

STAT 200 - Elementary Statistics for Applications

Summer Term 1 (May 15 – June 23, 2023)

Course description: Classical, nonparametric, and robust inferences about means, variances, and analysis of variance, using computers. Emphasis on problem formulation, assumptions, and interpretation.

Objectives: On completing the course, students should be able to demonstrate the ability to apply fundamental concepts in exploratory data analysis, recall key properties of the Normal model, apply and interpret basic summarization and modelling techniques to quantitative data, understand common experimental design flaws, demonstrate an understanding of basic concepts of probability and random variables, understand the concept of the sampling distribution of a statistic, understand the foundations of classical inference involving confidence intervals and hypothesis testing, apply inferential methods to means and proportions, demonstrate familiarity with one-way ANOVA, and apply the Chi-square test for independence between categorical variables.

This course provides the basic statistical toolkit required for the understanding and use of a range of methods for both summarizing and analyzing data, giving a platform for further study of applied Statistics. The emphasis in the course will be the application of these methods to real-life situations from the sciences.

Pre-requisites: One of MATH 101, 103, 105, 120, or SCIE 001.

Instructor: Ben Burr (Email: ben.burr@stat.ubc.ca). Please only use this email for matters that must be discussed directly with the instructor. This does **not** include absence from class or labs, missed assignments, registration problems, medical issues, course content, etc. Note that most of these are addressed below under the heading **Policy Regarding Extension Requests**.

Please email the **Course Coordinator** at stat200@ugrad.stat.ubc.ca to address administrative questions and related topics. Please use **office hours** or **Piazza** for questions regarding assignment problems, textbook problems, labs, class notes, examples, etc.

Classroom: Aquatic Ecosystems Research Laboratory 120 (Tuesday, Wednesday, Friday)

Class Time: 10:30am-12:30pm

Instructor Office Hours: Wednesdays from 12:30pm to 1:30pm in person in ESB 1043.

TA office hours: On Zoom. Details will be available on Canvas.

Course Website: canvas.ubc.ca

Please check the **Canvas** website regularly to keep up-to-date with the course. Everything you need will be available through Canvas and you should get familiar with all the tabs as soon as

possible. If you have any problems related to technical issues, please use **Help** (see the left side menu in the Canvas course page) to report the problem or to contact IT service.

Recommended Textbooks

De Veaux, R.D., Velleman, P.F., et al. (2021). Stats: Data and Models (Fourth Canadian Edition). Toronto: Pearson Canada.

This textbook is recommended but is not required. We will cover most of chapters 1-20, 22, and 24. Earlier editions are acceptable.

An open source alternative is available at http://onlinestatbook.com/Online_Statistics_Education.pdf

Grading Scheme

Assessment	Percentage
WeBWork	5%
Labs	5%
Written Assignments (2)	20%
Midterm	25%
Final Exam	45%

Policy regarding missing the midterm test:

1. There will be no make-up test.
2. Students who miss the test for a reason not covered in UBC's Academic Calendar will be given a grade of 0 on the test.
3. Students who miss the test for a reason that **is** covered in UBC's Academic Calendar will have the weight of the midterm added to the final exam (i.e., the Final Exam is worth 70% of your grade).

Deferred Exam Policy if you miss the Final Exam: The policy (UBC policy) is that students who miss the final exam **MUST** report to their faculty advising office within 48 hours to apply for deferred standing. They must also notify the instructor to receive instructions as to when they will write their deferred final. It will most likely be in the final exam period in the next term in which the course is offered. E.g., for 2023 Summer Term 1, the next offering of STAT 200 will be 2023 Winter Term 1, so the deferred exam will take place in December. But they will not be granted a deferred final unless they are granted deferred standing by their faculty advising office.

Policy regarding late assignments and extension requests: No extensions will be granted on any written assignment, WeBWork assignment, or lab. Late submissions for WeBWork assignments will receive a penalty of 10% for the first day late. At midnight on the day after the WeBWork assignment is due, late assignments will result in a grade of 0. Late submissions for lab assignments will result in a grade of 0. Late submissions for the written assignments will be deducted 10% of the possible score for each day after the deadline. E.g., if you hand in the assignment 12 hours late, you will be graded as normal and awarded a grade to start with. Suppose you achieve 90% on the assignment. Following grading, you will then be awarded 80% instead. The rule is that 60 minutes late and 23 hours and 59 minutes late are both equivalent to 1 day late, and result in 10% deducted. This applies for a maximum of 48 hours (20%). Assignments submitted more than 48 hours past the deadline will result in a grade of 0.

iClicker cloud: We will be using iClicker Cloud in lectures. iClicker Cloud is a response system that allows you to use your own computer or mobile device to respond to questions posed by instructors during class. You can set up an iClicker Cloud account and add STAT 200 as a course to this account. To do so, please follow <https://lthub.ubc.ca/guides/iclicker-cloud-student-guide> for details.

Piazza Discussion Board: You can use Piazza Discussion Board to post your questions regarding course content. This is where you can discuss ideas, strategies, and resources for solving the problems with your classmates. Please DO NOT POST ANSWERS to the questions in the WeBWork assignments/written assignments and lab assignments. Instead, share your thoughts and approaches to solving the problems. Asking others how to solve a problem without first trying to solve it yourself will not be beneficial for your learning. TAs will not give the solution for assignment questions before the due date. But they will surely give hints as needed and let you know the correct directions. If you need more clarification, it is always better to contact TAs or the instructor during our office hours or to post your question on Piazza. Don't expect TAs will answer all your questions posted in Piazza page. If you have any problems or feedback for the developers of Piazza, email team@piazza.com. To access the course Piazza page, please go to "Piazza" in the left menu in the Canvas course page and it will open in a new window. Then you can sign up for the class page. Please use the email address associated with your Canvas account.

