STA 304H1F / 1003HF - Surveys, Sampling and Observational Data / Sample Survey Theory

Section L0101, Fall 2018 (September 7 to December 5)

Classes: Wednesdays 13:10-14:00hrs and Fridays 13:10-15:00hrs in **ES 1050**, except Reading Week (Nov. 5-9)

Course website: Available through https://q.utoronto.ca (Quercus)

Instructor: Dr. Shivon Sue-Chee (**E-mail:** shivon.sue.chee@utoronto.ca)
Office hours: Times/days are to be decided (TBD) in **EP 104, Stewart Building**

Teaching Assistants:
Office hours: TBD in **SS 623, basement of Sid Smith Building**

Course content

This course teaches mathematical and statistical reasoning behind sampling, aspects of inference from surveys, and the interplay with observational studies. In addition to the topics listed in the calendar description, I will include discussion of current studies reported in the news.

The undergraduate calendar description is:

> Design of surveys, sources of bias, randomized response surveys.
> Techniques of sampling; stratification, clustering, unequal probability selection.
> Sampling inference, estimates of population mean and variances, ratio estimation.
> Observational data; correlation vs. causation, missing data, sources of bias.

Pre-requisite

ECO220Y1/ECO227Y1/GGR270Y1/PSY201H1/SOC300Y1/STA220H1/STA255H1/STA261H1/STA248H1/EEB225H1
Exclusion: STA322H1

Textbooks

- *Elementary Survey Sampling, 7th edition* by Scheaffer, Mendenhall, Ott and Gerow (Brooks/Cole 2012)
  We will cover most of Chapters 1 through 5, and selected parts of Chapters 6 through 11.

- *Sampling: Design and Analysis, 2nd edition* by Sharon Lohr (Duxbury 2010)
  This text is highly recommended.

Some Additional References

1. Survey Methodology, 2nd edition by Groves, Fowler, Couper, Lepkowski, Singer and Tourangeau (Wiley 2009)

2. Designing Surveys: A Guide to Decisions and Procedures, 3rd edition by Blair, Czaja and Blair (Sage 2014)

3. Design of Observational Studies by P. R. Rosenbaum (Springer 2010). UofT link to electronic copy: http://go.utlib.ca/cat/7890274

4. Mathematical Statistics and Data Analysis, 3rd edition by John Rice (Brooks/Cole 2007)

Evaluation

	Weight	Due Date	Time	Location
Assignment 1	4.5%	Thursday, September 27	10 pm	Submit online
(Weekly) Summaries	2.5%	TBA		Submit online
Term Test 1	18%	Wednesday, October 17	13:10-14:00hrs	TBA
Assignment 2	5%	TBA		Submit online
Assignment 3	7%	TBA		Submit online
Term Test 2	18%	Wednesday, November 21	13:10-14:00hrs	TBA
Final Exam	45%	Between December 8-21	(3 hrs)	TBA

Graduate students will be given the opportunity for extended learning and will be alternatively assessed. More information will be given in lecture or by email communication.

Students will be required to submit hand-written, partial summaries of the course content into Crowdmark via Quercus, on a (roughly) weekly basis beginning from September 24. They are to foster consistent student engagement and preparation of personal aid sheets. Late submissions will not be allowed.

The assignments will each be of a practical nature, for which the use R will be required. Assignments are to be submitted online into Crowdmark by 10pm on the due dates. Late assignments will be accepted but subject to a 20% penalty per day late. Late submissions will not be allowed beyond 48 hours of the due date.

The test will be written in locations to be announced (TBA). You will not need to know R syntax on the test and exam, but you will need to interpret output from R.

Non-programmable, scientific calculators are permitted on the test and exam. Calculators on phones and other devices equipped with remote access will not be permitted during the tests or final exam. **A one-sided, handwritten 8-1/2" x 11" aid sheet is allowed in the test (two-sided on the final exam).**

Re-grading Policy
Any requests to have marked work re-evaluated must be made in writing within one week of the date the work was returned to the class. The request must contain a justification for consideration. Be sure to include your official name, student number and/or paper number for identification purposes.

