

Web Development

Fall 2023

COURSE GOALS

This course introduces various Web technologies used to develop advanced Web based applications applying industry best practices. We start with the basics of displaying, laying out content, and styling with HTML5 and CSS3. Web pages are styled to respond to various screen sizes using CSS libraries such as Bootstrap. We program the browser with JavaScript, but quickly move on to jQuery to deal with browser and JavaScript language fragmentation. Single page applications and component based development are introduced as the modern Web application paradigm with React.js being the current most popular solution of choice. The challenge of application state management is solved with Redux. We'll learn how to create RESTful Web services with Node.js and use MongoDB as a permanent storage solution.

Lectures

Lectures will focus on developing a practical understanding of Web application development. The assignments are used as an example of applying the concepts to solve a practical problem. Lectures are intended to be live, but if you must miss a class or you are remote, all lectures will be recorded and available on your Zoom dashboard. Online, asynchronous courses do not require students to attend lectures, but are strongly encouraged to do so.

Assignments

The assignments consist of building a complete Web application using various technologies. The assignments give students the opportunity to practice what is discussed in class to achieve a practical level of understanding of the concepts.

Team Project

Students are encouraged to form teams of up to four members to collaborate on a team project due at the end of the semester. The team project will allow students to collaboratively complete a Web application from start to finish, including design & creation/optimization, as well as a dynamic user-interface.

MEETING

Lectures are intended to be in person and students are expected to regularly attend lectures on campus. Online/Asynchronous courses will meet over Zoom using the links below. If you have a health concern you are encouraged to stay home and you can join the lecture through the Zoom link shown below. All lectures will be recorded and available through Zoom. Lectures will be held at the days and time shown below and will be recorded for those that can not attend. All times are Eastern Standard Time (EST). The recordings are meant as a convenience and not as an alternative or to be "binge watched" at a later time. The course is hands on and fast paced, and the lectures will contain time sensitive tasks you are responsible for.

What	When, Where & Zoom
CS4550-01	Mondays & Thursdays @ 11:45am - 1:25pm EST, Shillman Hall 105
CS4550-02	Mondays & Wednesdays @ 2:50pm - 4:30pm EST, Shillman Hall 135
CS5610	Tuesdays & Thursdays @ 7pm - 9:30pm EST, Online

READING

There is a [required text available for purchase online](#). Students are expected to read the materials or view assigned videos in preparation of each lecture. Quizzes will be based on the assignments, lectures, and assigned reading material.

INSTRUCTION TEAM

Office hours will be held online on Zoom at the days and times shown below. We will be using Piazza for discussions. If you have a question please start there since other students might have had the same exact question. Piazza link: <https://piazza.com/class/lm1gi2uzv1x402/>. If you need one on one help the TAs and myself will be holding office hours following the schedule below on Zoom.

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
8		Jose	Jose		Jose		
9	Neeraj Srivatsav Sanne		Neeraj Srivatsav Sanne		Haris	Chetana	
10	Neeraj Srivatsav Sanne	vinavaka	Neeraj Srivatsav Sanne	vinavaka	Haris	Chetana	
11	Anson Antony	vinavaka	Kaushik Komanduri	vinavaka	Vishrutha	Vibhore	Pragya Prashar
12	Raghul	Kaushik Komanduri	Kaushik Komanduri	Haris	Vishrutha	Vibhore	Pragya Prashar
1	Raghul	Kaushik Komanduri	kartikey	Haris	Abhisha Daine	Javraj	Amit Satish Kulkarni
2	kartikey	Kaushik Boora	kartikey	Chandresh Lokesha	Abhisha Daine	Javraj	Amit Satish Kulkarni
3	kartikey	Kaushik Boora	Raghul	Chandresh Lokesha	Atul	Atul	
4	Gowtham Potnuru	Vishrutha	Raghul		Atul	Atul	
5	Gowtham Potnuru	Vishrutha		Kaushik Boora	Javraj	Pragya Prashar	
6	Antonio	Chandresh Lokesha	Antonio	Kaushik Boora	Javraj	Pragya Prashar	
7	Antonio	Chandresh Lokesha	Antonio	Tejas	Vibhore	Amit Satish Kulkarni	
8	Abhisha Daine	Tejas	Gowtham	Tejas	Vibhore	Amit Satish	