WeBWork: Please see the WeBWork assignment dates in the Canvas course page. Please go to "WeBWork" in the left menu in the Canvas course page to access WeBWork.

Labs: Groups will be assigned for the labs by the beginning of the second week of class. Lab assignments start the first week of class with an individual lab assignment due Friday. Lab materials will be provided in the lab sessions. You are expected to work with your group in the lab (once chosen or assigned) to solve the lab assignments and hand in the finished lab activity at the end of the lab day (by 11:59pm) on Canvas.

Health and Covid Safety in the Classroom

Masks: Masks are no longer required for all indoor public spaces on campus, as per the BC Public Health Officer orders and UBC policy. Despite this change in policy, Covid-19 continues to spread rapidly in the community, new variants arise, and many thousands of people continue to experience acute and long-term health problems causing long-term health damage and hundreds of deaths per week in Canada alone. For our in-person meetings in this class, it is important that all of us feel as comfortable as possible engaging in class activities while sharing an indoor space. Masks are a primary tool to make it harder for Covid-19 to find a new host. You are encouraged to wear a medical or non-medical mask for the duration of our class meetings for your own protection and the protection of everyone else in the class and their close contacts. You may be asked to remove your mask briefly for an ID check for an exam but not otherwise. Mask wearing protects you as well as others in your environment. Let's do everything we can as a community to stop the spread of this virus.

Vaccination: If you have not yet had a chance to get vaccinated against Covid-19, vaccines are available to you, free, and on campus (<http://www.vch.ca/covid-19/covid-19-vaccine>) The higher the rate of vaccination in our community overall, the lower the chance of spreading this virus. You are an important part of the UBC community. Please arrange to get vaccinated if you have not already done so.

Seating in class: To reduce the risk of Covid transmission, **please sit in a consistent area** of the classroom each day. This will minimize your contacts and will still allow for the pedagogical methods planned for this class to help your learning.

Your personal health

If you're sick, it's important that you stay home – no matter what you think you may be sick with (e.g., cold, flu, other).

- Do not come to class if you have Covid symptoms, have recently tested positive for Covid, or are required to quarantine. You can check this website to find out if you should self-isolate or self-monitor: <http://www.bccdc.ca/health-info/diseases-conditions/covid-19/self-isolation#Who>.
- Your precautions will help reduce risk and keep everyone safer. In this class, the marking scheme is intended to provide flexibility so that you can prioritize your health and still be able to succeed.

If you do miss class because of illness:

- Make a connection early in the term to another student or a group of students in the class. You can help each other by sharing notes. If you don't yet know anyone in the class, post on the discussion forum (Piazza) to connect with other students.
- Consult the class resources on Canvas.
- Use the online discussion forum (Piazza) for help.

- Come to online office hours (instructor and TAs) to contact us and discuss.

If you are sick on a midterm exam day, please email the Course Coordinator as soon as you are confident you should not come to the scheduled exam. It is much better for you to email ahead of time and not attend. Remember to include your full name and student number in your message.

If you are sick on a final exam day, do not attend the exam. You must follow up with your home faculty's advising office to apply for deferred standing:

<https://students.ubc.ca/enrolment/academic-learning-resources/academic-advising>. Students who are granted deferred standing write the final exam/assignment at a later date.

If you're a Science student, you must apply for deferred standing (an academic concession) through Science Advising no later than 48 hours after the missed final exam/assignment. Learn more and find the application online: <https://science.ubc.ca/students/advising/concession>.

For additional information about academic concessions, see the UBC policy here:

<http://www.calendar.ubc.ca/vancouver/index.cfm?tree=3,329,0,0>

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Instructor health

If I (the instructor) am sick: I will do my best to stay well, but if I am ill, develop Covid symptoms, or test positive for Covid, then I will not come to class. If that happens, here's what you can expect

- If I am well enough to teach, but am taking precautions to avoid infecting others, we may try to hold a synchronous online session. If this happens, you will receive an announcement in Canvas telling you how to join the class. You can anticipate that this would very likely be a last-minute email. Our classroom will still be available for you to sit and attend an online session, in this (hopefully rare) instance.
- You may receive a message from me with a recording of the lecture material for you to watch on your own time.
- My colleague might substitute for me for in-person classes

Academic Integrity: Class Policies on Exams and Assignments

Assignments/WeBWork/Labs:

- Discussion of ideas learned in class is encouraged (with other students, TAs or the instructor). This helps the learning process. But individual work turned in by each student should be your own work. Do not copy or paraphrase solutions from other students or from other sources. Do not provide your solutions to another student. Failure to comply with these rules will result in an automatic 0 for your work, and additional academic penalties.

For more information, please see

Academic Honesty and Standards: <http://www.calendar.ubc.ca/Vancouver/index.cfm?tree=3,54,111,958>

Academic Misconduct: <http://www.calendar.ubc.ca/Vancouver/index.cfm?tree=3,54,111,959>

Disciplinary Measures: <http://www.calendar.ubc.ca/Vancouver/index.cfm?tree=3,54,111,960>

Reach Out for Success

- University students often encounter setbacks from time to time that can impact academic performance. Discuss your situation with your instructor or an academic advisor. Learn about how you can plan for success at: www.students.ubc.ca
- For help addressing mental or physical health concerns, including seeing a UBC counsellor or doctor, visit: <https://students.ubc.ca/health-wellness>