

INFO 6620 Web Design and Architecture
Winter 2025

Course Type (e.g. F2F, online, blended): F2F

Class Time and location: Monday 17:35-20:25, Rowe 4055

Cross-list(s) if applicable: MGMT 4620 Enterprise Web Applications

Instructor name/title: Geoff Krause, MI | Lecturer, Faculty of Management

Office: TBA (but you can find me in Rowe 4032, currently)

Email: gkrause@dal.ca

How to contact me: The best way to reach me is generally via email, and including the course code (MGMT4620 or INFO6620) in the subject line will help draw it to my attention. I regularly check my email throughout the mornings and afternoons on weekdays, and I should usually be able to respond within 48 hours. **If you would like to set up a one-on-one meeting, please send me an email to schedule a meeting.** I'm happy to meet either in-person or online via Microsoft Teams. I am often available in my team's lab (currently in Rowe 4032 – this is subject to change), but this is a shared space. I may set up a place and time for office hours closer to the start of the semester, and will make an announcement with the details.

Office hours: TBA or by appointment

Course website: Brightspace

Tutorials: Friday 14:35-15:25, Rowe 4055

COURSE DESCRIPTION

This course follows the format and content used in 2024, which was heavily revised from previous offerings. We will examine the techniques used to create, structure, and deliver contemporary cloud-based web applications used to deliver software as a service using hands-on examples. We will also explore scientific, business, and philosophical perspectives on emerging web technologies. Topics include: web application architecture, web application hosting and management, web services, generative AI, database access, software-as-a-service business models, and emerging scholarly issues related to web technologies. The technologies used in this course will include HTML/CSS, Python Flask, the Open AI application programming interface, Microsoft Azure, SQL, and Google Analytics. You are not expected to be a web developer, though as an advanced information technology course, we will explore these topics using provided code to expand your managerial knowledge of web applications.

COURSE PRE-REQUISITES

INFO 5590, or permission from the instructor. This is an advanced technology course for the Master of Information program and students should be prepared for substantial technical content.

LEARNING OUTCOMES

Upon completion of the course, students will:

1. Discuss the sociotechnical context of enterprise cloud applications
2. Plan and implement a cloud-based web application
3. Research and identify opportunities for making positive improvements to web applications
4. Identify opportunities for positive digital transformation using web technologies

5. Contrast business, philosophical, and academic perspectives on emerging digital technologies

TECHNOLOGY REQUIREMENTS

You will need a computer with access to high-speed internet and an editor such as VSCode. You will also need access to a Python environment such as Anaconda, Microsoft Azure, GitHub, and OpenAI. These tools will be provided to you at no cost.

INSTRUCTIONAL METHODS

This course involves a combination of seminar content, hands-on tutorials, and discussion. There are emerging digital technologies are changing nearly everything about our society and contemporary web infrastructure underpins most of these technologies. It is thus essential for executives and managers, whether in business, non-profit, or public sector contexts, to have a deep understanding of these technologies. This course seeks to provide such an understanding using hands-on activities and seminar-style discussions. As an advanced technology elective course primarily targeted to managers (not software developers) who have taken prior technology courses, its overarching goal is to prepare students with advanced knowledge that can help them lead positive digital transformation in the organizations that they aspire to work in.

LEARNING MATERIALS

All materials will be announced on Brightspace with instructions on how to access them before class begins. Some examples of materials that we will make extensive use of are:

- A web editor such as [VSCode](#)
- A [GitHub](#) account
- A Python environment such as [Anaconda](#) or your system's Python
- Microsoft [Azure for Students](#)
- OpenAI API keys (to be provided by the instructor)
- Readings will be provided at least two weeks before class
- Most tutorials expand on a single example, a finished web application called SnapTutor. Finished code and related materials will be provided early in the semester.

METHODS OF EVALUATION

Detailed instructions regarding each assignment will be provided. Assessment of all assignments is directly related to attention to the instructions, clarity of expression and presentation, and evidence of significant analysis and reflection.

See also the [Grading Policy](#).

