

University of British Columbia, Department of Statistics
STAT 305, Introduction to Statistical Inference, 2016/17 Term 2
Instructor: William J. Welch
Course website: <http://ugrad.stat.ubc.ca/~stat305>

Overview

An introduction to likelihood and Bayesian principles for statistical models and inference

Calendar 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.

Teaching team

Instructor	Will Welch, ESB 3132, Ext 2-3339, will [AT] stat [DOT] ubc [DOT] ca
Teaching Assistant	TBA
Teaching Assistant	TBA
Teaching Assistant	TBA

Office hours for all the teaching team will be at the course website.

Time and place

Lectures Mon, Wed, Fri, 1:00–2:00 pm, Hennings 200

Text books and other materials

Course text (required)	“STAT 305, Introduction to Statistical Inference” by Welch, W.J. A 2016 edition is expected to be available at the bookstore in December 2016 (when it is available there will be a News item at the course website)
Course text (optional)	“Mathematical Statistics and Data Analysis” (3rd edition) by Rice, J.A.
Other books	Please see “Supplementary Reading” at the course website for other texts, including those on reserve at the library
Clicker	A CLICKER IS REQUIRED

Prerequisites

Either (a) one of STAT 200, BIOL 300 and one of MATH 302, STAT 302; or (b) a score of 65% or higher in one of MATH 302, STAT 302. (STAT 200 or BIOL 300 is recommended.)

Co-requisites: None

Credit exclusion: Consult the credit exclusion list within the Faculty of Science section in the calendar.

Assessment

3 quizzes 40%, final exam 45%, labs 5%, WeBWorK 5%, in-class clicker participation 5%

To pass the course it is normally necessary to obtain 50% based on the quiz and final examinations, i.e., 42.5 or more out of the maximum 85 points. Otherwise the exam grade is normally reported. If the 50% exam threshold is satisfied, the grade reported is weighted based on all 5 assessment components above.

Quizzes

Quizzes are scheduled in class on the following dates: TBA. They will start at the beginning of class, so please make sure you are on time. Quizzes will be based on material from assignments, WeBWorK, lab problems, and the lectures, including activities held in the lectures.

If you would like a quiz question remarked, write a note specifying the question/part and the reason for requesting a review of the grading. Attach this to your paper and give it to me or a Teaching Assistant *no later than one week after the papers were returned to students*.

There will be no make-up quizzes. If you miss a quiz for a documented valid reason the weights for the other quizzes and the final will be readjusted to total 85% (the quizzes and final make up 85% of the grading scheme). Valid reasons for missing a quiz are typically medical conditions, other emergencies, or an important UBC event. Please take note that, as the quiz dates are known well in advance and are in class time, normally there will be no accommodation for exams in other classes, vacations, social events, business transactions, or similar activities.

Examination aids

A formula sheet can be used at the quizzes and final exam. More details will be provided.

Please bring your student ID to the quizzes and the final exam.

Labs

You will work in teams; its membership will be determined by the lab Teaching Assistant. Your team should sit together in lectures, too, as the team will be called upon to answer questions from time to time. For most labs, a joint report for the team will be handed in at the end. It will be marked.

Assignments

There will be approximately weekly online WeBWorK assignments for credit.

Traditional questions will also be given approximately weekly. They will NOT be collected or marked. Brief answers are provided in the course text, and some answers will be taken up in the lab or in class. No other solutions will be provided.

If you cannot get started with a question or are stuck at some point in the solution, please see one of the teaching team during office hours. We are here to help YOU successfully complete the problem; it does not help you if we do the problem for you. See us as often as you need to keep making progress. Working together in groups for these questions allowed and indeed encouraged.

The purpose of all assignments is to prepare you for the quizzes and final, where similar questions will appear. The traditional 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 web site has information about how you may also download R to your own computer, data sets and examples, and several online R tutorials, including a “getting started guide”. Some of the assigned questions and some labs will involve computing. Familiarity with R will be tested on the quizzes and final examination.

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.