CSCI 3172 — Web-Centric Computing

Course Syllabus

Dalhousie University is located in Mi'kma'ki, the ancestral and unceded territory of the Mi'kmaq. We are all Treaty people.

Dalhousie acknowledges the histories, contributions, and legacies of the African Nova Scotia people and communities who have been here for over 400 years.

Instructor Information[1]

Instructor:	Gabriella Mosquera (*she, her*)	**Office:**	ONLINE
E-mail:	mosquera@cs.dal.ca	**Office Hours:**	See Brightspace
Class Meeting Time:	MW 1:05PM - 2:25PM	**Room No:**	LSC C240
Lab Meeting Time (B01)	T 11:05AM - 12:55PM	**Room No:**	Goldberg 143
Lab Meeting Time (B02)	R 11:05AM - 12:55PM	**Room No:**	Goldberg 143
Course TAs:	See Brightspace		
Course Homepage:	https://dal.brightspace.com/		

Important Dates

- **Quiz Dates:** *See Brightspace*
- **Lab Deadlines:** *See Brightspace*
- **Munro Day (university closed):** Feb 2, 2024
- **Heritage Day (university closed):** Feb 19, 2024
- **Study Break (no classes):** Feb 19 - 23, 2024
- **Good Friday (university closed):** Mar 29, 2024
- **Final Withdrawal Date without financial penalty:** Jan 22, 2024
- **Final Withdrawal Date with financial penalty:** Feb 6, 2024
- **Final Withdrawal Date with a "W":** Mar 6, 2024

[1] All assignment/lab/tutorial due dates, lecture/lab meetings, and office hours are provided using Local Time, i.e., Atlantic Daylight Time (ADT)

Course Description

This course provides a solid grasp of core WWW technologies and a conceptual framework for understanding the development of the WWW and working with future web technologies. The course explores interactive and non-interactive web applications built using various technologies and architectural models. Students will get a hands on experience in developing web applications using dynamic frameworks for extending HTML code. In addition, we will also explore the significance of Web design and programming concepts in terms of accessibility issues both from the perspective of Web robots and end-users, and apply UI and UX design principles, as well as web caching, proxy techniques and security best practices.

Learning Outcomes

- Understand principles of interaction design, user experience design, web design, and connect these concepts to users' expectations and behaviours to create interactive and usable client-server web applications.
- Judge the accessibility of a given web site from the perspective of end users' and web crawlers', in order make decisions about a site's Search Engine Optimization (SEO), discover interesting application and user behaviour data, construct a well organized information architecture for a given site, and plan for and design efficient task flows.
- Evaluate the use of web cookies and sessions, web caching and cache busting, for the purpose of increasing an application's usability and performance, while recognizing the need for security measures to be applied (e.g., SSL, encryption) given an application's infrastructure and constraints.
- Interact with others to develop an interactive and responsive web application, draft a concept design report, and write a technical report to discuss the purpose, business landscape (e.g., competitive advantage, target users), and development process (including challenges experienced) of an interactive, usable, secure, and accessible medium size client-server web application.
- Be more interested in the current trends and technologies used by most web applications, their technological requirements, as well as the usability and accessibility implications of specific devices.

Course Rationale

Web-Centric Computing (CSCI 3172) is a 3rd year core course on web technologies and web programming languages on which related 4th year courses float.

