B3 Representation:
Digitally-Assisted Model Making

Instructor

Cailen Pybus, Part-Time Academic (cailen.pybus@dal.ca)
    Office Hours, Virtual   **T:** 9:30 – 10:30 am (email for appointment)
    Office Hours, In-Person   **Th:** 11:30am – 12:00pm (after lecture)

Teaching Assistants

Sam Chenier	sm248460@dal.ca	TA Office Hours	**M:** 12:30pm – 2:00pm
Noah Davis	nh451368@dal.ca		**W:** 12:30pm – 2:00pm
Jacob Rusen-Steele	jc314920@dal.ca		

Class Meetings

Th   9:35am – 12:25pm **Lecture** Medjuck B015 Auditorium

Weekly Hours

For this 3-credit-hour course, an average of 9 hours per week is expected for all course-related activities, including classes. If most students are spending substantially more time, please notify the instructor.

Calendar Description

This course introduces digital tools and methods for representing, modeling, and fabricating objects and systems. It uses digital modeling for CNC routing, laser cutting, and 3D printing. The course emphasizes process rather than outcomes. It also considers constraints and opportunities that arise during transitions between physical and digital media.
Course Website: https://dal.brightspace.com/d2l/home/330923
Restriction: Year 4 BEDS Students

This course acknowledges that we are in Mi'kma'ki, the ancestral and unceded territory of the Mi'kmaq People, who signed Peace and Friendship Treaties with the Crown. Section 35 of the Constitution Act, 1982 recognizes and affirms Aboriginal and Treaty rights. This course also acknowledges the legacies of African Nova Scotians, who have been here for over 400 years.

Last Revised: 2024/05/09

Dürer's Rhinoceros, woodcut by Albrecht Dürer showing an Indian Rhinoceros as it was described to him in 1515.

Course Description

Living in the 21st century, digital technologies assert their presence in nearly every aspect of our lives—from communicating with our families; to entertainment and education. For an architect to employ digital techniques then is no mere binary choice between digital and hand-drafting, but rather a question of degree. Though "digital architecture" was once an avant-garde term, the realm of digital techniques can be found in a broad spectrum of techniques and all manner of projects ranging from the prestigious to the banal: from the preservation of historic buildings to the generation of the most unremarkable office plans. Today, all architectural production is digital architecture.

Digital representation exists in continuity with wider histories of architectural representation, itself a set of technical procedures developed alongside Modernity. By the end of the twentieth century, computers had ostensibly replaced drafting boards and dramatically changed the work of architecture offices. And yet, the persistence of analog techniques asserts itself in the vocabulary associated with everyday digital work—terms such as "erasing," "plotting," "layering," "masking," "hatching," "pasting," etc., remain ubiquitous in design programs. Furthermore, while claims of digital efficiency, precision, and objectivity abound, the digital also invariably introduces new challenges, and occasionally even reintroduces forgotten problems.

Turning to digital models, a model is more generally a representation or simulation of a system, concept, or object designed to facilitate understanding, analysis, or communication. Models come in various forms, ranging from physical prototypes constructed with tangible materials to digital simulations created through computational algorithms. Regardless of their medium, models serve as tools for visualization, exploration, and experimentation. Integral across numerous fields, models provide a means to translate abstract concepts into tangible representations that can be manipulated, analyzed, and refined.

In the context of Architecture, Nick Dunn describes four kinds of models which concern architects: descriptive, explorative, evaluative, and predictive (Dunn 2010, 152). This course is concerned chiefly with the first two, asking students to make a descriptive and an explorative model. According to the Oxford English Dictionary (2024), the verb "modelling" traces its roots back to the 1650s, denoting the "action of bringing into desired condition." This definition encapsulates the essence of modelling, particularly when considering it a critical tool in design processes.

While the presentation models have their purpose, making exploration models, especially those made iteratively or in series, can yield a big impact on design process. As highlighted by design Megan Werner, models are first and foremost a means of investigation (Werner 2010, 12). Surprisingly, the work of some firms normally associated with 'digital architecture' base their formal process in making physical models and engaging with material. For example, Frank Gehry's Walt Disney Concert Hall (2003) and Zaha Hadid's Maxxi museum in Rome (2009) were developed through intensive design processes conditioned by the making of countless exploratory physical models. Defending a position on the importance of design through making, British anthropologist Tim Ingold also tells about the similarities of weaving and the design process, and how the act of making generates form (Ingold 2013, 27).

