Endicott College
Beverly, Massachusetts

School of Science & Technology
Computer Science Department
Course Syllabus

Course No:	CSC 302.01
Course Title:	Web Programming II—Interactive Web Applications
Credits:	3
Class Type:	Lecture
Semester and Year:	Fall 2024
Meeting Times:	T/R 9:30–10:45am in JSC233

Faculty: Henry Feild, Ph.D.
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- Office Hours: See https://bit.ly/hanks-office-hours

Catalog Description
An advanced examination and application of server-side web programming and client communication technologies that facilitate interactive web applications.

Learning Outcomes
At the completion of this course, you will be able to:

- implement client and server side web applications
- describe and use key web technologies
- describe and demonstrate the principles of event-driven web applications
- describe critical societal Internet issues, such as data collection and cookie tracking

Teaching/Learning Strategies
This course uses a mix of videos, problem-based learning, and peer instruction to assist you in understanding and applying core programming concepts and skills. This is a *flipped* class; one or more videos going over key concepts and a small practice homework will be assigned prior to class. During class, you will have the opportunity to ask questions and we will apply what you learned to new examples. Several programming assignments will give you the opportunity to demonstrate what you've learned in a larger application.

Every few weeks, one day will be set aside for a quiz. These frequent, low stakes assessments will help you and me assess your mastery of the material throughout the semester and provide you many opportunities to course correct as necessary.

Specifications grading is used to provide you agency in determining the level of mastery you'd like to achieve based on your prefered grade (i.e., it is clear from the beginning of the semester what you must do to earn an A, B, C, or D in the course). You will be given a number of revision tokens which you may use to revise project milestone submissions that do not pass the given specifications; see Due dates, Late policy, and Revision tokens for details.

Required Texts/Technology
There are no required texts for this class.

You will need dependable internet access to watch video lectures, read online resources, and to access the class server.

You will need various free software throughout the semester; video guides will guide you through those.

You will need a GitHub account. You will be required to create a private repository and give me access to it. All assignment submissions throughout the semester will be through this repository. Detailed instructions are available in a video on the course Canvas page.

Evaluation Methods
The course is made up of the following graded components. Each component will be graded pass/fail based on clearly stated specifications, indicated below where possible:

- Homework, done individually or in small groups prior to each class and consists of videos and one or more programming problems where you apply the concepts from the videos
    - *Pass*: you made a reasonable attempt at the programming problems and committed your solution to your GitHub repository

- Class participation
    - *Pass*: it is clear that you came prepared and fully engaged in the class activities for the entire class; you were on task and followed directions; you submitted all requested materials as instructed; each class, I will ask you to respond to questions on a sheet of paper that I will collect at the end of class—these will be graded based on engagement and completion rather than correctness

- Semester project, a large project started roughly halfway through the semester in which you apply the concepts learned in class. There will be four milestones throughout the second half of the semester, in addition to a project report and presentation, so that you can get feedback and make timely progress. Each milestone will be marked as follows:
    - *Unassassable:* no or little attempt was made.
    - *Reasonable attempt*: it is clear that you made a good faith effort to meet the majority of the specifications even if they are not all met

    - *Pass*: you satisfy all of the specifications to a sufficient degree—it's perfectly met or very nearly met (e.g., if a specification says your code must include a comment above every function, but your code includes comments above only about 80% of functions, then that is deemed "sufficient")

- Quizzes, a total of four, one given roughly every three weeks. Each quiz contains 10 medium-sized problems that assess your understanding of one or more topics. Questions are associated with one or more major topics (each question lists the topics it assesses). Each grade bundle requires a certain number of quiz questions to be passed and a certain number of topics to be passed (passing a topic means passing one or more quiz questions that assess that topic). On quiz days, the entire class will be set aside for you to do as many of 10 quiz questions as you'd like. A two-sided, 8.5"x11" cheat sheet may be used for these. The follow per-question rubric will be used:
    - *Full credit/Pass* (1 point): the provided solution is correct or very close to correct
    - *Partial credit* (0.25 points): the provided solution includes a nugget that I deem demonstrates a significant understanding of the topics under consideration
    - *No credit* (0 points)
- Final quiz; this is a longer quiz (20 questions instead of 10). This will cover topics covered since the last quiz, as well as questions related to topics covered earlier in the semester. You may use a two-sided, 8.5"x11" cheat sheet on this. The same per-question rubric from the regular quizzes will be used.

The final grade bundles (in specifications grading speak) are below. The basis of your final course grade is determined by the highest bundle you satisfy *all* the requirements for. If the base grade is **X**, then it will be bumped to **X**+ if you've satisfied a higher bundle with regards to one of the criteria, or (**X**+1)- if you've satisfied a higher bundle with regards to two of the criteria.