Class Format and Course Communication

- Content will be delivered via a combination of lectures, tutorials/labs, reference slides, videos, and interactive exercises.
- This course is delivered using a Hybrid-Flexible (HyFlex) delivery model, i.e., students are able to attend all lecture and lab sessions both in-person and online through Collaborate Ultra.
- All live sessions (e.g., lectures, labs, tutorials) will be recorded and shared on Brightspace to allow for synchronous and asynchronous attendance.
- Students must ask for the instructor's permission before recording class lectures.
- All course material will be posted through the course's Brightspace site. It is the student's responsibility to revise the pre-lecture material before lectures and tutorials/labs and post-lecture material after lectures and tutorials/labs.
- **Students who feel sick or unwell as asked NOT to come to class**. As an accommodation, **the Instructor will be live streaming every lecture through Collaborate Ultra,** so that students who are not able to be present in class do not suffer any penalties in following this request. As mentioned, **ALL Collaborate Ultra sessions will be recorded and shared** after the fact through Brightspace.
- Course announcements and deadlines will be posted through the course's Brightspace site, and the course Team's Channel. It is the student's responsibility to check their Dal e-mail, Course Teams Channel, and Brightspace account on a daily basis. To access your Dal e-mail see: **https://www.dal.ca/dept/its/o365/services/email.html**
- To access the Course Team's Channel, please visit the Course BrightSpace Site and go to the "Teams Course Channel" Tab.
- **The preferred means of communication for this course is MS Teams,** this allows for your messages to be given priority throughout the term. Though you may still use regular emails for communicating with the Instructor, do keep in mind that this method may result in your email not being answered promptly.

Instructor Meetings

- For Instructor meetings, as well as TA meetings, check the "**Booking Appointments**" **tab on our course's Brightspace site.**
- If you are unable to find a suitable time for you to meet the instructor, using the link listed on the "**Booking Appointments**" **tab**, contact the Instructor so that a more suitable meeting time can be made to accommodate your schedule.

Evaluation Criteria

100% Group Work
- 40% Labs (best 6 out of 8)
- 30% Quizzes (best 5 out of 6)
- 30% Participation (in-class/online discussions and hands-on activities):
  - 15% Engagement
  - 15% Lecture Activities

Notes

- The grade conversion scale in Section 7.6.2 of the Graduate Studies Calendar will be used.
- Late All assignments/labs/quizzes/activities are **not** accepted. However, no penalty will be assessed for All assignments/labs/quizzes/activities that are late due to documented situations.
- Any grievance regarding marks must be brought to the attention of the instructor **within FIVE (5) days**.
- All assignments/labs/quizzes/activities are due at **11:59PM** on the specified due date.
- All assignments, labs, quizzes, and activities must be submitted electronically **ONLY**.
- Unless otherwise specified by the Instructor, **no collaboration is permitted** on assignments, labs, quizzes, or activities.
- A student must achieve an overall average of 50% or higher on EACH examination and/or test for the examination/test mark to be counted towards the final grade. Additionally, the instructor reserves the right to revise all assignments and/or labs/tutorials for cases in which this requirement is not met.

General Assignment Guidelines

These guidelines suggest points to consider when preparing, writing and presenting your work. Criteria for assessment will be based on attention to these general guidelines as well as on evidence of wide reading and reflection of the topics under consideration.

- Please ensure you have read, and understand **Dalhousie University policies on academic integrity**.
- Written reports and assignments must follow the template available of the course's learning management system (i.e., BrightSpace); in general, written reports and assignments are 1.5 or double spaced, pages should be numbered, font - Times New Roman 12-point size, margins – 2cm (5% deduction for any submission not matching the required format specification).
- Depending on a particular assignment, written work should have a bibliography or reference list of the items used in the preparation of the report, using the ACM or IEEE citation style only.

- **Assignments are due at 23:59PM on the due date**, unless specified otherwise by the instructor. **However**, all assignment dropboxes on Brightspace will close at 12PM (NOON) on the following day, i.e., students will be able to update their submissions on Brightspace UNTIL 12PM (NOON) of the following day (i.e., the assignment dropbox' end date) without a late penalty.
- **All written assignments must be submitted electronically via Brightspace**, unless specified otherwise by the instructor. **The only acceptable file format for written reports is PDF (5% deduction for any submission not matching the required format specification).**
- The submission file for written reports, assignments and/or labs **must be** named as follows:
  - For individual assignments: **A#_LastName_FirstName.pdf**
  - For individual labs: **L#_LastName_FirstName#.pdf**
  - For group labs: **L#_Group#.pdf**
- **Assignment/Lab handouts will include information on where and how to submit your files. In general, the course instructor will require for you to submit your work through Timberlea and/or FCS' Git Lab site** (**https://git.cs.dal.ca/**).
- A **README file MUST** accompany any programming work you submit for this course, a README template is available through the course Brightspace site. **This README file must include the URL pointing to your work** along with other required information, i.e., it is possible for you to choose your own URL for your assignments/labs/tutorials, i.e., choose a URL other than what is specified in a Lab Handout, as long as that URL is listed in your README file.
  - Students must submit their README file through the corresponding Lab Assignment Dropbox on BrightSpace.
  - Git Lab submissions must also include the expected README file.
- **For programming assignments submitted electronically through FCS' Git Lab site**, you will have to:
  - Ensure the following:
    - Your GitLab folder structure for Individual deliverables such as Labs and Activities should resemble a structure similar to that illustrated on Figure 1.