COMPONENT	DETAILS	DUE DATE	VALUE/WEIGHT
Reflections	8 times throughout the semester, I will provide a reflective question related to the course material. I will post this question in the seminar and expect you to respond in 250 words or less on Brightspace.	Jan. 17, Jan. 24, Jan. 31, Feb. 7, Feb. 28, Mar. 7, Mar. 14, Mar. 28	20%
Case Assignment 1 – Generative AI	This assignment will test your ability to critically assess and apply content related to generative artificial intelligence. Prepare a response to the case	Feb. 14	20%

	using a combination of writing, diagramming, and a limited amount of coding to demonstrate your mastery of the content.		
Case Assignment 2 – Web Applications and Infrastructure	This assignment will test your ability to critically assess and apply content related to web applications and infrastructure. Prepare a response to the case using a combination of writing, diagramming, and a limited amount of coding to demonstrate your mastery of the content.	March 21	20%
Final Project	Prepare a web application innovation which either extends the example provided in the course or proposes a new application of the technology explored. Prepare a written report to complement the code which outlines the details of your innovation, whose life it improves, and the positive contribution it could make to the world.	April 8	40%

INTEGRATION OF [MI Competencies](#)

PROGRAM COMPETENCY	COURSE LEARNING OUTCOME	COURSE ASSESSMENT
Adaptation	2, 4	CA 1, CA 2, FP
Collaboration	5	R
Commitment to equity, diversity, inclusion, accessibility, and decolonization	3, 5	FP
Communication	1, 4, 5	R, CA 1, CA 2, FP
Digital and technological literacy	1, 2, 3, 4, 5	R, CA 1, CA 2, FP
Evidence-based practices	4, 5	CA 1, CA 2
Leadership	1, 5	R, CA 1, CA 2, FP

Learning	1, 5	R, FP
Management	1, 4, 5	R, CA 1, CA 2, FP
User-centred design	2, 3, 4	CA 1, CA 2

CLASS POLICIES

Attendance

Class attendance is required in all MI courses and is included in the participation mark. Attendance records will be kept by the instructor.

Citation Style

MI courses use APA as the default standard citation style. Unless the instructor provides alternative written instructions, please use the APA citation style in your assignments to briefly identify (cite) other people's ideas and information and to indicate the sources of these citations in the References list at the end of the assignment. For more information on APA style, consult Dalhousie Library website at <https://libraries.dal.ca/help/style-guides.html> or the APA's Frequently Asked Questions about APA

Late penalties for assignments

A penalty for late assignments will be assessed, unless prior permission has been given by the instructor to submit an assignment late, which normally will be for extended illness, medical, or family emergencies only (see below). Late submissions will be assessed a penalty of five percent per day, including weekends. Assignments will not normally be accepted seven days or more after the due date; in such cases the student will receive a grade of zero.

Missed or Late Academic Requirements due to Student Absence:

Dalhousie University recognizes that students may experience short-term physical or mental health conditions, or other extenuating circumstances that may affect their ability to attend required classes, tests, exams or submit other coursework.

Dalhousie students are asked to take responsibility for their own short-term absences (3 days or less) by contacting their instructor by phone or email prior to the academic requirement deadline or scheduled time **AND** by submitting a completed [Student Declaration of Absence form](#) to their instructor in case of missed or late academic requirements. Only 2 separate Student Declaration of Absence forms may be submitted per course during a term.

GRADING POLICY

A+	90-100	Demonstrates original work of distinction.
A	85-89	Demonstrates high-level command of the subject matter and an ability for critical analysis.
A-	80-84	Demonstrates above-average command of the subject matter.
B+	77-79	Demonstrates average command of the subject matter.
B	73-76	Demonstrates acceptable command of the subject matter.
B-	70-72	Demonstrates minimally acceptable command of the subject matter.
F	<70	Unacceptable for credit towards a Master's degree.

ACCOMMODATION POLICY FOR STUDENTS

The Student Accessibility Centre is Dalhousie's centre of expertise for student accessibility and accommodation. The advising team works with students on the Halifax campus who request accommodation as a result of: a disability, religious obligation, or any barrier related to any other characteristic protected under Human Rights legislation (NS, NB, PEI, NFLD).

