assignment, and a weekly quiz regarding topics covered in the lecture. Each section concludes with a website and server project.

#### **Section 1: Web Fundamentals and Server-side applications**

~6 classes

- HTTP, servers and clients, HTTP as stateless, request/response
- The role of HTML, CSS, and JS
- HTML best practices, CSS best practices, JS best practices
- Static vs dynamic assets
- Programming as communication
- Javascript syntax, NodeJS, npm/yarn
- Debugging JS, testing pyramid
- Model-View-Controller(MVC), Separation of Concerns (SoC)
- HTTPS/SSL, public-key encryption, certificates, Authentication, Authorization
- Password hashing/salting, JWT, SQL Injection, Cross Site Scripting (XSS)
- Client-side storage (cookies, localStorage, indexedDB), sessions
- Server-based Application state

#### **Section 2: Single Page Applications (SPA) using plain Javascript and REST Services**

~4 classes

- The DOM and client-side JS
- JS validation and client-side rendering in Rich Internet Applications (RIA)
- Client-side MVC and client state
- Service calls (XHR/AJAX) and web services (REST, GraphQL, SOAP)
- Writing RESTful services on the server
- Browser Security: Same Origin Policy (SOP), Cross Origin Resource Sharing (CORS)
- Modern tooling: minifiers, linters, bundlers, transpilers

#### **Section 3: SPA development and web service calls with React**

~ 3 classes

- React and JSX

- Service calls with React
- Client-side state management
- The future of server-side vs client-side development
- Workplace expectations: Agile, Prototypes, and developer roles

## Grading Scale

Instructor reserves the right to adjust scores based on the final demonstration of applied knowledge

Outside of the dropped scores for assignments and quizzes and any adjustment of scores for demonstrated knowledge, there is no grading curve.

Contributions of different material to the final grade are weighted as follows:

- 15% Total of Weekly Assignments (lowest score ignored)
- 10% Total Weekly Quizzes (lowest score ignored)
- 25% Project 1 Website using HTML and CSS
- 25% Project 2: Website to spec using plain Client Side JS
- 25% Final Project 3: Website using React

The letter grade for course is decided by the percentage of their total score compared to the possible score:

	87-89.9% B+	77-79.9% C+	
94-100% A	84-86.9% B	74-76.9% C	
90-94.9% A-	80-83.9%B-	70-73.9% C-	69.9% or below F

## Attendance/Late Work Policy

### Attendance Policy

Students are expected to attend the weekly class sessions (in-person in the classroom) and ask questions whenever the lectures are unclear to them. Barring emergencies, any absences must be requested and approved in advance. Students registered in MGEN courses (INFO, CSYE, and DAMG) are allowed a maximum of 2 absences per course, with 3 or more absences resulting in an automatic 'F' for that course. Students are expected to inform their instructors of any absences in advance of the class; if a student is sick long-term or experiences a medical issue that prevents class attendance, it is strongly encouraged that they speak with their Academic Advisor ([coe-mgen-gradadvising@northeastern.edu](mailto:coe-mgen-gradadvising@northeastern.edu)) to learn more about the Medical Leave of Absence. Should a student anticipate being unable to attend 3 or more classes, they should discuss their situation with their Academic Advisor to explore other

types of leave in accordance with the University's academic and global entry expectations. International students should review the Office of Global Services webpage to understand their visa compliance requirements.

Teaching Assistants (TAs) or Instructional Assistants (IAs) will be present at each class to collect student attendance.

### Late Work Policy

Students are expected to complete the weekly assignments between classes and submit to their class Github repositories by the deadline (normally before the day of the next class). Students are expected to complete the weekly Canvas-based quizzes between classes and submit online before the deadline (normally before the day of the next class).

Students must communicate with the faculty prior to the deadline if they anticipate work will be submitted late. Work submitted late without prior communication with faculty will not be graded. Late work submitted WITH prior communication is either granted an extension (no grade penalty) OR will be graded with a penalty and only graded after on-time assignments are graded, time-permitting. Any submission that was not granted an extension has no guarantee that it will be graded.

### End-of-Course Evaluation Surveys

Your feedback regarding your educational experience in this class is particularly important to the College of Professional Studies. Your comments will make a difference in the future planning and presentation of our curriculum.