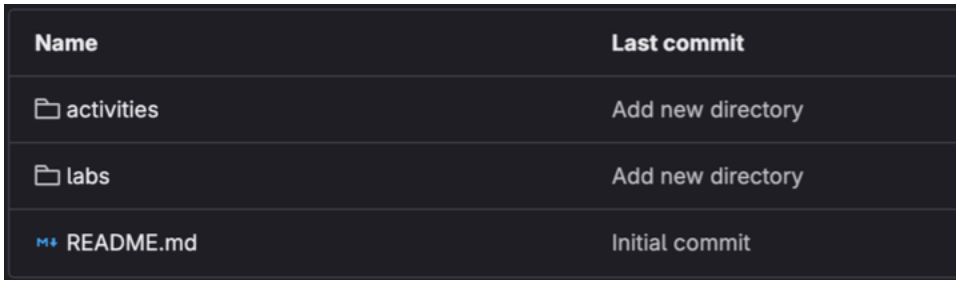

Figure 1. *GitLab Folder Structure Example.*

- Setup your tutorial, assignment and project folders as a '**private project**'
- Add the course and/or Instructor and TA's **CSIDs as 'Maintainers'** *(to be provided in class)* for your tutorials, assignments, and project folders.

- **For programming assignments submitted electronically through Timberlea**. The URL pointing to an assignment must be named as follows:
  - For individual labs:
    - **http://web.cs.dal.ca/~yourusername/csci3172/labs/lab#/**
  - For individual activities:
    - **http://web.cs.dal.ca/~yourusername/csci3172/activities/lecture#/**

  Assignments/labs not accessible at the specified URL will receive an automatic grade of ZERO (0), unless the correct URL to access the lab or activity is provided through the student's README file.
- For programming assignments/labs submitted electronically through FCS' Git Lab site, you will have to:
  - Create a project for CSCI 3172, this project should host all your folders and/or branches for your labs and/or activities in this course. This project structure should resemble resemble a structure similar to that illustrated on Figure 1.