This course aims to help students develop their own informed approach to digital representation through software-based workflows and the practice of physical modelmaking. Digital tools presented in this class are to complement the skills already acquired in analog drawing and modelling. Furthermore, while technical aptitude will be helpful, students must also demonstrate critical positions on representation technology, weighing the stakes of adopting digital techniques, deciding on their relevance, and reflecting on their impact, as they go on to make decisions as trusted professionals.

The course is divided into two themes. **(1) Modelling Ontology** asks students to consider 'what is a model?' in architecture and more generally. **(2) Modelling Technology** will explore the generative potential of digital fabrication techniques in the design process.

Learning Objectives

1. **Select representational strategies** that best support design ideas and demonstrate the ability to intellectually defend those decisions.

2. Build upon foundational 3D modelling skills to **attain fluency in key softwares** to digital representation at a level permitting self-learning and experimentation.

3. **Understand constraints between the physical and digital realm**, and how working through these constraints offers emergent opportunities for design.

4. Develop a **material-based design research methodology** to effectively fabricate forms and test architectural intentions.

5. Enact **critical thinking skills** through discussion, writing, and project-based activity.

## Class Format

Lectures and Demonstration Videos

The lecture period will mix presentations on the history and theory of digital architectural representation, alongside software demonstrations. Weekly lecture content will be delivered in two formats:

- **2 hours of in-person thematic lecture content**, for presentation of theoretical and pragmatic material related to course content. They include explanations of assignment requirements, group feedback, and occasional group discussions.

- **1 hour of pre-recorded demonstration videos**, available for viewing on Brightspace. Students can expect to re-watch certain sections of these videos to effectively learn techniques. Skills introduced in the demonstrations will be practiced in deliverables.

Assignment Progress

Acquiring skills in Digital Representation is heavily contingent on spending time practicing them. Therefore, the assignments of this course are paced to have students practice new skills every week, receive feedback, and then submit a final Assignment of revised work.

- **Practice Exercises (8):** Completed individually. Weekly short exercises to practice skills. Marked for completion and due on Mondays, no feedback provided. **Students may choose to "skip" one (1) PE without penalty.**

- **Task Updates (6):** Completed in groups. Each Assignment generally requires 1 Task per week for 3-4 Tasks total. Groups will submit a weekly Work-In-Progress Task Update corresponding to the week's theme. Submitted on Wednesdays, feedback provided, and graded towards the corresponding Assignment. **Groups are expected to meet with TAs for a desk review during at least two office hours for each of Assignments 1&2, for four (4) TA desk reviews total.**

- **Assignments (2):** All Tasks for an Assignment completed and revised, packaged together, and submitted for final grading. Feedback provided.
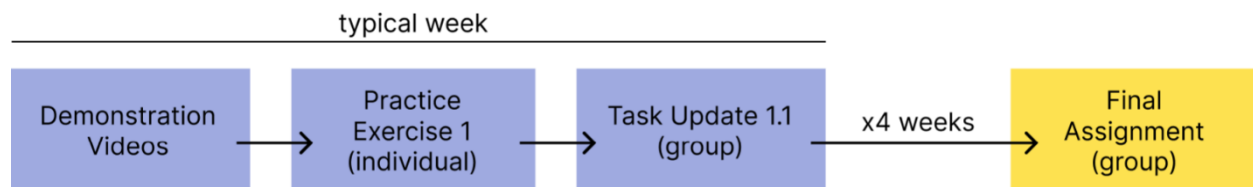
TA Office Hours

Office hours are an opportunity to receive hands-on technical assistance and feedback of work-in-progress with the Teaching Assistants. Since time is limited, a sign-up sheet will be made available in advance of each office hour session to reserve a meeting.

Required Software and Materials

Software Students are expected to have personal laptops, or access to a computer with the following software: Adobe InDesign, Adobe Illustrator, Adobe Photoshop, and Rhinoceros 3D.

