

Introductory Statistics for Science and Health Sciences

Department of Mathematics and Statistics

STAT 1060; MATH 1060 Winter 2025

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

We acknowledge the histories, contributions, and legacies of the African Nova Scotian people and communities who have been here for over 400 years.

Instructor(s):

Dr. Ammar Sarhan, coordinator, teaching the first half of all sections, Office hours: TR 12:00 – 12:50 & W 13:00-13:50, Office located in Chase 105

Ms. Sarah Organ, second half of Sections 02 & 04, sarah.organ@dal.ca, Office hours: TBA

Dr. Philippe Fullsack, second half of Sections 01 & 03, philippe.fullsack@dal.ca, Office hours: TBA

Lectures:

Section 01, TR 1305 – 1425 McCain Aud-1

Section 02: MWF 1135 – 1225 DUNN 117

Section 03, TR 1005 – 1125 McCain Aud-1

Section 04, TR 0835 – 0955 McCain Aud-1

Tutorials:

10/ 1hr each

Course delivery:

The course is mainly in-person. However, if there are some cancellations due to weather, we will shift to online delivery at those times. For the online delivery, there will be short videos for the material in addition to the lecture notes and class examples notes, that will be available on the course website. Same policy for the tutorials.

Course Description

This course introduces the basic concepts of statistics through extensive use of examples. The topics include experimental design, descriptive statistics, simple linear regression, and the basics of statistical inference. Students will learn to use the statistical software R and RStudio.

Course Prerequisites

Academic or advanced Grade 12 Mathematics (or pre-calculus) or equivalent.

Learning Objectives

At the end of this course, students should be able to:

1. Discuss basic statistical vocabulary and concepts
2. Identify and distinguish the contexts that can be analyzed using the statistical methods
3. Distinguish contexts that call for techniques beyond the scope of the course
4. Write clear statements (inference) supporting interpretations of data analysis.

5. Test if two populations have the same mean.
6. Test if there is a linear correlation between two quantitative variables.
7. Predict the value of a response variable based on the value of a predictor.

Course Materials

- **Textbook:** Stats: Data and Models, 4th Canadian Edition DeVeaux, Velleman, Bock, Vukov and Wong. (Pearson Canada). Any other edition would work.
- **Statistical Software:** R and RStudio
- **Calculator:** A scientific calculator with natural log and exponential functions.
- **Course websites:** Brightspace and LON-CAPA.

For online/blended course delivery:

- The exams are in-person and require on-campus attendance.
- Outline exam is not an option
- The lecture will be recorded and posted on the Brightspace.
- R and RStudio software are required.
- There will be on-campus weekly tutorials, but the attendance is not mandatory. However, the tutorials are recorded and will be available on the Brightspace.
- If you choose to skip the tutorial, kindly refrain from asking questions outside the designated tutorial sessions.
- Weekly assignments and tutorial assessments are online on LON-CAPA platform.

Course Assessment

Component	Weight (% of final grade)	Date
Exam 1 , (on-campus)	35%	March 7, 7:00-9:00 pm (length: 2 hours)
Exam 2 , (on-campus)	35%	Final exam period - Scheduled by Registrar (length: 2 hours)

Assignments: (online) 15%

Assignment	Due date	Assignment	Due date
1	Jan 26	6	March 9
2	Feb 2	7	March 16
3	Feb 9	8	March 23
4	Feb 16	9	April 7
5	March 2		

Tutorial Assessments: (online) 15%

Assessment	Due date	Assignment	Due date
1	Jan 26	6	March 9
2	Feb 2	7	March 16
3	Feb 9	8	March 23
4	Feb 16	9	April 7
5	March 2		

Conversion of numerical grades to final letter grades follows the [Dalhousie Grade Scale](#)

A+ (90-100)	B+ (77-79)	C+ (65-69)	D (50-54)
A (85-89)	B (73-76)	C (60-64)	F (0-49)
A- (80-84)	B- (70-72)	C- (55-59)	

In the event of a weather-related cancellation, our procedure will be as follows: For the lectures:

Students can consult the lecture notes and access relevant videos from the Digital Resources on Brightspace. Any queries can be posted on the Brightspace discussion board. Should further clarification be needed, students are encouraged to reach out to their instructor during office hours or visit the learning center.