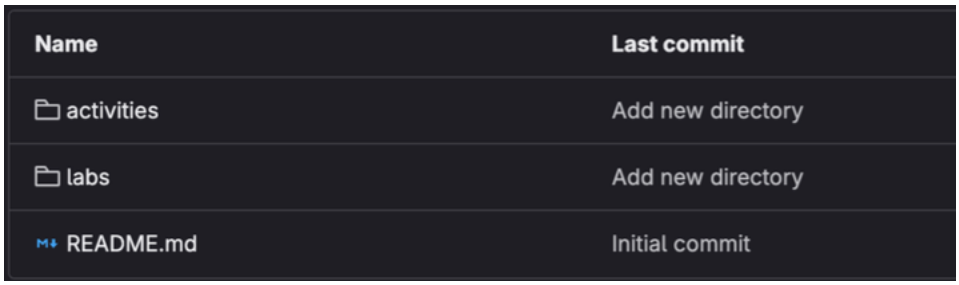

Figure 1. *GitLab Folder Structure Example.*

        - Setup your project folder as a '**private project**'
        - Add the course **Teaching Assistants (TAs) and Instructor** as **'Maintainers'** to your project, using their **CSIDs.** These CSIDs will be provided in your Lab 1 Handout.
    - Ensure lab and activity folders use a name that is indicative of the Lab being completed (i.e., Lab# or lab#).
- A **README file MUST** accompany any programming work you submit for this course, a README template is available through the course Brightspace site. **This README file MUST include the URL pointing to your work** along with other required information, i.e., it is possible for you to choose your own URL for your assignments/labs/tutorials, as long as that URL is listed in your README file.
    - Students must submit their README file through the corresponding Lab Assignment Dropbox on BrightSpace.
    - GitLab submissions must also include the expected README file.
    - It is YOUR responsibility to ensure your work is accessible through the URL provided in the corresponding lab or activity instructions.

- All web programming assignments **must be** submitted electronically according to the guidelines specified in each assignment and/or tutorial handout, which will also include s**ubmitting all your programming work through Git Lab, and your README files through Brightspace**. **Failure to submit** your programming work through Git Lab **will result in an automatic ZERO (0)** for that assignment, even if said assignment was submitted through Timberlea and/or Git Lab.

Midterm and Final Exam Requirements

- There will be **no midterms and/or final exams in this course**. Students will be evaluated through a series of hands-on labs and activities, as well as non-cumulative quizzes.

Required Texts and Resources

- There are no required textbooks for this course.
- Lecture and Lab/Tutorial slides and additional material (e.g., videos), will be posted on the course's Learning Management System (i.e., Brightspace)
- Additional assistance is available from the course Teaching Assistants.

Prerequisites

CSCI 2132 or CSCI 2134, CSCI 2141 and CSCI 2170.

Tentative List of Topics

1. Planning and Design
   - Interaction Design
   - U/X and UI Design
   - Information Architecture
   - Model-View-Controller
2. ReactJS
   - Views and Routing
   - Scope and Events
   - Data Binding/Routing
   - Authentication and Authorization
3. Site Performance
   - Web Cookies and Sessions
   - Web Caching
   - Cache Busting
   - Search Engine Optimization (SEO)
4. Maintenance and Security
   - Web Security
   - Debugging
   - Site Maintenance
   - Code Reusability

Student Declaration of Absence

The Student Declaration of Absence (SDA) policy shall apply. https://www.dal.ca/campus_life/safety-respect/student-rights-and-responsibilities/academic-policies/student-absence.html
In this course, the student has a maximum of **TWO (2) SDAs** per semester. In this case, to use an SDA in this course, **the student must notify the instructor via MS Teams or email** of their inability to meet a deliverable's deadline **BEFORE** its specified deadline **AND** submit the completed SDA form in the corresponding assignment dropbox on Brightspace (i.e., an SDA for Lab 1 must be submitted in the assignment dropbox for Lab 1 on BrightSpace). Upon notification, the student will have THREE days after the deadline to submit the deliverable for which they submitted an SDA. **SDA extensions are ONLY applied to the original due date of an assignment or lab**. Students **will not be able to use an SDA** in cases where the Instructor has already applied a 3-day (or higher) extension in a given assignment for the entire class.

Academic Standards

Failure to properly attribute sources in your work will be treated as an academic standards issue and points may be deducted for not following citation requirements. For example, forgetting to quote text taken from other sources, failure to include in-text citations, or a failure to include

required information in the citations or references. Please see the resources on proper citation provided by the Dalhousie Writing Center (https://dal.ca.libguides.com/c.php?g=257176&p=5001261).

Please note that if it appears that the error was made with intent to claim other people's work as your own such as a lack of both citations and references, an allegation of plagiarism will be submitted to the Faculty Academic Integrity Officer, which could result in consequences such as a course failure.

In this course, you will be given instructions on how to source your work, as well as a README file template to use for this purpose.