If there are aspects of the design, instruction, and/or experiences within this course that result in barriers to your inclusion please contact the Student Accessibility Centre. Please visit www.dal.ca/access for more information and to obtain the Request for Accommodation form.

A note taker may be required as part of a student's accommodation. Visit https://www.dal.ca/campus_life/academic-support/accessibility/accommodations-/classroom-accommodation.html for more details.

Please note that your classroom may contain accessible furniture and equipment. It is important that these items remain in the classroom, undisturbed, so that students who require their use will be able to fully participate.

ACADEMIC INTEGRITY

In general:

The commitment of the Faculty of Management is to graduate future leaders of business, government and civil society who manage with integrity and get things done. This is non-negotiable in our community and it starts with your first class at Dalhousie University. So, when you submit any work for evaluation in this course or any other, please ensure that you are familiar with your obligations under the Faculty of Management's Academic Integrity Policies and that you understand where to go for help and advice in living up to our standards. You should be familiar with the Faculty of Management Professor and Student Contract on Academic Integrity, and it is your responsibility to ask questions if there is anything you do not understand.

Dalhousie offers many ways to learn about academic writing and presentations so that all members of the University community may acknowledge the intellectual property of others. Knowing how to find, evaluate, select, synthesize and cite information for use in assignments is called being "information literate". Information literacy is taught by Dalhousie University Librarians in classes and through Dalhousie Libraries' online Citing & Writing tutorials.

Do not plagiarize any materials for this course. For further guidance on what constitutes plagiarism, how to avoid it, and proper methods for attributing sources, please consult the University Secretariat's Academic Integrity page.

Please note that Dalhousie subscribes to software that checks for originality in submitted papers. Any paper submitted by a student at Dalhousie University may be checked for originality to support instructors in confirming that the student has not plagiarized from other sources. Plagiarism is considered a very serious academic offence that may lead to loss of credit, suspension or expulsion from the University, or even the revocation of a degree. It is essential that there be correct attribution of authorities from which facts and opinions have been derived. At Dalhousie, there are University Regulations which deal with plagiarism and, prior to submitting any paper in a course; students should read the Policy on Intellectual Honesty contained in the Academic Calendar.

Furthermore the University's Senate has affirmed the right of any instructor to require that student assignments be submitted in both written and computer readable format, e.g.: a text file or as an email attachment, and to submit any paper to a check such as that performed by the plagiarism detection software. As a student in this class, you are to keep an electronic copy of any paper you submit, and the course instructor may require you to submit that electronic copy to plagiarism detection software. Use of third-party originality checking software does not preclude instructor use of alternate means to

identify lapses in originality and attribution. The result of such assessment may be used as evidence in any disciplinary action taken by the Senate.

Finally: If you suspect a lapse in academic integrity by colleagues or a professor, you may confidentially share your concerns via DeanManagement@dal.ca.

Faculty of Management clarification on plagiarism versus collaboration:

There are many forms of plagiarism, for instance, copying on exams and assignments. There is a clear line between group work on assignments when explicitly authorised by the professor and copying solutions from others. It is permissible to work on assignments with your friends but only when the professor gives you permission in the specific context of the assignment. University rules clearly stipulate that all assignments should be undertaken individually unless specifically authorised.

Specific examples of plagiarism include, but are not limited to, the following:

- Copying a computer file from another student, and using it as a template for your own solution
- Copying text written by another student
- Submitting the work of someone else, including that of a tutor as your own

An example of acceptable collaboration includes the following:

- When authorised by the professor, discussing the issues and underlying factors of a case with fellow students, and then each of the students writing up their submissions individually, from start to finish.

UNIVERSITY STATEMENTS

This course is governed by the academic rules and regulations set forth in the [University Calendar](#) and the Senate.

ACCESSIBILITY

The Student Accessibility Centre is Dalhousie's centre of expertise for matters related to student accessibility and accommodation. We work collaboratively with Dalhousie and King's students, faculty, and staff to create an inclusive educational environment for students. The Centre is responsible for administering the university-wide [Student Accommodation Policy](#) working across all programs and faculties.

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.