			Potnuru			Kulkarni	
9	Abhisha Daine	Tejas	Gowtham Potnuru	Anson Antony	Chetana		
10			Anson Antony	Anson Antony	Chetana		

AGENDA

Date	Week	Topic	Assignments			Exams	
			Name	Due	Topic	Name	Topic
9/4	0	Intro, the Internet, the WWW, setup, HTML	A1	9/18	INTRO		
		Setting up a development environment					
9/11	1	Building User Interfaces with HTML			HTML		
		Formatting, layout, tags					
9/18	2	CSS, styling, color/position/layout/grids	A2	10/2	CSS	Q1	HTML
9/25	3	Box model, Bootstrap/Icons, responsive design			Bootstrap		
10/2	4	JavaScript, DOM, JSON, data types & structures	A3	10/16	JavaScript	Q2	CSS
		strings, arrays, objects, spreaders, functions					
10/9	5	React components, router navigation			React		
		dynamic content					
10/16	6	React state, Redux,	A4	10/30	State & Redux	X1	HTML-React
		Reducers					
10/23	7	Exam 1 Review 1st lecture of the week			Exam 1		
		Exam 1 on 2nd lecture of the week					
10/30	8	Node, Client/Server, REST, Controllers, Services	A5	11/13	Node	Q3	Redux
		Axios, AJAX					
11/6	9	Async Redux, Server State, Session, Login			Session		
		Authentication, user profiles					
11/13	10	MongoDB, Mongoose, Schemas, Models, DAOs,	A6	11/27	Mongo	Q4	Node
		Integrate Node with Mongo					
11/20	11	Project, getting started, prototype	P	12/4			
		Napster client					
11/27	12	Working on the project				Q5	Mongo
12/4	13	Project Due 12/10, Demo Week, Exam 2 Review					
		UG last day of classes Wednesday 12/6					

12/11	14	Final Exam: Friday 12/15 @ 10:30am	X2			X2	
		GR last day of classes Saturday 12/16					
12/18	15	Faculty grades due 12/18 @ 2pm					

EVALUATION

The final grade for this course will be weighted as follows...

- Assignments (~6): 40%
- Quizzes (~5): 10%
- Project: 30%
- Exam 1: 10%
- Exam 2: 10%

Final grades will be assigned based on the following scale

- A 94 - 100
- A- 90 - <94
- B+ 87 - <90
- B 84 - <87
- B- 80 - <84
- C+ 77 - <80
- C 74 - <77
- C- 70 - <74
- D+ 67 - <70
- D 64 - <67
- D- 60 - <64
- F <60

Late Submission Policy

All assignments and project milestones are due at midnight on their due date. Late submissions will be penalized one percent for every hour late. For example, an on-time submission might receive a grade of 90 points. The same assignment submitted 5 hours after the deadline would be deducted 5 points and receive an 85. In general students can not make up a quiz, exam or assignment.

Assignments

Submissions will be made via Canvas. Each assignment will have instructions on what to submit, but generally you will submit a link to a github repository and/or an online hosted server running a Web application. Code is expected to be professional and properly documented; any required data files and library dependencies must be resolvable via pom.xml or package.json files. All source code must be available through a public GitHub repository. Instructors must be able to clone your repository, build, and run your project from their local environments. There will be about 10 assignments in total.

This class has very strict standards for borrowing code: if you borrow anything for use in your assignment/project, you must have a citation, **even if it's your own code from previous semesters and/or other courses**. A good guideline is that if you take more than three lines of code from some source, you must include the information on where it came from. A URL or a notation (e.g., "MATLAB help files") is fine. If it is an entire function, note it at the beginning of the code segment and include any original credit information. Provide a qualitative description of what you used, and what you changed/contributed. If you have a question about what is considered a violation of this policy, ASK!

