a place of mind
THE UNIVERSITY OF BRITISH COLUMBIA

Department of Statistics
Website : www.stat.ubc.ca

3182 Earth Sciences Bldg
2207 Main Mall
Vancouver, BC V6T 1Z4

Telephone: (604)822-0570
Facsimile: (604) 822-6960

STAT 305
2021 Summer Term 2
Instructor: William Welch

Description: Review of probability theory. Sampling distribution theory, large sample theory and methods of estimation and hypothesis testing, including maximum likelihood estimation, likelihood ratio testing and confidence interval construction. [3-0-1]

Prerequisites: Either (a) one of STAT 200, STAT 203, BIOL 300, STAT 241, STAT 251, COMM 291, ECON 325, FRST 231, PSYC 218, PSYC 366, and one of MATH 302, STAT 302; or (b) a score of 65% or higher in one of MATH 302, STAT 302. The Department recommends that students meet the prerequisite through option (a).

Textbook/course material: "STAT 305, Introduction to Statistics Inference" by Welch, W.J. (August 14, 2019 edition). Available at the bookstore. (Please see emails sent in May and June for ordering details.)

References: "Mathematical Statistics and Data Analysis: (3rd edition) by Rice, J.A., on reserve at the Barber library. OPTIONAL.

Website: canvas.ubc.ca

Classes: will be offered at the scheduled time MWF 4:00 – 6:00 pm and will be recorded. Each class will have in-class activities with iClicker questions.

Assessment: Final exam 40%, midterm exam 25%, labs 15% (including peer evaluation), WeBWorK 10%, in-class iClicker questions 10%

To pass the course it is normally necessary to obtain 50% on the midterm and final exam, i.e., 32.5 or more out of the maximum of 65 points. Otherwise the exam grade is normally reported. If the 50% exam threshold is satisfied, the grade reported is weighted based on all assessment components as above.

Policy regarding missing the final exam: Students who miss the final exam must report to their Faculty advising office within 72 hours of the missed exam, and must supply supporting documentation. Only your Faculty Advising office can grant deferred standing in a course. You must also notify your instructor prior to (if possible) or immediately after the missed exam. Your instructor will let you know when you are expected to write your deferred exam. Deferred exams will ONLY be provided to students who have applied for and received deferred standing from their Faculty. Please note that if you are granted deferred standing for the STAT 305 final exam in the summer, you will be expected to write your deferred exam with the 2021/22 term 1 sitting of the course in December. In such a case, make sure that you

download materials from Canvas immediately, because you will not have access to them after August 31st.

Midterm: Will be held in the 4:00 – 6:00 pm class on Monday July 26. It will start at the beginning of class, so please make sure you are on time. The midterm will be based on all course materials, including labs, graded assignments, other ungraded problems assigned from time to time, lectures, and activities held in lectures.

If you would like a midterm question remarked, send a regrade request via the online submission system. Normally the request must be made *no later than one week after the midterm was graded*.

There will be no make-up midterm. If you miss it for a documented valid reason, the weight for the final will be readjusted to total 65% (the midterm and final make up 65% of the grading scheme).

If you miss the midterm, a lab, or an assignment for a valid reason, please fill out the "Student Declaration of Academic Concession  and email it to william.welch@ubc.ca. Please consult the Academic Concession page of the UBC Vancouver Academic Calendar for UBC policy. Valid reasons are typically acute or changed medical conditions, other emergencies, or an important UBC event. Please note that, as the midterm date is known well in advance and is in class time, normally there will be no accommodation for other classes, vacations, social events, business transactions, or similar activities.

Please make your student ID available at the quizzes and final exam.

Labs: All students must be registered for a lab section. Join your lab via zoom from the zoom tab on the left at canvas. Your lab TAs will describe how lab groups are organized, expectations for the labs, tasks, etc.

Assignments: There will be approximately weekly online assignments for credit based on WeBWorK and some uploaded written solutions. Questions will also be suggested approximately weekly. The suggested questions will NOT be graded. Brief answers are often in the course text, and some answers may be taken up in office hours. No other solutions will be provided. If you cannot get started with a question or are stuck at some point in the solution, please post a question at piazza or see one of the teaching team during office hours. We are here to help YOU successfully complete the problem; if does not help you if we do the problem for you. Keep iterating with a piazza discussion or see us as often as you need to keep making progress. Working together in groups for these optional questions is allowed and indeed encouraged. One purpose of all assignments is to prepare you for the midterm and final, where similar questions will appear. The suggested questions are not part of assessment but are also an (essential!) aid to learning by doing.

Computing: Computing is an integral part of this course, e.g., to compute required probabilities. We will use the R data-analysis environment. The course website has information about how you may implement R on your own computer (essential in the online environment), data sets and examples, and several online R tutorials, including a "getting started guide".

Many of the assigned questions will involve computing. Familiarity with R will also be tested on the quizzes and final examination.

Academic Integrity: While academic studies build on past and current knowledge from others, it is essential that all academics, including students, make clear where past knowledge ends and their contributions begin. Basically, do not represent other people's work as your own; that is plagiarism. For students in STAT 305, specifically:

1. iClicker responses are part of YOUR grade and need to be YOUR work.
2. YOUR grade for group lab work needs to reflect that YOU engaged and contributed fairly to the group effort.
3. WeBWorK and any associated written assignment component is part of YOUR grade and needs to be YOUR work and written independently by you.
4. You already know that the midterm and final exams should be YOUR work only.

Thus, submit and claim for credit only the work YOU have done, which includes writing text (and math) in your own words. That is the basis of academic integrity. Copying and representing others' work as yours is cheating. There will be checks in place and any suspected violations will be followed up and penalized as appropriate with a report to Faculty of Science Advising, where records are kept across courses. Offences may be escalated to the President's Advisory Committee on Student Discipline.

UBC's policies on academic integrity are in the Academic Calendar at http://calendar.ubc.ca/vancouver/index.cfm?tree=3,54,111,0.

Outline of topics: The course will start at the section on moment generating functions in the course notes and then proceed closely following the order in the course notes.