DIVERSITY AND INCLUSION

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).

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.”

RECOGNITION OF MI'KMAQ TERRITORY

Dalhousie University is located in Mi'kma'ki, the ancestral and unceded territory of the Mi'kmaq. We are all Treaty people. For more information about the purpose of territorial acknowledgements, or information about alternative territorial acknowledgements if your class is offered outside of Nova Scotia, please visit <https://native-land.ca/>.

The Elders in Residence program provides students with access to First Nations elders for guidance, counsel and support. Visit the office in the McCain Building (room 3037) or contact the programs at elders@dal.ca or 902-494-6803 (leave a message).

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.

COURSE SCHEDULE

Date of Class	Topic	Readings
January 6	Course Overview & Intro to HTML/CSS	(Optional) W3Schools HTML Tutorial. https://www.w3schools.com/html/ (Optional) W3Schools CSS Tutorial. https://www.w3schools.com/css/
January 13	Origins of the Web & Intro to Web Architecture	Markoff, J. (1993, December 8). BUSINESS TECHNOLOGY; A Free and Simple Computer Link. The New York Times. https://www.nytimes.com/1993/12/08/business/business-technology-a-free-and-simple-computer-link.html Berners-Lee, T. (2024, March 12). Marking the Web's 35th Birthday: An Open Letter. Medium. https://medium.com/@timberners_lee/marking-the-webs-35th-birthday-an-open-letter-ebb410cc7d42 (Optional) W3Schools Bootstrap 5 Tutorial. https://www.w3schools.com/bootstrap5/
January 20	Organizations on the Web and in the Cloud	Moreira, P., Mullen, A., and Moreira, C. (2023). Executive Summary. 2022 Atlantic Canadian Startup Data Report. Brightspace. Misha, A. D., Karpe, S., Kamalanand, N. and Radhakrishnan, V. (2023). Tech skills transformation: Navigating the future of work in 2025 and beyond. EY. Brightspace. (Optional) W3Schools Python Tutorial. https://www.w3schools.com/python/default.asp
January 27	APIs & Intro to Generative AI	Y Combinator (2024, December). Top Generative AI Startups of 2024. https://www.ycombinator.com/companies/industry/generative-ai

Date of Class	Topic	Readings
		(Optional) OpenAI API Reference. https://platform.openai.com/docs/api-reference
February 3	GenAI & Technology Adoption	Prasad Agrawal, K. (2023). Towards adoption of Generative AI in organizational settings. <i>Journal of Computer Information Systems</i> , 1-16. https://doi.org/10.1080/08874417.2023.2240744
February 10	Data and Databases	Gandomi, A., & Haider, M. (2015). Beyond the hype: Big data concepts, methods, and analytics. <i>International Journal of Information Management</i> , 35(2), 137–144. https://doi.org/10.1016/j.ijinfomgt.2014.10.007
February 24	Software as a Service	Xiao, X., Sarker, S., Wright, R. T., Sarker, S., & Mariadoss, B. J. (2020). Commitment and Replacement of Existing SaaS-Delivered Applications: A Mixed-Methods Investigation. <i>MIS Quarterly</i> , 44(4). https://doi.org/10.25300/MISQ/2020/13216
March 3	Social Media	Nissen, A., Conrad, C., & Newman, A. (2023, April). Are You Human? Investigating the Perceptions and Evaluations of Virtual Versus Human Instagram Influencers. In <i>Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems</i> (pp. 1-14). https://doi.org/10.1145/3544548.3580943
March 10	Surveillance Capitalism	Zuboff, S. (2015). Big other: surveillance capitalism and the prospects of an information civilization. <i>Journal of Information Technology</i> , 30(1), 75-89. https://doi.org/10.1057/jit.2015
March 17	Design & User Experience	Kuang, E., Jahangirzadeh Soure, E., Fan, M., Zhao, J., & Shinohara, K. (2023, April). Collaboration with Conversational AI Assistants for UX Evaluation: Questions and How to Ask them (Voice vs. Text). In <i>Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems</i> (pp. 1-15).
March 24	Ethics and GenAI	TBA
March 31	Future of the Web and GenAI	TBA