Materials As this course has a strong emphasis on physical model-making, it is recommended that **students should expect to budget approximately $150 in expenses for model materials per-student.** However, students may choose to spend more or less than this estimate, depending on the techniques and materials chosen to fabricate their models.

Email Etiquette

Instructors aim to respond to emails **within 2 business days of receiving them**. Students can expect to receive responses during typical working hours on weekdays, i.e., not evenings and weekends. Likewise, students are also expected to follow similar email etiquette with instructors and their peers.

Schedule

Part	Week	Mondays 8pm		Wednesdays 8pm	Thursdays	
		2 Critical Summaries	7 Practice Exercises	Task Updates Assignments	Lectures	Demonstrations
Part 1: Modelling Ontology	Week 1 May 6-10	-	-	-	Lecture 1 Introduction	Demo 1 Rhino 3D Model Preparation
	Week 2 May 13-17	CS1	PE1	TU1.1	Lecture 2 Critical Media	Demo 2 Rhino 2D Cutsheet Preparation
	Week 3 May 20-24	CS2 Tues 10am	PE2 Tues 10am	TU1.2	Lecture 3 Reproduction	Demo 3 Laser Cutter Tutorial
	Week 4 May 27-31	CS3	PE3	TU1.3	Lecture 4 Model Making	Demo 4 3D Printing Tutorial
	Week 5 June 3-7	CS4	PE4	**Assignment 1**	Lecture 5 Communication / A1 Exhibition	Demo 5 Photomontage Techniques
Part 2: Modelling Technology	Week 6 June 10-14	CS5	PE5	-	Lecture 6 Mass Customization	Demo 6 3D Milling Preparation
	Week 7 June 17-21	CS6	PE6	TU2.1	Lecture 7 Digital Craft	Demo 7 Advanced Rhino 3D
	Week 8 June 24-28	CS7	PE7	TU2.2	Lecture 8 Intelligent Models	Demo 8 Grasshopper Introduction
	Week 9 July 1-5	CS8 Tues 10am	PE8 Tues 10am	TU2.3	Lecture 9 (SLEQs) The Model Professional	Demo 9 Adobe Premier
	Week 10 July 8-12	-	-	**Assignment 2**	Final Presentations	-

- Submissions are always due at 8pm to Brightspace unless otherwise indicated.
- Schedule is subject to change, with reasonable notice.
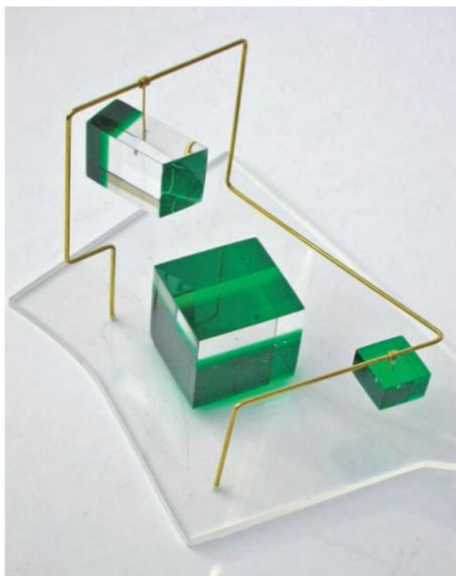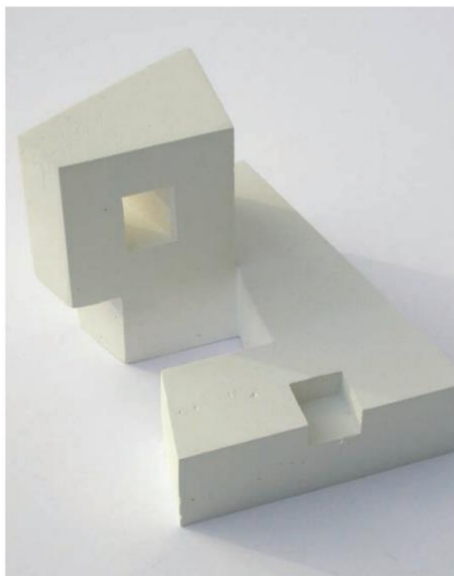
Analytical concept model expressing the composition of solid and void in an architectural project, from *Architectural Modelmaking*, Nick Dunn, 2010.

