Endicott College
Beverly, Massachusetts

School of Arts and Sciences
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 2020

Faculty: Henry Feild, Ph.D.
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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 interactive videos, problem-based learning, and peer instruction to assist you in understanding and applying core programming concepts and skills. This is a *flipped* class; homework (theory and demonstration videos) will be assigned prior to class and will form the basis of the class activities. This allows us to use class time to apply that knowledge to a running example. You will then continue to work on the class assignment at home.

Every two weeks, one day will be set aside for an individual timed assessment. 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 redo tokens which you may use to revise programming assignments that do not pass the given specifications; see Due dates, Late policy, and Redo tokens for details.

In order to support students in quarantine, isolation, or any other situation, physical attendance is flexible. You may attend in person, live over Zoom (a.k.a. remote/synchronous), or remote/asynchronously. You may switch back and forth between these at any time and you do not need to notify me of your choice or provide an explanation.

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 problems (usually working more on a class activity).
    - Pass: you watched every specified video and attempted all of the embedded questions; you spent an hour on the problems and committed your code to your GitHub repository (only has to be in one submitter's repo)
- Think-pair-share activities (TPSs), done at the beginning of every class meeting (closed book/notes)
    - Pass: you've made a reasonable attempt at the questions and fully engaged during the "pair" (if in person or remote/synchronous) and "share" portions; answers should be added to both your running TPS document (see TPS0 for details) and the group TPS for the day
- Class activities, done individually or in small groups.
    - Pass: it is clear that you came prepared and fully engaged in the activity for the entire class (~40 minutes since TPS will take up about 10 minutes of each class); you were on topic most of the time and followed directions; you submitted all requested materials through your or your partner's Git repository within 24 hours after the beginning of class

- Programming assignments. Every class activity will specify one or more extensions that you can complete as a programming assignment. These usually involve implementing advanced features or functionality for the course project. They are due two weeks after the class in which they were specified. You only need to complete a limited number of these (see the grade bundles below) and you may complete them alone or in pairs.
    - Pass: the web application runs mostly as expected, the source code includes a header and in-line comments, the code is well organized, and all assignment-specific criteria are met. There is a README file that includes a list of the team members and a copy of the assignment rubric with every satisfied specification checked off (all should be checked; if not, you shouldn't submit)
- Quizzes, given roughly every two weeks. Each quiz contains 10 medium-sized problems that assess your understanding of one or more topics. To pass the class, you must pass at least one quiz question assessing each topic throughout the semester (each question lists the topics it assesses). Furthermore, each grade bundle requires a certain number of quiz questions to be passed. On quiz days, the entire class will be set aside for you to do as many of 10 LOAs as you'd like. A two-sided, 8.5"x11" cheat sheet may be used for these.
    - Pass (question level): the provided solution is correct or very close to correct
- Final quiz; this is a longer quiz (20 questions instead of 10) and is not required. Take it if you haven't passed enough quiz questions to satisfy your target grade bundle
    - Pass (question level): the provided solution is correct or very close to correct

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 • think-pair-shares	**Programming assignments**	**Quiz questions** (all bundles require that your set of passed quiz questions fully covers the set of programming skills and concepts)
A	• 90%	• pass at least 4 PAs • at least one "Advanced"	• pass at least 30 questions
B	• 80%	• pass at least 3 PAs • at least one "Advanced"	• pass at least 25 questions
C	• 70%	• pass at least 3 PAs	• pass at least 20 questions

D	• 60%	• pass at least 2 PAs	• pass at least 15 questions

Example: you pass 95% of class activities and TPSs, 82% of homework, you pass 4 PAs (one of them "Advanced"), and you pass 28 quiz questions. Your criteria-level grades are:

- Effort: B (because of the homework)
- Programming assignment: 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.

Since this system is different from typical grading systems, I will track your current and projected grade in a shared document. I will send instructions for accessing that document in a Canvas announcement.

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	Move storage server-side on a self-managed server (LAMP-like stack)
4	Add a simple API
5	Convert to a RESTful API
6	Adding multiple users (authentication, authorization, cookies)
7	Common attacks (SQL injection, XSS)
8	Testing
9–10	Convert to using a PaaS (Firebase)
11	Frameworks
12	Miscellaneous libraries
13	Advanced JavaScript (closures, OOP, promises)
14	Review
	Final quiz—date & time TBA

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 Redo 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 within 24 hours of the class, or if you cannot attend class, by completing any assignments and watching a recording of the class (when applicable) within 24 hours of the class.

Programming assignments

These will be extensions of class activities and must be submitted within two weeks of the class they correspond to. They may not be submitted late.

Redo tokens

Since the programming assignments, like everything else, will be graded as pass/fail, you will have the opportunity to resubmit a failed programming assignment using a **redo token**. You will start the semester with four of these. You must resubmit within one week of receiving feedback

on the previous submission. You may use more than one token for the same assignment (e.g., you could submit up to 5 versions of one programming assignment if you wanted to—the original plus four redos). If you are working with a partner, each resubmission costs *each* of you one token.

Quizzes
Quizzes must be done during the normally scheduled class time, even if you take it remotely. 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.

ADA Policy
If you as a student qualify as a person with a disability as defined in Chapter 504 of the Rehabilitation Act of 1973, the Americans with Disabilities Act (ADA) of 1990, the Americans with Disabilities Act Amendments Act of 2008 (ADAAA), you are strongly encouraged to register with the Center for Teaching and Learning. The Center for Teaching and Learning is located in the Diane M. Halle Library room 201 and online at https://www.endicott.edu/academics/academic-resources-support.

As a student registered with the Center for Teaching and Learning, it is your responsibility to present your accommodation letter to your instructor at the beginning of each semester.

Academic Integrity Statement
Students are required to abide by the *Academic Integrity Policy* of Endicott College.

Cheating on exams 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 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.

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 may attend any class in person, remote/synchronously, or remote/asynchronously. I define a class absence as any class for which you pass none of the assignments associated with that day (homework, think pair share, and class activity).

In accordance with the Undergraduate College's Attendance Policy, being absent three or more weeks of class (that's twelve days of class or lab) 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 pass the day's TPS and class activity.

Classroom Safety

Endicott's classroom behavior policy reads as follows:

> *The instructor may dismiss any student from a class who persists in behavior which disrupts or adversely affects the **safety,** learning and teaching process in their classrooms. Students must understand behavior that undermines favorable conditions for **safety**, learning and teaching will not be tolerated. If continued, such behavior may lead to removal from the course and a grade of "F" recorded.*

This semester, you are expected to adhere to the following safety measures while attending class in person:

- **You must wear a mask/face covering at all times.** Your face coverings should appropriately cover your mouth and nose. A zero tolerance policy will be adhered to. If you fail to appropriately wear a mask/face covering, you will be removed from the course.
- **You may not eat or drink in the classroom**, since it interferes with safe usage of their face coverings/masks.
- Upon arrival to the classroom, you must use the PPE station to clean their desk.
- Due to the need to maintain contact tracing, once you choose a seat in the classroom, you **must use the same seat** for the remainder of the semester.

Subject to Change Statement

This syllabus is subject to change. I will notify you of any changes throughout the semester and highlight them above.