

DANA 4800 (001)

BUSINESS STATISTICS

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1. Instructor Contact Information

Name: Michael Lo

Office: B154L

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Phone: 604-323-5730

Office Hours: Tue/Thu 1330-1415, or by appointment

2. Course Information

Course Format: Lecture 2.0h + Seminar 2.0h

Credits: 3.0

Course Description: Statistical inference is the process of drawing conclusions from data. Students gain a foundation in probability, descriptive statistics, sampling methods, normal distributions, Poisson distributions, sampling distributions, one-sample and two-sample statistical inference procedures on both proportions and means (including the z and t tests).

Prerequisite: None.

Note: Registration in this course is restricted to students admitted to the Post-Degree Diploma in Data Analytics and Post-Degree Certificate in Data Analytics.

2.1 Optional Textbooks

- *The Practice of Statistics for Business and Economics*, 5th edition, 2020 by Layth Alwan, Bruce Craig, and George McCabe, Macmillan Learning. (Loose-leaf about \$196 at Langara Bookstore)
- *Practical Statistics for Data Scientists*, 2nd edition, 2020 by Peter Bruce, Andrew Bruce, and Peter Gedeck, O'Reilly Media, Inc. (ISBN: 9781492072942; paperback about \$92 on Amazon)

2.2 BrightSpace

- You will have access to the BrightSpace course shell about 24 hours after your registration.
- We will use BrightSpace extensively, like posting course documents and notes, and uploading grades etc.

3. Evaluation & Assessment

3.1 Assessments and Weightings

Item	Date	Weight
Final Exam	TBD	25%
Midterm Tests	MT1: Wednesday June 12 MT2: Wednesday July 17	30%
Project	Project #1A: June 1 Project #1B: June 22 and 24 Project #2: July 27 and 29	30%
Assignments	Due: Sundays 5/25, 6/8, 6/29, 7/13, 8/5	10%
Contributions	Every class	5%

3.2 Grading

The following grading scale is used in this course:

Minimum Overall (%)	96	85	80	77	73	68	63	58	53	48
Grade in Course	A+	A	A-	B+	B	B-	C+	C	C-	D

A student must obtain a minimum of 45% on the final exam to obtain an overall grade of C- or better in the course. Please check with your respective department regarding the specific program requirement.

3.3 Final Exam

- The final examination will be a two-hour closed-book exam on the entire semester's work, i.e. cumulative.
- Note: No electronic device use is allowed during the final exam.
- The final exam period is August 5-16, 2025. Seating at the final exam is mandatory. Hence, students should make themselves available during this time. For any request regarding final exam date/time accommodation, you are required to submit a formal letter from the party of concern.
- You are required to bring a picture identification document. Failure to do so may result in getting a zero in the final exam. Hence, failing the course.
- Students will not be allowed to keep any bags within reach of their seats when writing final exams. If students bring bags to the examination room (classroom or gym), they will be required to leave their bags at the front of the room and the instructor or College cannot take responsibility for the safety of these bags. Therefore, students are advised not to bring bags to campus at all, at least not to bring expensive bags or bags that contain anything of particular value, or to make arrangements with a friend whom they can trust to look after their belongings during the exam time.
- I have zero tolerance in any form of cheating in this class. Any offending student will be given a mark of zero in this final exam. In addition, this incident and the student will be reported to the Office of Student Conduct and Academic Integrity.
- Visit our [Langara Plagiarisms page](#) for more details.

3.4 Midterm Tests

- There are two closed-book midterm tests, and both of them will be about one hour long.
- Midterm tests are non-cumulative.
- Note: No electronic device use is allowed during the midterm exams.
- No make-up midterm tests will be given. But in a situation where you anticipated that you might miss the test because of any reason (e.g. medical or personal), please contact me before the test date/time. Accommodation might be granted as long as the reason is legitimate.
- Note: You do not need any medical note if you are sick. Please stay home and rest.
- I have zero tolerance in any form of cheating in this class. Any offending student will be given a mark of zero in midterm exams. In addition, this incident and the student will be reported to the Office of Student Conduct and Academic Integrity.
- Visit our [Langara Plagiarisms page](#) for more details.

3.5 Projects

- Please refer to the Project Handouts for details.
- The project is an important component of this course. There is a course-wide policy that students who do not hand in an acceptable project will not get a final letter grade higher than a D.
- Visit our [Langara Plagiarisms page](#) for more details.

3.6 Assignments

- All submissions are done electronically to BrightSpace Assignment Submission Folders.
- Due time is midnight (actually 11:59 pm) on the day it is due.
- You can have multiple submissions for one assignment. But only the latest copy will be marked.
- It is recommended that you submit your assignments early to avoid any technical issues (like internet connection issues) that might prevent you from handing your assignments on time.
- Each student must submit their own work.
- Collaboration among students (like working together with others) is highly encouraged. But keep in mind that collaboration does not mean the wording and style of writing are “carbon copy” of one another. Instead, it is suggested to have big group discussion and then complete the final version alone and in your own words.
- We have a marker (former student) marking the assignments. You can directly contact them if there are any issue with marking. Their contact is available on BrightSpace Contact.
- I have zero tolerance in any form of cheating in this class. Any offending student will be given a mark of zero in assignments. In addition, this incident and the student will be reported to the Office of Student Conduct and Academic Integrity.
- Visit our [Langara Plagiarisms page](#) for more details.