At the end of this course, please take the time to complete the evaluation survey at <https://neu.evaluationkit.com>. Your survey responses are **completely anonymous and confidential**. For courses 6 weeks in length or shorter, surveys will be open one week prior to the end of the courses; for courses greater than 6 weeks in length, surveys will be open for two weeks. An email will be sent to your Husky Mail account notifying you when surveys are available.

### Academic Integrity

A commitment to the principles of academic integrity is essential to the mission of Northeastern University. The promotion of independent and original scholarship ensures that students derive the most from their educational experience and their pursuit of knowledge. Academic dishonesty violates the most fundamental values of an intellectual community and undermines the achievements of the entire University.

As members of the academic community, students must become familiar with their rights and responsibilities. In each course, they are responsible for knowing the requirements and restrictions regarding research and writing, examinations of whatever kind, collaborative work, the use of study aids, the appropriateness of assistance, and other issues. Students are responsible for learning the conventions of documentation and acknowledgment of sources in their fields. Northeastern University expects students to complete all examinations, tests, papers, creative projects, and

assignments of any kind according to the highest ethical standards, as set forth either explicitly or implicitly in this Code or by the direction of instructors.

Go to <http://www.northeastern.edu/osccr/academic-integrity-policy/> to access the full academic integrity policy.

### **MGEN Student Feedback**

Students who would like to provide the MGEN unit with anonymous feedback on this particular course, Teaching Assistants, Instructional Assistants, professors, or to provide general feedback regarding their program, may do so using this survey: [https://neu.co1.qualtrics.com/jfe/form/SV\\_cTIAbH7ZRaaW0Ki](https://neu.co1.qualtrics.com/jfe/form/SV_cTIAbH7ZRaaW0Ki)

### **University Health and Counseling Services**

As a student enrolled in this course, you are fully responsible for assignments, work, and course materials as outlined in this syllabus and in the classroom. Over the course of the semester if you experience any health issues, please contact UHCS.

For more information, visit <https://www.northeastern.edu/uahcs>.

### **Student Accommodations**

Northeastern University and the Disability Resource Center (DRC) are committed to providing disability services that enable students who qualify under Section 504 of the Rehabilitation Act and the Americans with Disabilities Act Amendments Act (ADAAA) to participate fully in the activities of the university. To receive accommodations through the DRC, students must provide appropriate documentation that demonstrates a current substantially limiting disability.

For more information, visit <https://drc.sites.northeastern.edu>.

### **Library Services**

The Northeastern University Library is at the hub of campus intellectual life. Resources include over 900,000 print volumes, 206,500 e-books, and 70,225 electronic journals.

For more information and for education specific resources, visit <https://library.northeastern.edu>.

### **24/7 Canvas Technical Help**

For immediate technical support for Canvas, call 617-373-4357 or email [help@northeastern.edu](mailto:help@northeastern.edu)

Canvas Faculty Resources: <https://canvas.northeastern.edu/faculty-resources/>

Canvas Student Resources: <https://canvas.northeastern.edu/student-resources/>

For assistance with my Northeastern e-mail, and basic technical support:

Visit ITS at <https://its.northeastern.edu>

Email: [help@northeastern.edu](mailto:help@northeastern.edu)

ITS Customer Service Desk: 617-373-4357

## **Diversity and Inclusion**

Northeastern University is committed to equal opportunity, affirmative action, diversity, and social justice while building a climate of inclusion on and beyond campus. In the classroom, members of the University community work to cultivate an inclusive environment that denounces discrimination through innovation, collaboration, and an awareness of global perspectives on social justice.

Please visit <http://www.northeastern.edu/oidi/> for complete information on Diversity and Inclusion

## **Title IX**

*Title IX of the Education Amendments of 1972 protects individuals from sex or gender-based discrimination, including discrimination based on gender-identity, in educational programs and activities that receive federal financial assistance.*

Northeastern's Title IX Policy prohibits Prohibited Offenses, which are defined as sexual harassment, sexual assault, relationship or domestic violence, and stalking. The Title IX Policy applies to the entire community, including male, female, transgender students, faculty, and staff.

In case of an emergency, please call 911.

*Please visit <https://www.northeastern.edu/ouec> for a complete list of reporting options and resources both on- and off-campus.*