Grade Bundles			
	Effort Minimum pass rate of each of: ● class activities ● homework	**Semester project**	**Quiz questions**
A	● 90%	● pass all 4 milestones, presentation, report	● accumulate at least 30 points ● pass question assessing each of the 13 major topics
B	● 80%	● passed 3 milestones, report, and presentation	● accumulate at least 25 points

		• made a reasonable attempt at 1 milestone	• pass questions assessing 11 of the major topics
C	• 70%	• passed 2 milestones and the report or presentation • made a reasonable attempt on the others	• accumulate at least 20 points • pass questions assessing at 9 of the major topics
D	• 60%	• passed 1 milestone • made a reasonable attempt at 2 of the other milestones and both the report and presentation	• accumulate at least 15 points • pass questions assessing 8 of the major topics

Example: you pass 95% of class activities, 82% of homework, you pass all 4 milestones, the report, and presentation, and you pass 28 quiz questions. Your criteria-level grades are:

- Effort: B (because of the homework)
- Semester project: A
- Quiz questions: B

You will wind up with a B+, since you have fully satisfied the B criteria and one criteria satisfies a higher bundle.

Topical Outline and Timeline

A more detailed outline can be found on the course Canvas page.

Week	Goal
1	Basic web page
2	Make a client-side app using LocalStorage
3	Single page app
	Quiz 1 (Thursday, Sep. 12)
4	PHP
5	Client-server architecture, working with remote servers (Linux)
6	AJAX
	Quiz 2 (Thursday, Oct. 3)
7	Server-side storage: databases / Simple APIs
8	Authentication / Cookies
9	Authorization
	Quiz 3 (Thursday, Oct. 24)
10	Creating a RESTful API
11	Common attacks (SQL injection, XSS)

12 Testing
Quiz 4 (Nov 14)
13 Libraries and frameworks
Thanksgiving break: Nov. 25–29
14 Other JavaScript topics (websockets, closures, OOP, promises)
15 Review

Final exam—December 17, 8–10am in JSC 233

Each quiz question will assess one or more of the following topics; you must pass at least one question assessing each of the major topics in order to pass the course:

1. Basic HTML/JavaScript/CSS
2. Client-server model
3. Client-side state
    a. LocalStorage
    b. Cookies
4. Server-side state
    a. Session cookies
    b. Self-managed server (e.g., LAMP)
    c. Platform as a service (PaaS) (e.g., Firebase)
5. Remote server development
6. Security
    a. Authentication vs. authorization
    b. HTTPS vs. HTTP, encryption
    c. SQL injection attacks
    d. Cross-site Scripting (XSS) attacks
    e. JSON web tokens (JWT)
7. APIs
    a. Simple and RESTful
8. Asynchronous requests/response handling (AJAX)
9. Frameworks
10. DOM manipulation
11. Debugging
    a. Server-side
    b. Client-side
12. Testing
    a. UI, JavaScript unit tests, and APIs
13. Advanced/miscellaneous

Due Dates, Late Policy, and Revision tokens

Homework

Homework is due before the start of most classes. Because this is a flipped class, the homework is vital to get the most out of each class period. As such, these assignments will not be accepted late. However, remember that you can still earn an A if you pass 90% of the homework.

Think-pair-shares and class activities

Similarly, think-pair-shares and class activities may not be made up after the deadline; you earn credit for these by participating in class and submitting any required materials.

Semester project

The semester project gives you the opportunity to showcase your mastery of the concepts covered in class applied to a larger scale project. There will be four milestones spread throughout the second half of the semester. See the grade bundles for how many you need to attempt and pass in order to achieve your target grade. You may apply revision tokens and late days to semester project milestones.

Revision tokens

Since the project milestones, like everything else, will be graded as pass/fail, you will have the opportunity to revise and resubmit a failed milestone using a **revision token**. In order to be eligible to use a revision token, you must have submitted your milestone on time and made a reasonable attempt at it. You will start the semester with **six** tokens (one for each milestone, plus the presentation and report). You must resubmit within *four days* of receiving feedback on the previous submission. You may use more than one token for the same milestone (e.g., you could submit 5 versions of one milestone if you wanted to—the original plus four revisions). Using a revision token on one milestone does not change the due date of subsequent milestones.

Late days

Separate from revision tokens, you will have **four** late days you may use throughout the semester. Each late day affords you an additional 24 hours to submit a milestone (the initial version or a revision). You may stack these, that is, you can use more than one for the same assignment/version).

Quizzes

Quizzes must be done in person during the normally scheduled class time (or in the testing center if you have an Endicott-granted accommodation). If you have a conflict during a scheduled quiz, please let me know as soon as possible so we can make alternative arrangements.