	Assignments	Midterms	Final
Open book?	Yes	No	No
Collaboration with others?	Sure	Absolutely Not	Absolutely Not
Hand in your own work?	Absolutely	Absolutely	Absolutely
Cumulative?	No	No	Yes
Format	BrightSpace Assignments	In Person	In Person
Answer Keys Posted	Yes	Yes	No
Marks Posted	Yes	Yes	Yes

3.7 Contributions

- The contributions mark is very self-explanatory.
- Make sure you pay attention in the first day of class about the definition of contributions. And please do not make your own assumptions because it is very likely to be wrong.
- It is given or assigned based on, whether you like it or not, Michael's memory of your contributions to the learning of everybody during class time.
- I understand that some of you are shy and less comfortable speaking up in the class. Our class is a risk- and judgment-free zone, and it is up to me to make sure you feel comfortable sharing your thoughts. Please talk to me if you need a little extra encouragement.

4. College Policies

As a student at Langara, you are responsible for familiarizing yourself and complying with the following policies:

[F1002 - Concerns about Instruction](#)

[E1003 - Student Code of Conduct](#)

[F1004 - Code of Academic Conduct](#)

[F1008 - Student Attendance and Participation](#)

[E2006 - Appeal of Final Grade](#)

[E2008 - Academic Standing](#)

[E2011 - Withdrawal from Courses](#)

In particular, students are expected to get themselves familiarized with other college policies [here](#).

5. Course Learning Outcomes

Upon Completion of this course, successful students will be able to	Project	Assignment	MT/Final
• compare and contrast methods of selecting a sample	✓	✓	✓
• identify and explain sources of bias	✓	✓	✓
• select and apply the appropriate techniques for describing one-variable and two-variable data and interpreting the results	✓	✓	✓
• solve problem related to Poisson and Normal distributions		✓	✓
• identify and use appropriate methods for solving probability problems and interpret the results		✓	✓
• identify the concept of a sampling distribution and the application in the Central Limit Theorem		✓	✓
• carry out interval estimation and hypothesis testing for a single population and interpret the results, including checking the necessary assumptions/conditions		✓	✓
• apply statistical methodology in real-life examples using everyday language	✓	✓	✓
• produce a report that satisfies a set of criteria in a statistical investigation	✓		
• select and carry out an appropriate method of inference for the mean or proportion of one population and interpret the results		✓	✓
• select and carry out an appropriate method of inference to compare the means or proportions of two populations (either independent or related) and interpret the results		✓	✓
• use industry-leading statistical software applications to perform data analysis and to interpret the output	✓	✓	

6. Frequently Asked Questions

Q: How much time should I spend outside classroom?

A: Students are suggested to spend about 2 hours per hour of class time in studying (including reading, doing exercises, etc.) A course with 4 hours of class time per week requires 8 hours per week on average – 12 total hours per course per week. A typical student taking 3 courses need to spend 36 hours per week. Note: There are about 37.5 hours of work in a full-time job in Canada.

Here is a [good article](#) to know more about.

Q: I did poorly in the first half of the course, when is the last day I can withdraw from the course?

A: It is typically the end of Week 8 (Week 9 in Spring term). See the [Important Dates](#) for details.

Grading & Evaluations:

Q: Is writing the final exam mandatory?

A: Yes, it is mandatory. You cannot get a pass of this course if you do not write the final exam.

Q: When will the final exam be? I need to book my flight home.

A: The final exam schedule will not be made available until after the end of Week 8. But the final exam period can be found [here](#). If you cannot wait till the end of Week 8 to book air ticket, make sure you book after last day of the final exam period.

Q: Are there bonus work (like in the form of assignments) that will be offered at the end of the term so that I could boost up my grade?

A: Sorry, there will not be any bonus work. Please make sure you stay on top of things from Day 1.

Computing & Technology:

Q: What my Langara username or login is? How do I log in to the college computer network?

A: Here is the [link](#) for your information.

Q: How often should I check my Langara or BrightSpace emails?

A: It depends on the instructors. For Michael Lo, you are expected to check at least once a day.

Q: What statistical software should I use? Is it free?

A: We will use R Studio as the primary statistical software in this course. Please consult with Michael if you want to use any statistical software other than R.

Q: Do I need a graphing calculator in this course?

A: No. You are fine with a basic scientific calculator. Make sure you have the “square root” function. You could use your graphing calculators in this course, but it has no advantage over others.

7. Tentative Class Schedule

Week	Date	Module	Content	Additional Information
1	5/6	--	First Class	--
1	5/8	M01	The Fundamentals	--
2	5/13	M02	Data Collection, Bias, Ethics	--
2	5/15	M03	EDA – One Categorical Var.	--
3	5/20	M04	EDA – One Numerical Var.	--
3	5/22	M05	EDA – Two Variables	--
4	5/27	M06	Probability	--
4	5/29	M06	Probability	Bayes’ Theorem
5	6/3	Spare & Review		
5	6/5	M07	Probability Distributions	Binomial, Poisson, Exponential, and Normal
6	6/10			
6	6/12	Midterm #1		
7	6/17	M08 M09	Sampling Distributions Confidence Intervals	Means and Proportions
7	6/19	Class Cancellation – Langara Convocation		
8	6/24	Presentation #1B		
8	6/26	M10	Hypothesis Testing	Means and Proportions
-	Sat 6/28	Last Day of Withdrawal		
9	7/1	Canada Day Holiday		
9	7/3	M10	Hypothesis Testing	Means and Proportions
10	7/8	M11	t-Tests	Means only
10	7/10	Spare & Review		
11	7/15	M12	Two-Sample t-Tests	Equal and unequal variance
11	7/17	Midterm #2		
12	7/22	M12	Two-Sample t-Tests	Equal and unequal variance
12	7/24	M13	Two-Sample Proportion Tests	Proportions only
13	7/29	Presentation #2		
13	7/31	Spare & Review		