Responsible Computing Policy

Usage of all computing resources in the Faculty of Computer Science must be within the Dalhousie Acceptable Use Policies (**http://its.dal.ca/policies/**) and the Faculty of Computer Science Responsible Computing Policy. For more information please see **https://www.dal.ca/content/dam/dalhousie/pdf/faculty/computerscience/policies-procedures/fcs_policy_local.pdf**

Use of Plagiarism Detection Software

All submitted code may be passed through a plagiarism detection software, such as the plagiarism detector embedded in Codio, the Moss (**https://theory.stanford.edu/~aiken/moss/**) Software Similarity Detection System, or similar systems. If a student does not wish to have their assignments passed through plagiarism detection software, they should contact the instructor for an alternative. Please note, that code not passed through plagiarism detection software will necessarily receive closer scrutiny. **https://cdn.dal.ca/content/dam/dalhousie/pdf/dept/university_secretariat/policy-repository/OriginalitySoftwarePolicy.pdf**

Use of Artificial Intelligence Tools

You MAY use AI-driven tools to assist you in learning but remember that your objective is to understand, achieve, and apply the course competencies and outcomes. While you may use tools for learning, specific assessments in this course will disallow the use of AI-driven tools to assert that you have attained course learning outcomes. This is because a graduate must be able to analyze, assess and produce work unassisted by AI technology. Where tools are allowed: you MUST acknowledge all tools used to assist you. If applicable, you MUST provide links to chat logs. Using AI-driven tools where prohibited constitutes an academic offence.

Copyright Notice

These course materials are designed for use as part of the CSCI courses at Dalhousie University and are the property of the instructor unless otherwise stated. Third party copyrighted materials (such as books, journal articles, music, videos, etc.) have either been licensed for use in this course or fall under an exception or limitation in Canadian Copyright law. Copying this course material for distribution (e.g. uploading material to a commercial third party website) may lead to a violation of Copyright law.

Student Health and Wellness

Taking care of your health is important. As a Dalhousie student, you have access to a wide range of resources to support your health and wellbeing. Students looking to access physical or mental health & wellness services at Dalhousie can go to the Student Health & Wellness Centre in the LeMarchant Building. The team includes: registered nurses, doctors, counsellors and a social worker. Visit **dal.ca/studenthealth** to learn more and book an appointment today.

Students also have access to a variety of online mental health resources, including telephone/ texting counselling and workshops/training programs. Learn more and access these resources at d**al.ca/mentalhealth**.

Culture of Respect[2]

Every person has a right to respect and safety. We believe inclusiveness is fundamental to education and learning. Misogyny and other disrespectful behaviour in our classrooms, on our campus, on social media, and in our community is unacceptable. As a community, we must stand for equality and hold ourselves to a higher standard.

What we all need to do:

1. **Be Ready to Act:** This starts with promising yourself to speak up to help prevent it from happening again. Whatever it takes, summon your courage to address the issue. Try to approach the issue with open-ended questions like "Why did you say that?" or "How did you develop that belief?"

[2] Source: Speak Up! © 2005 Southern Poverty Law Center. First Printing. This publication was produced by Teaching Tolerance, a project of the Southern Poverty Law Center. Full "Speak Up" document found at: http://www.dal.ca/dept/dalrespect.html. Revised by Susan Holmes from a document provided April 2015 by Lyndsay Anderson, Manager, Student Dispute Resolution, Dalhousie University, 902.494.4140, lyndsay.anderson@dal.ca www.dal.ca/think.

2. **Identify the Behaviour:** Use reflective listening and avoid labeling, name-calling, or assigning blame to the person. Focus the conversation on the behaviour, not on the person. For example, "The comment you just made sounded racist, is that what you intended?" is a better approach than "You're a racist if you make comments like that."
3. **Appeal to Principles:** This can work well if the person is known to you, like a friend, sibling, or co-worker. For example, "I have always thought of you as a fair-minded person, so it shocks me when I hear you say something like that."
4. **Set Limits:** You cannot control another person's actions, but you can control what happens in your space. Do not be afraid to ask someone "Please do not tell racist jokes in my presence anymore" or state "This classroom is not a place where I allow homophobia to occur." After you have set that expectation, make sure you consistently maintain it.
5. **Find or be an Ally:** Seek out like-minded people that support your views, and help support others in their challenges. Leading by example can be a powerful way to inspire others to do the same.
6. **Be Vigilant:** Change can happen slowly, but do not let this deter you. Stay prepared, keep speaking up, and do not let yourself be silenced.