Extenuating circumstances

If you have an extenuating circumstance that will cause you to miss a lot of work, please notify me as soon as possible so we can discuss and negotiate an alternative schedule if I feel it is appropriate.

Accessibility Services

Endicott College provides equal educational opportunities for all students regardless of disability status. If you believe that you qualify as a person with a disability as defined by Section 504 of the Rehabilitation Act of 1973, the Americans with Disabilities Act (ADA) of 1990 and its Amendment Act of 2008 (ADAAA), you are encouraged to register with the Center for Accessibility Services Office to request accommodations, auxiliary aides, and/or support. The Center for Accessibility Services is located on the 2nd Floor of the Diane M. Halle Library. Please visit the Center for Accessibility Services website and you may contact Accessibility Services at access@endicott.edu with any questions.

Academic Support

The Division of Academic Success believes that every student can benefit from having a thought partner who supports their learning. We offer innovative and individualized services that motivate you as you pursue your educational goals:

- Content and Writing Tutoring: Work with content tutors who can help you understand, remember, and apply course content, or with writing tutors who will support your growth as writers and thinkers. Students can schedule free tutoring sessions on TutorTrac[1] or stop by Halle Library 204.
- Quick-Connect Coaching: Meet with a professional academic coach for thirty minutes to devise a solution to an immediate challenge, including unpacking a difficult assignment, creating a specific study schedule for an upcoming assessment, prioritizing multiple responsibilities, and more. Students can schedule free quick-connect sessions on TutorTrac or stop by Halle Library 204.
- Academic Coaching: Grow your academic self-awareness and deepen your connection to your education by partnering once, twice, or three times a week with a professional academic coach to: develop and deepen academic confidence, resilience, and grit; develop time management and organizational systems and strategies; learn how to set and adjust goals; and recognize how to best utilize resources. This program has an additional cost. To enroll in academic coaching, students can email academiccoaching@endicott.edu.
- Workshops: Our semester workshops help students build skills in crucial areas for learning and succeeding: time management, goal setting, note-taking strategies, and metacognition. See the website[2] for a complete list of programs.

Academic Integrity Statement

Students are required to abide by the *Academic Integrity Policy* of Endicott College[3].

Cheating on quizzes may result in failure of the course or dismissal from the College. Plagiarism (the presentation of someone else's words, images, or ideas as one's own) also applies to programming. For example, copying code from another source without acknowledging that

[1] http://tutortrac.endicott.edu/

[2] https://www.endicott.edu/academics/academic-resources-support/division-of-academic-success/student-workshops

[3] https://catalog.endicott.edu/content.php?catoid=46&navoid=2574#aca-integrity

source, or turning in work that is largely someone else's is considered plagiarism. Plagiarism is a serious offense and will result in failure of the assignment at a minimum, but may also result in failure of the course or dismissal from the College.

You may use generative AI assistance in this course (such as Copilot or ChatGPT) for homework assignments and project milestones provided you cite it. You must include a disclosure in the header of every file for which AI was used and a description of how it was used.

For any substantial or complex snippet of code produced from elsewhere (whether via generative AI or copied from a site like StackOverflow or W3Schools), you must include a comment above the code in question with a citation and details about what you modified, if anything.

Course Expectations

For each credit hour, students are expected to spend a minimum of two hours on work outside of class each week. For this three credit course, that is a minimum of six hours each week.

All students must review the Academic Calendar published by the Registrar's Office online at:

https://www.endicott.edu/academics/academic-resources-support/academic-calendar

Attendance and Participation

Class attendance is expected of all students (including you!) up to and including the last day of scheduled classes during the semester. You must plan accordingly. You will not be directly graded on attendance, however, class activities are dependent on you being present. I will send a progress report if you are accrue excessive absences and it appears to impact your performance in the class.

In accordance with the Undergraduate College's Attendance Policy, being absent three or more weeks of class (that's twelve days of class) in total throughout the semester will result in a WX (withdraw/failing) for an unexcused absence (e.g., the student did not feel like coming to class) or W (withdraw) in the case of an extenuating circumstance (e.g., a medical condition).

While in class, students are expected to be fully present and engaged. Using phones or computers in class for any non-class purpose—e.g., texting, making calls, checking email, watching unassigned videos, etc.—is strictly forbidden. Side discussions, covert texting, or any other failure to pay attention will negatively impact your grade. Students who fail to participate or give their full and undivided attention to the class, disrupt class, are habitually late to class, or are rude to other students or the instructor will not receive credit for the day's class activity.

Subject to Change Statement

This syllabus is subject to change. I will notify you of any changes throughout the semester, highlight them above, and make a note of the change in the changelog below.

Changelog

- *2024-08-29: initial syllabus*

- *2024-09-10: Updated the rubric for quiz questions; updated the grade bundle to use "points" instead of "passed questions"*