Assessment

Assignments

Assignment briefs will be provided at the start of each assignment, including more detailed information on **format, submission, and rubrics**.

Activity	Description	Group Size	Grade Weight	Marked By
Assignment 1: Hybrid Model	Based on a case study, students are to make a physical analytical model which expresses key intentions of its architectural design using a hybrid of analogue and digital fabrication techniques. Includes weekly Task Updates.	3 - 4	35%	Instructor / TAs
Assignment 2: Patternmaking Model	Students will develop a prototype for an architectural detail that explores the patternmaking potential of a digital fabrication medium of their choice. Includes weekly Task Updates.	3 - 4	35%	Instructor / TAs
Critical Summaries (2)	Two written summaries of course readings.	2	15%	Instructor
Participation	= PE Average - Attendance Penalties + Discretionary - <u>Practice Exercises (7).</u> Weekly short exercises to practice skills needed for the Assignments. Marked for completion. Students may **choose to "skip"** one PE without penalty. - <u>Attendance,</u> students may miss <u>one lecture</u> without penalty. For additional unexcused absences, 1.5% is lost from the Participation total. - <u>Discretionary,</u> participation in class discussions, peer reviewed collaboration for group work.	1	15%	Instructor / TAs

Attendance

To avoid an attendance penalty, students must provide <u>advance notice by email</u> to the instructor. See participation grading above. Students should expect excusable absences to require written verification (ie: doctors note) and may be related to:

- Health, family care, religious holidays, and campus accessibility.

For absences resulting in missed submissions or presentations, please refer to the Student Declaration of Absence description in "Course-Specific Policies" below.

Group Work:

Learning to work in a group is extremely important in building teamwork skills vital in students' future professional practice as architects. Successful group assignments will require effective collaboration between team members, involving reasonable expectations of communication and availability (eg: providing prior notice for unavailability, communicating during reasonable hours, respecting peers' non-academic responsibilities and boundaries, etc). Considering the 9-hour weekly time limit, it will be essential for students to distribute their labour to complete course work.

To encourage professional conduct, a **Peer Review Form** will be submitted by all students at the end of the term which may incur a maximum +/-**2% bonus or penalty to individual students' participation grades**. Criteria will be provided in the Form. Finally, students will have the option to change their group composition between Assignments 1 and 2.

Criteria and Standards of Assessment

Practice Exercises (PEs) and Task Updates (TUs): It is not essential that these intermediate submissions be "finished," rather that one can practice the skills related to the week's lesson (PEs) and demonstrate it through Work-In-Progress (TUs). The instructor and TAs are available for technical assistance and feedback during their office hours. Simplified grades for PEs and TUs shall be limited to:

- 100% Exceptional demonstration of requested content
- 85% All requirements completed.
- 80% Satisfactorily completed, 1-2 important requirements may be missing or incomplete
- 70% Unsatisfactorily completed, important requirements unfulfilled
- 50% Substantially incomplete
- 0% No submission, or submitted a blank or near-blank document

Assignment 1 Hybrid Model: The model will be built in four elements over four weeks with brief feedback provided after each of the four Task Updates. Students then have the opportunity to revise their model for the final submission. Detailed standards will be provided in the A1 brief.

Criteria	Weight of 100%
Task 1 – Element A (analog)	/15
Task 2 – Element B (analog)	/15
Task 3 – Element C (digital)	/15
Task 4 – Element D (digital)	/15
Process Record	/10
Average of Task Updates (3)	/10
Overall Craft and Visual Quality	/10
Overall Conceptual Development	/5
Reflection Text	/5

Assignment 2 Patternmaking Model: The model will be built progressively over 4 weeks according to steps at the students' discretion. Students will document their design and fabrication process, and present a 'tutorial' of how to do their fabrication technique in the final class. Detailed standards will be provided in the A2 brief.

Criteria	Weight of 100%
Task 1 - Test	/10
Task 2 - Prototype	/30
Task 3 - Presentation	/30
Average of Task Updates (3)	/10
Overall Craft and Visual Quality	/10
Overall Conceptual Development	/5
Reflection Text	/5

Critical Summaries: Each of the two Critical Summaries will be marked out of 100%. Students will receive written feedback of their first CS before submitting the second. Specific requirements are noted in the CS Brief.