For Tutorials:

Your section will have an online tutorial accessible via Brightspace. You have the option to participate in the live session or view the recorded tutorial on Brightspace. If you have inquiries, attending the online session after watching the recording is recommended. Please note that TAs won't be available to address questions outside the tutorial sessions as they don't hold office hours.

Course Policies on Missed or Late Academic Requirements

- Every assignment and tutorial assessment will be available for a full week starting from the third week, beginning January 20th.
- No extensions will be granted for these assignments or tutorial assessments under any circumstances. Missing the due date for an assignment or tutorial assessment will result in a score of 0 for that particular component.
- Not attending exams 1 and 2, without a valid documented excuse, verified by Dr. Sarhan, will lead to a score of 0.
- Students who missed Exam 1 and subsequently completed a makeup exam will not be allowed to take a make-up for Exam 2 unless they provide a legitimate reason, which must be approved by Dr. Sarhan. This policy ensures fairness in handling exam make-ups while maintaining accountability for scheduled assessments. Exceptions will be considered on a case-by-case basis, emphasizing the importance of clear communication and valid justification for absences.
- I will **NOT accept** the **Student Declaration of Absence** in this course.
- You're welcome to reach out to your instructor during office hours for any queries or visit the learning center in Chase building on weekdays between 11:30 am to 4:30 pm.
- I won't be answering any questions via email.

Course Policies related to Academic Integrity

At Dalhousie University, we are guided in all our work by the values of academic integrity: honesty, trust, fairness, responsibility, and respect (The Center for Academic Integrity, Duke University, 1999). As a student, you are required to demonstrate these values in all 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.

Information: https://www.dal.ca/dept/university_secretariat/academic-integrity.html

Extra Help at Learning Centre:

The MATH/STAT Learning Centre is located in Chase 119 and will be operating in-person and remotely. It opens on Jan. 6 and support is available Monday through Friday from 11:30am - 4:30pm and Monday through Friday evenings from 6:30- 7:30pm, until Apr. 23. Register for the Brightspace “course” at <https://www.dal.ca/faculty/science/math-stats/about/learning-centre.html> to access the online support and see the latest schedule.

Course Content

Week	Date	Topic	Instructor
1	Jan 6-10	Displaying and Summarizing Quantitative Data	Dr. Sarhan
2	Jan 13-17	Understanding and Comparing Distributions	Dr. Sarhan
3	Jan 20-24	The standard deviation as a ruler Understanding Randomness	Dr. Sarhan

Week	Date	Topic	Instructor
4	Jan 27-31	Sample Surveys Experiments and Observational Studies	Dr. Sarhan
5	Feb 3-6	From Randomness to Probability Rules	Dr. Sarhan
	Feb 7	Munro Day – No Classes	
6	Feb 10-14	Random Variables Probability Model (Normal and Binomial)	Dr. Sarhan
7	Feb 17-21	Study Break – No Classes	
8	Feb 24-28	Sampling Distribution Models Confidence intervals for proportions	Dr. Fullsack & Ms. Organ
9	Mar 3-7	Testing Hypotheses about proportions	Dr. Fullsack & Ms. Organ
9	Mar 7	Exam 1- Covers material taught by Dr. Sarhan, weeks 1 – 6	
10	Mar 10-14	Inferences About Means	Dr. Fullsack & Ms. Organ
11	Mar 17-21	Comparing Means Paired Samples	Dr. Fullsack & Ms. Organ
12	Mar 24-28	Scatterplots, Association, and Correlation Linear Regression	Dr. Fullsack & Ms. Organ
13, 14	Mar 31-Apr 7	Regression Wisdom Inferences for Regression	Dr. Fullsack & Ms. Organ
April 9- 26		Exam Period	

