

STAT 344 – SURVEY SAMPLING, Fall 2025

Lecture: MWF 2pm - 3pm, Sept 2 – Dec 5, in-person.

Labs: L1A (Tue 4pm, ESB1046), L1B (Thu 11am, ESB1042), L1C (Thu 1pm, ESB1046). You must register one of the labs.

Class webpage: UBC Canvas STAT344.

Instructor: Lang Wu, Professor, Department of Statistics, UBC.

Personal webpage: <https://www.stat.ubc.ca/~lang>

Email: lang@stat.ubc.ca

Office: *Earth Science Building (ESB) 3126*, 2207 Main Mall.

Office hours: See Canvas class page. Instructor and TA office hours start in the second week of class. Most office hours will be online via Zoom, but some may be in person (we will email you in advance). You are also welcome to talk to the instructor/TAs **in-person** right after class/lab. *You are strongly encouraged to post your questions on **Piazza discussion board** via Canvas class page.*

Teaching assistants: see Canvas.

Email policy: Due to large volumes of emails the instructor receives daily, the instructor may be unable to respond individual emails on time. *Please use email for confidential and personal matters only.* Please use the online **Piazza discussion board** on Canvas to discuss course materials.

Text: There is no suitable textbook at this level. Therefore, the lecture notes posted on Canvas will define the course materials. Some **references** are listed at the end, which can be freely accessed online via the UBC library. Please also read “**Unit summaries**” posted on Canvas, which may serve as “mini-text”.

Prerequisite: STAT 200 (or similar introductory statistics course)

Co-requisite: MATH/STAT 302 (or similar introductory probability course)

Lecture format: All lectures are in-person. Lecture slides will be posted on Canvas in advance. We will fill in many details and gaps in the slides during the class and post them on Canvas after class within a day or two (see “**Post-lecture marked slides**” on Canvas). Most lectures will involve **iClicker questions**. Some classes will involve **in-class activities**.

Lab Info: Labs start in the *second week* of class, in-person. Lab assignments start in the *third week of class*. You should attend the lab session you registered. Typically, there will be a small, for-credit exercise for each group to submit online on Canvas by

11:59pm on Fridays.

Each group should submit just one report. Each group will consist of 3–5 students, assigned by your TAs. The group members should stay the same after Week 3. Each group member should take turn to serve as the group leader. *You should clearly indicate the group members (and their contributions to the assignments) and group leader on each submitted group assignment.* Those who do not contribute to a lab assignment will receive no credits for that assignment. No late assignment will be

accepted. The lowest lab group assignment score will be dropped. Please see Canvas for more details.

Homework: Homework assignments are to be completed via the WeBWorK online homework system (access via Canvas). WeBWorK starts in the *third week* of class. You should complete these WeBWorK assignments individually and independently. There will be roughly six homework assignments, typically due on

Sundays by 11:59pm.

The schedules of these assignments will depend on lecture schedules which may be adjusted throughout the term. Please see Canvas for more details. You have at least one week to complete each WeBWorK assignment. No late homework will be accepted. No credits will be given for missing homework. The lowest Webwork assignment score will be dropped.

iClicker: We will be using iClicker in almost every lecture class. You will be graded on *both participation and performance* (50% each). The three lowest iClicker marks will not be counted.

Piazza discussion board: We will use the Piazza online platform (access via Canvas) to allow students, TAs, and the instructor to discuss course materials. In particular, queries about course materials should be posted to Piazza, not emailed to a TA or the instructor. The TAs and the instructor will be spending time moderating and posting to Piazza, if the questions cannot be answered by students. **Students are strongly encouraged to answer questions on Piazza** (answers by students will be checked by the TAs or instructors and may be revised if necessary). **The top 5% students who contribute the most on Piazza will get 2 bonus points on their final grades** (e.g., your final grade will be 90% if your actual grade is 88%, plus possible references). *Please do not post answers to WebWork assignments on Piazza.*

Announcements: Class announcements will be sent via emails. Please check your emails regularly.

R software: We will use software R frequently in class/lab to illustrate the basic ideas. You will also need R to complete some WeBWorK questions. If you are unfamiliar with R, please learn the basics as soon as possible. TAs will review R basics in the labs. *R code will not be tested in the exams directly, but many lecture/lab materials contain R code and outputs, and it is important to understand these materials in R (these will be tested in the exams).*

Exams: There will be a midterm exam and a final exam – both are **in person**. The midterm exam will be on

Friday, October 24, 2:00pm – 3:00pm, in class.

Final exam information should be available sometime in October. *No makeup exams.* If you miss a midterm with good reasons (e.g., sick), the midterm weight will be transferred to your final exam. If you miss the final exam with good reasons, you have to formally apply for a deferred final exam through your Faculty (e.g., Faculty of Science). Two sample midterm and final exams (with solutions) will be posted on Canvas about a week before the exams. Please see Canvas for more details about exams.

Evaluation: Your final grade will be the higher one from the following two weighting schemes:

Scheme I: iClicker: 10%, Webwork: 10%, lab: 5%, midterm: 25%, final exam: 50%.

Scheme II: iClicker: 10%, Webwork: 10%, lab: 5%, midterm: 20%, final exam: 55%.

The weights may be adjusted if necessary.

Lecture topics:

1. Fundamentals of random sampling and inferences about populations; review of applicable material from introductory statistics.
2. Ratio and regression estimation; estimation in domains.
3. Stratified sampling.
4. Cluster sampling.
5. Sampling weights; biased sampling.
6. Nonresponse, missing data
7. Additional topics if time allows.

References:

- Lohr, S.L. (1999 1st ed., 2010 2nd ed.) Sampling: Design and Analysis. Duxbury Press.
- Lumley, T. (2010) Complex Surveys: A Guide to Analysis Using R. Wiley.
- Rao, P.S.R.S. (2000) Sampling methodologies with applications. Chapman & Hall.