University Statements

This course is governed by the academic rules and regulations set forth in the University Calendar and the Senate. https://academiccalendar.dal.ca/Catalog/ViewCatalog.aspx?pageid=viewcatalog&catalogid=111&loaduseredits=False

Territorial Acknowledgement

Dalhousie University is located in Mi'kma'ki, the ancestral and unceded territory of the Mi'kmaq. We are all Treaty people.

Dalhousie acknowledges the histories, contributions, and legacies of the African Nova Scotia people and communities who have been here for over 400 years.

Internationalization

At Dalhousie, 'thinking and acting globally' enhances the quality and impact of education, supporting learning that is "interdisciplinary, cross-cultural, global in reach, and orientated toward solving problems that extend across national borders." https://www.dal.ca/about-dal/internationalization.html

Academic Integrity

At Dalhousie University, we are guided in all of our work by the values of academic integrity: honesty, trust, fairness, responsibility and respect. As a student, you are required to demonstrate these values in all of the work you do. The University provides policies and procedures that every member of the university community is required to follow to ensure academic integrity. (read more: http://www.dal.ca/dept/university_secretariat/academic-integrity.html)

Accessibility

The Student Accessibility Centre is Dalhousie's centre of expertise for matters related to student accessibility and accommodation. If there are aspects of the design, instruction, and/or experiences within this course (online or in-person) that result in barriers to your inclusion please contact: https://www.dal.ca/campus_life/academic-support/accessibility.html for all courses offered by Dalhousie with the exception of Truro.

Conduct in the Classroom — Culture of Respect

Substantial and constructive dialogue on challenging issues is an important part of academic inquiry and exchange. It requires willingness to listen and tolerance of opposing points of view. Consideration of individual differences and alternative viewpoints is required of all class members, towards each other, towards instructors, and towards guest speakers. While expressions of differing perspectives are welcome and encouraged, the words and language used should remain within acceptable bounds of civility and respect.

Diversity and Inclusion — Culture of Respect

Every person at Dalhousie has a right to be respected and safe. We believe inclusiveness is fundamental to education. We stand for equality. Dalhousie is strengthened in our diversity. We are a respectful and inclusive community. We are committed to being a place where everyone feels welcome and supported, which is why our Strategic Direction prioritizes fostering a culture of diversity and inclusiveness (Strategic Priority 5.2). (read more: http://www.dal.ca/cultureofrespect.html)

Student Code of Conduct

Everyone at Dalhousie is expected to treat others with dignity and respect. The Code of Student Conduct allows Dalhousie to take disciplinary action if students don't follow this community expectation. When appropriate, violations of the code can be resolved in a reasonable and informal manner—perhaps through a restorative justice process. If an informal resolution can't be reached, or would be inappropriate, procedures exist for formal dispute resolution. (read more: https://www.dal.ca/dept/university_secretariat/policies/student-life/code-of-student-con.html).

Fair Dealing Policy

The Dalhousie University Fair Dealing Policy provides guidance for the limited use of copyright protected material without the risk of infringement and without having to seek the permission of copyright owners. It is intended to provide a balance between the rights of creators and the rights of users at Dalhousie. (read more: https://www.dal.ca/dept/university_secretariat/policies/academic/fair-dealing-policy-.html)

Originality Checking Software

The course instructor may use Dalhousie's approved originality checking software and Google to check the originality of any work submitted for credit, in accordance with the Student Submission of Assignments and Use of Originality Checking Software Policy. Students are free, without penalty of grade, to choose an alternative method of attesting to the authenticity of their work, and must inform the instructor no later than the last day to add/drop classes of their intent to choose an alternate method. (read more: https://www.dal.ca/dept/university_secretariat/policies/academic/student-submission-of-assigments-and-use-of-originality.html)

Student Use of Course Materials

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Learning and Support Resources

Please see: https://www.dal.ca/campus_life/academic-support.html