The university's academic integrity policy discusses actions regarded as violations and consequences for students: <http://www.northeastern.edu/osccr/academic-integrity>

Quizzes

To encourage attendance there will unannounced, short, 10-20 minute quiz at the beginning or end of some lectures. The content of the quiz will typically consist of the last couple of lectures, but are generally cumulative. The instructor is free to skip quizzes depending on time constraints. There will be no makeup quizzes. For online/asynchronous classes, quizzes will be made available for 24 hours for students to take asynchronously.

Project

The goal of the project is to gain hands-on experience with developing a full Web application from the ground up. The project should be conducted in groups of 1-5 people. Completion of the project will include milestones in the schedule below.

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.

Read the policy describing definitions and consequences of Cheating, Fabrication, Plagiarism, Plagiarism, and other details regarding [Academic Integrity Policy](#)

Cheating

Intentionally using or attempting to use unauthorized materials, information or study aids in an academic exercise

Fabrication

Intentional and unauthorized falsification, misrepresentation, or invention of any data, or citation in an academic exercise

Plagiarism

Intentionally representing the words, ideas, or data of another as one's own in any academic exercise without providing proper citation

Unauthorized Collaboration

Instances when students submit individual academic works that are substantially similar to one another; while several students may have the same source material, the analysis, interpretation, and reporting of the data must be each individual's independent work

Participation in Academically Dishonest Activities

Any action taken by a student with the intent of gaining an unfair advantage

Facilitating Academic Dishonesty

Intentionally or knowingly helping or attempting to violate any provision of this policy

CLASSROOM ENVIRONMENT

To create and preserve a classroom atmosphere that optimizes teaching and learning, all participants share a responsibility in creating a civil and non-disruptive forum for the discussion of ideas. Students are expected to conduct themselves at all times in a manner that does not disrupt teaching or learning. Your comments to others should be constructive and free from harassing statements. You are encouraged to disagree with other students and the instructor, but such disagreements need to be respectful and be based upon facts and documentation (rather than prejudices and personalities). The instructor reserves the right to interrupt conversations that deviate from these expectations. Repeated unprofessional or disrespectful conduct may result in a lower grade or more severe consequences. Part of the learning process in this course is respectful engagement of ideas with others.

BE PRESENT WHEN YOU ARE IN CLASS. Please do not distract from the class by doing other activities such as phone calls, email, facebook, chat/IM/texting, games, web surfing – unless it has a direct bearing on the course. Then, by all means, surf away!

Attendance is expected. Sometimes you cannot avoid missing a class. If you need to be away from class, it is your responsibility to catch up on the materials discussed in the class.

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.

If you or someone you know has been a survivor of a Prohibited Offense, confidential support and guidance can be found through University Health and Counseling Services staff (<http://www.northeastern.edu/uahcs/>) and the Center for Spiritual Dialogue and Service clergy members (<http://www.northeastern.edu/spirituallife/>). By law, those employees are not required to report allegations of sex or gender-based discrimination to the University.

Alleged violations can be reported non-confidentially to the Title IX Coordinator within The Office for Gender Equity and Compliance at: titleix@northeastern.edu and/or through NUPD (Emergency 617.373.3333; Non-Emergency 617.373.2121). Reporting Prohibited Offenses to NUPD does NOT commit the victim/affected party to future legal action.

Faculty members are considered "responsible employees" at Northeastern University, meaning they are required to report all allegations of sex or gender-based discrimination to the Title IX Coordinator.

In case of an emergency, please call 911.

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

Students With Disabilities

Students who have disabilities who wish to receive academic services and/or accommodations should visit the Disability Resource Center at 20 Dodge Hall or call (617) 373-2675. If you have already done so, please provide your letter from the DRC to me early in the semester so that I can arrange those accommodations.