- 90%+ Exceptional synthesis of studied content.
- 85, 88% Thoughtfully answered all 5 questions and provided an accessible question.
- 80, 83% Answered all 5 questions and provided a discussion question.
- 78% Did not complete all 5 Questions, but writing itself is clear and effective.
- 75% Provided an opinion rather than a summary, writing issues.
- 70% Significant issues with clarity, spelling, and grammar.
- 60% Major issues and missing requirements
- 68% or lower Degrees of substantially incomplete

University Standards for Individual Assignments

Letter	Percent	Definition	Description
A+ A A–	90–100% 85–89% 80–84%	Excellent	Considerable evidence of original thinking; outstanding capacity to analyze and synthesize; outstanding grasp of subject matter; evidence of extensive knowledge base.
B+ B B–	77–79% 73–76% 70–72%	Good	Evidence of grasp of subject matter, some evidence of critical capacity and analytical ability; reasonable understanding of relevant issues; evidence of familiarity with the literature.
C+ C C–	65–69% 60–64% 55–59%	Satisfactory	Evidence of some understanding of the subject matter; ability to develop solutions to simple problems.
D	50–54%	Marginal pass	Evidence of minimal familiarity with the subject matter; minimal analytical and critical skill.
F	0–49%	Fail	Little evidence of understanding of the subject matter; weakness in analytical and critical skills; limited or irrelevant use of the literature.
INC		Incomplete	(counts as zero in GPA calculation)
W		Withdrew after deadline	(neutral in GPA calculation)
ILL		Compassionate reasons, illness	(neutral in GPA calculation)

Other, exceptional grades are noted in the undergraduate calendar.

Calculation of Final Grades

All submissions are given a numerical grade, which is multiplied by their weight, and added to calculate a final letter grade.

Grading Format

Grades for individual assignments will be returned either directly to the student during class time or via Brightspace. All submission types except Practice Exercises will receive feedback (see page 3). Final grades will be issued as per Dalhousie protocol.

Façade design of *The Broad* in Los Angeles, showing a pattern of mass-customized fibre-reinforced concrete panels which create a "veil" shading the interior spaces of the museum. Designed by Diller Scofidio + Renfro, image via Archdaily 2015.

Course-Specific Policies

Late Submissions

Students will be penalized by 3% per weekday, for each day a submission is late.

Submission	Due date	Late Accepted	Deduction per weekday	Final deadline for a late submission	No submission
All Submissions	As per course schedule	yes	3%	Two weeks after the deadline, on Fridays at 6:00 PM	0%

For example, if an assignment is evaluated at 82% (mid A-) before late penalties, at 1 day late it drops to 79% (high B+), at 2 days it drops to 76% (high B), etc. Note: The following University or School policies take precedence over course-specific policies:

- No late assignments are accepted after the last day of weekly classes (the Friday before review week).

- With a Student Declaration of Absence (maximum two per course), an assignment may be submitted up to three weekdays late without penalty. An SDA cannot be used for the final assignment.

- With a medical note submitted to the School office, a course assignment (including a final assignment) may be submitted more than three weekdays late without penalty. The number of weekdays depends on how long you were unable to work, as indicated in the medical note. If more than one course is affected, you should consult with the Undergraduate/Graduate Coordinator to set a new schedule of due dates.

- A student with an accessibility plan that allows for deadline extensions does not need to submit an SDA.

Video Recordings and Course Materials

Video recordings and other course materials are provided to students for their own private use and are not intended for public distribution. For reasons of intellectual property, copyright, and under compliance of the Dalhousie University Fair Dealing Policy, please **under no circumstances distribute course materials** (ie: publish on the internet or social media platforms) such as course documents, presentations, and videos without first acquiring written permission of the author/instructor.

Accommodations

It is a student's responsibility to self-identify as needing accommodations. Please contact the Student Accessibility Centre. The SAC will notify the School office, which will then notify your instructors.

References

Modelmaking references are intended as examples and inspiration for Assignments 1 and 2, Architectural Drawings provide examples and conventions for drawings, and Course Bibliography provides a selection of texts referred to in lectures. Any required readings for Critical Summaries will be provided on Brightspace.