Homework
Practice problems from the textbooks will be posted in the lecture notes and some may be discussed in class. They are to help you prepare for the tests and exam and are not to be handed in. Solutions will not be posted. However, additional help will be available through TA and Instructor office hours and the class Piazza discussion forum.

Missed Test Policy
If a test is missed for a valid reason, you must submit proper (original, complete and appropriate) documentation in person within one week of the test to the instructor. If documentation is not received in time, your test mark will be zero. If the (missed) test documentation is validated, the test's weight will be shifted to the final exam.
If both tests are missed for valid reasons, an online makeup test will be assigned. The makeup test will cover material from both tests and will be worth 7%; the remaining weight of the tests will be shifted to the final exam.

Computing
This course does not require advanced computing, but some calculations are necessary. You are welcome

to use a programmable calculator, or the statistical computing package of your choice. The textbook web site provides some Excel macros for the examples in the text, and Appendix B gives SAS macros as well. I will use the R computing package, and provide sample codes in lectures. Additional help with R will be provided in office hours or via the discussion forum.

R is freely available for download at http://cran.r-project.org for Mac, Windows and Linux operating systems. If you wish to use R at UofT, you will need to sign up for a CQUEST account. To find out more, go to http://www.cquest.utoronto.ca.

Course website
The course website is available through the new Quercus Management Engine via q.utoronto.ca. The undergrad- STA304 L0101 and grad-STA1003 L0101 sections are grafted into one course in Quercus as STA1003. It will be regularly updated with lecture notes, assignments, quizzes and readings. Quercus will also be used for announcements and your grades. Please turn on email notifications to receive announcements, and emails from me if urgent matters arise.

Online Discussion Board
This term you will have the option to use Piazza for class discussion. If you decide not to use Piazza it will not disadvantage you in any way, and will not affect official University outcomes (e.g., grades and learning opportunities). If you choose not to opt-into Piazza then you can ask questions or discuss course material with the instructor or TAs during office hours.

Be sure to read Piazzas Privacy Policy and Terms of Use carefully. Take time to understand and be comfortable with what they say. They provide for substantial sharing and disclosure of your personal information held by Piazza, which affects your privacy. If you decide to participate in Piazza, only provide content that you are comfortable sharing under the terms of the Privacy Policy and Terms of Use.
The Piazza system is highly catered to getting you course material help fast and efficiently from classmates, the TA, and the instructor. Rather than emailing questions, I encourage you to post your questions on Piazza. To sign up for the discussion forum go to the link:

http://piazza.com/utoronto.ca/fall2018/sta3041003

This discussion forum will be shared with the L0201 Fall section of STA304/1003. Moderation of the forum is subject to TA availability. Further details will be announced later.

Communication
In general, I am not able to answer questions about the course material by e-mail. Students are encouraged to attend lectures, Instructor and/or TA office hours, or post questions about the course material on the discussion board. E-mail is appropriate for personal matters only. Use your utoronto.ca or mail.utoronto.ca account. I will generally answer e-mail within one business day.

Accessibility Needs
The University of Toronto is committed to accessibility. If you require accommodations for a disability, or have any accessibility concerns about the course, the classroom, or course materials, please contact Accessibility Services as soon as possible at accessibility.services@utoronto.ca or http://www.studentlife.utoronto.ca.

Academic Integrity
You are responsible for knowing the content of the University of Toronto's Code of Behaviour on Academic Matters at http://www.artsci.utoronto.ca/osai/students. If you have any questions about what is

or is not permitted in this course, please do not hesitate to contact me.

Need additional help?
Here are some options:

- Try posting on the Piazza discussion forum.

- Join (or create) a STA304/1003 UofT Recognized Study Group:
  http://www.studygroups.artsci.utoronto.ca/

- Visit the instructor or teaching assistants during office hours

- Email the instructor in cases of emergencies or personal matters

Your responsibility
The classroom sessions for this class are designed to actively engage you in the course material. I hope you'll find them interesting, challenging, and fun, and an excellent opportunity to truly learn the material. In order for these sessions to be effective, coming prepared, by learning about the week's concepts through the textbook, is essential.