University Policies and Statements

Recognition of Mi'kmaq Territory

Dalhousie University would like to acknowledge that the University is on Traditional Mi'kmaq Territory. The Elders in Residence program provides students with access to First Nations elders for guidance, counsel, and support. Visit or e-mail the Indigenous Student Centre at 1321 Edward St or elders@dal.ca. Additional information regarding the Indigenous Student Centre can be found at:
https://www.dal.ca/campus_life/communities/indigenous.html

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." Additional internationalization information can be found at:
<https://www.dal.ca/about-dal/internationalization.html>

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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 (https://www.dal.ca/campus_life/academic-support/accessibility.html) for all courses offered by Dalhousie with the exception of Truro. For courses offered by the Faculty of Agriculture, please contact the Student Success Centre in Truro (<https://www.dal.ca/about-dal/agricultural-campus/student-success-centre.html>)

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). Additional diversity and inclusion information can be found at:
<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. The full Code of Student Conduct can be found at:
https://www.dal.ca/dept/university_secretariat/policies/student-life/code-of-student-conduct.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. Additional information regarding the Fair Dealing Policy can be found at:
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. Additional information regarding Originality Checking Software can be found at:
https://www.dal.ca/dept/university_secretariat/policies/academic/student-submission-of-assignments-and-use-of-originality-checking-software-policy.html

Student Use of Course Materials

Course materials are designed for use as part of this course 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 to a commercial third-party website) may lead to a violation of Copyright law.

Faculty of Science

Student Resources and Support University Policies and Programs

Important Dates in the Academic Year (including add/drop dates):

http://www.dal.ca/academics/important_dates.html

Classroom Recording Protocol:

[Class Recording Protocol - 2021](#)

Dalhousie Grading Practices Policies:

<https://www.dal.ca/content/dam/www/about/leadership-and-governance/university-policies/grading-practices-policy.pdf>

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/health-and-safety/sexualized-violence-policy.html

Scent-Free Program:

<https://www.dal.ca/dept/safety/programs-services/occupational-safety/scent-free.html>

Learning and Support Resources General Academic Support – Advising (Halifax):

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

General Academic Support – Advising (Truro):

<https://www.dal.ca/about-dal/agricultural-campus/ssc/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:

https://www.dal.ca/campus_life/communities/indigenous.html

Indigenous Connection:

<https://www.dal.ca/about-dal/indigenous-connection.html>

Elders-in-Residence (The 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:

[https://cdn.dal.ca/content/dam/dalhousie/pdf/academics/UG/indigenous-studies/Elder- Protocol-July2018.pdf](https://cdn.dal.ca/content/dam/dalhousie/pdf/academics/UG/indigenous-studies/Elder-Protocol-July2018.pdf)

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.ca/about/LGBTQ2SIA+>

Collaborative:

<https://www.dal.ca/dept/vpei/edia/education/community-specific-spaces/LGBTQ2SIA-collaborative.html>

Dalhousie Libraries:

<http://libraries.dal.ca/>

Copyright Office:

<https://libraries.dal.ca/services/copyright-office.html>

Dalhousie Student Advocacy Services:

<https://www.dsu.ca/dsas?rq=student%20advocacy>

Dalhousie Ombudsperson:

https://www.dal.ca/campus_life/safety-respect/student-rights-and-responsibilities/where-to-get-help/ombudsperson.html

Human Rights and Equity Services:

<https://www.dal.ca/dept/hres.html>

Writing Centre:

https://www.dal.ca/campus_life/academic-support/writing-and-study-skills.html

Study Skills/Tutoring:

http://www.dal.ca/campus_life/academic-support/study-skills-and-tutoring.html

Faculty of Science Advising Support:

<https://www.dal.ca/faculty/science/current-students/undergrad-students/degree-planning.html>

Safety Biosafety:

<http://www.dal.ca/dept/safety/programs-services/biosafety.html>

Chemical Safety:

<https://www.dal.ca/dept/safety/programs-services/chemical-safety.html>

Radiation Safety:

<http://www.dal.ca/dept/safety/programs-services/radiation-safety.html>

Laser Safety:

<https://www.dal.ca/dept/safety/programs-services/radiation-safety/laser-safety.htm>