Model Making

Dunn, Nick. 2010. *Architectural Modelmaking*. Portfolio Skills. Architecture. London: Laurence King Pub.

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Jetsonen, Jari. 2001. *Little Big Houses: Working with Architectural Models*. Helsinki: Building Information.

Johnson, Jason S., and Joshua Vermillion. 2016. *Digital Design Exercises for Architecture Students*. Online Access with DDA: Askews (Architecture). New York, NY: Routledge.

Knoll, Wolfgang, Martin Hechinger, Hans-Joachim Heyer, Boris Miklautsch, and Francesca Rogier. 2007. *Architectural Models: Construction Techniques*. Second edition. Ft. Lauderdale, FL: J. Ross Publishing.

Mills, Criss. 2011. *Designing with Models: A Studio Guide to Architectural Process Models*. Third edition. Hoboken, N.J.: Wiley.

Morris, Mark, and Mike Aling. 2021. *Worldmodelling: Architectural Models in the 21st Century*. Newark, NJ:: John Wiley & Sons.

Oswald, Ansgar, and Uta Keil. 2008. *Architectural Models*. Barcelona, Spaña: LINKS International.

Werner, Megan. 2011. *Model Making*. The Architecture Brief Series. New York: Princeton Architectural Press.

Architectural Drawings

Ching, Francis D. K. 1979. *Architecture, Form, Space & Order*. New York: Van Nostrand Reinhold.

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Neufert, Ernst, Vincent Jones, and John Thackara. 1980. *Data*. Granada.

Course Bibliography

Alexander, Zeynep Çelik, and John May. 2020. *Design Technics: Archaeologies of Architectural Practice*. Minneapolis: University of Minnesota Press.

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Dossick, Carrie, and Gina Neff. 2011. "Messy Talk and Clean Technology: Communication, Problem-Solving and Collaboration Using Building Information Modelling." *The Engineering Project Organization Journal* 1 (June 1): 83–93.

Fink, David Andrew, and Alejandro Mata. 2020. "Digital Twin: Bringing MEP Models to Life." *Autodesk University*. Blog.July 10.

Frascari, Marco, Jonathan Hale, and Bradley Starkey, eds. 2007. *From Models to Drawings: Imagination and Representation in Architecture*. 1st edition. London; New York: Routledge.

Friedberg, Anne. 2004. "The Virtual Window." In *Rethinking Media Change: The Aesthetics of Transition*, edited by David Thorburn and Henry Jenkins, 337–52. Cambridge, MA: MIT Press.

Gershenfeld, Neil. 2012. "How to Make Almost Anything: The Digital Fabrication Revolution." *Foreign Affairs* 91, no. 6: 43–57.

Goffi, Federica. 2022. *The Routledge Companion to Architectural Drawings and Models: From Translating to Archiving, Collecting and Displaying*. Abingdon, Oxon: Routledge.

Graham, Katie, Cailen Pybus, Nicolas Arellano, Joey Doherty, Lara Chow, Stephen Fai, and Tyler Grunt. 2019. "Defining Geometry Levels for Optimizing BIM for VR: Insights from Traditional Architectural Media." *Technology Architecture + Design* 3, no. 2 (July 3): 234–44.

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Ingold, Tim. 2013. "Of Blocks and Knots." *Architectural Review* 234 (1400): 26–27.

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Shields, Jennifer. 2014. *Collage and Architecture*. New York: Routledge.

Simitch, Andrea, and Val K. Warke. 2014. *The Language of Architecture: 26 Principles Every Architect Should Know*. Beverly, MA: Rockport Publishers.

Stiny, George. 1990. "What Designers Do That Computers Should." In *The Electronic Design Studio: Architectural Education in the Computer Era*, edited by Malcolm McCullough, William J. Mitchell, and Patrick Purcell, 17–30. Cambridge, MA: MIT Press.

Faculty Policy

Equity, Diversity and Inclusion

The Faculty of Architecture and Planning is committed to recognizing and addressing racism, sexism, xenophobia and other forms of oppression within academia and the professions of architecture and planning. We, the faculty, are working to address issues of historic normalization of oppressive politics, segregation, and community disempowerment, which continues within our disciplines today.

University Statements

Territorial Acknowledgement

The Dalhousie University Senate acknowledges that we are in Mi'kma'ki, the ancestral and unceded territory of the Mi'kmaq People and pays respect to the Indigenous knowledges held by the Mi'kmaq People, and to the wisdom of their Elders past and present. The Mi'kmaq People signed Peace and Friendship Treaties with the Crown, and section 35 of the Constitution Act, 1982 recognizes and affirms Aboriginal and Treaty rights. We are all Treaty people. The Dalhousie University Senate also acknowledges the histories, contributions, and legacies of African Nova Scotians, 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 oriented toward solving problems that extend across national borders."

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.

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 the Student Accessibility Centre (for all courses offered by Dalhousie with the exception of Truro). Your classrooms may contain accessible furniture and equipment. It is important that these items remain in place, undisturbed, so that students who require their use will be able to fully participate.

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).

Code of Student 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.

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.

University Policies, Guidelines, and Resources for Support

Dalhousie courses are governed by the academic rules and regulations set forth in the Academic Calendar and the Senate.

- https://academiccalendar.dal.ca/catalog/viewcatalog.aspx
- https://www.dal.ca/dept/university_secretariat/university_senate.html

University Policies and Programs

- Important Dates in the Academic Year (including add/drop dates)
  - https://www.dal.ca/academics/important_dates.html
- Classroom Recording Protocol
  - https://www.dal.ca/dept/university_secretariat/policies/academic/classroom-recording-protocol.html
- Dalhousie Grading Practices Policy
  - https://www.dal.ca/dept/university_secretariat/policies/academic/grading-practices-policy.html
- Grade Appeal Process
  - https://www.dal.ca/campus_life/academic-support/grades-and-student-records/appealing-a-grade.html
- Sexualized Violence Policy
  - https://www.dal.ca/dept/university_secretariat/policies/human-rights---equity/sexualized-violence-policy.html
- Scent-Free Program
  - https://www.dal.ca/dept/safety/programs-services/occupational-safety/scent-free.html

Learning and Support Resources

- Academic Support - Advising https://www.dal.ca/campus_life/academic-support/study-skills-and-tutoring.html
  - https://www.dal.ca/campus_life/academic-support/advising.html
- Student Health & Wellness Centre
  - https://www.dal.ca/campus_life/health-and-wellness.html
- On Track (helps you transition into university, and supports you through your first year at Dalhousie and beyond)
  - https://www.dal.ca/campus_life/academic-support/On-track.html
- Indigenous Student Centre and Indigenous Connection
  - https://www.dal.ca/campus_life/communities/indigenous.html
  - https://www.dal.ca/about-dal/indigenous-connection.html
- Elders-in-Residence program provides students with access to First Nations elders for guidance, counsel and support. Visit the office in the Indigenous Student Centre or contact the program at elders@dal.ca or 902-494-6803.
- Black Student Advising Centre
  - https://www.dal.ca/campus_life/communities/black-student-advising.html

- International Centre
    - https://www.dal.ca/campus_life/international-centre.html
- South House Sexual and Gender Resource Centre
    - https://southhousehalifax.org/about-us
- LGBTQ2SIA+ Collaborative
    - https://www.dal.ca/dept/vpei/edia/education/community-specific-spaces/LGBTQ2SIA-collaborative.html
- Dalhousie Libraries
    - https://libraries.dal.ca/
- Copyright Office
    - https://libraries.dal.ca/services/copyright-office.html
- Dalhousie Student Advocacy Service (DSAS)
    - https://www.dsu.ca/dsas
- Dalhousie Ombudsperson
    - https://www.dal.ca/campus_life/safety-respect/student-rights-and-responsibilities/where-to-get-help/ombudsperson.html
- Human Rights & Equity Services
    - https://www.dal.ca/dept/vpei.html
- Writing Centre
    - https://www.dal.ca/campus_life/academic-support/writing-and-study-skills.html
- Study Skills/Tutoring
    - https://www.dal.ca/campus_life/academic-support/study-skills-and-tutoring.html

Safety

- Faculty of Architecture and Planning: Work Safety
    - https://www.dal.ca/faculty/architecture-planning/current-students/inside-building/work-safety.html

Cailen Pybus

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