# Introduction to Quantitative Methods in Sociology

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**Office Hours:** Fridays, 1:30-3:30pm (online)

**Teaching Assistants:**

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**Class:** LEC0101: Mon, 10:10am-12pm

Delivery mode: (first 2 weeks asynchronous); in person – SS1071

Required applications: Quercus

**Tutorials:** FE36 – 725 Spadina - basement
TUT0401: Thu, 9am-10:30am
TUT0501: Thu, 10:30am-12pm
TUT0601: Thu, 12:30am-2pm
**Location:** FE36 – 725 Spadina – basement

**Class website:** https://q.utoronto.ca

## Course Description and Aims

This course is designed to introduce statistical methods to students majoring in sociology. The class focuses on fundamental statistical concepts and on the *application* of basic statistical techniques. You are expected to be familiar with and apply algebraic operations, but the course will avoid advanced mathematical concepts and proofs. We will start by introducing the building blocks of statistics: variables, levels of measurement, and probability distributions. We will then learn how to use quantitative data from samples to estimate characteristics of populations, test whether the estimates differ across subpopulations, and make inferences about relationships between two or more observed variables.

After taking this course you should be able to:

1. *Describe* how researchers use samples to make inferences about populations.
2. *Identify* important assumptions that underlie basic statistical analyses reported in the scholarly literature and in the news.
3. *Use* basic statistical techniques to (a) describe key characteristics of samples, (b) infer population means and proportions from sample data, (c) compare means and proportions of two or more groups, (d) conduct a test of independence on a contingency table, (e) describe the association between two variables, and (d) estimate the linear relationship between two or more variables.
4. *Gain familiarity* with the SPSS statistical software package by practicing the techniques we cover in class.
5. *Begin to develop an intuition* about how the concepts and techniques you learn in this class would generalize to accommodate more sophisticated analyses.

## Learning Components and Course Requirements

**Lectures:**

Weekly lectures are on Mondays, 10:10am-12pm. To comply with University guidance, **the first two weeks of lecture will be delivered asynchronously**. Subsequent lectures and tests will be in-person (SS1071). Lectures will place special emphasis on

working through example problems. The responsibility of being aware of what the professor says in lecture materials (including administrative announcements) rests with the student.

**Required Text (*note the edition*):**

Healey, Joseph F., Steven G. Prus, and Riva Lieflander. 2018. Statistics: A Tool for Social Research, **4th Canadian Ed**. Nelson Education Ltd.

The textbook is available in the U of T bookstore. **IMPORTANT**: Whether you purchase a hard copy ($131.95) or online-only ($64.95), you will receive a password for MindTap, which will give you access to the electronic version of the book, the online system this class uses for homework assignments, and other electronic resources. Follow the instructions posted on our Quercus site to enroll in the correct MindTap course.

Link to purchase online-only version: https://tinyurl.com/txefebr4

**Calculator:**

You will need a calculator to complete homework assignments and for use during tests. A scientific calculator capable of doing basic algebraic functions is sufficient (you do not need a graphing calculator).

**Tutorials:**

A new tutorial video will be posted on Monday of each week (except during the Midterm week). The videos will provide all the information you need to complete the Lab Assignments. Lab sessions will provide an opportunity to ask questions and get help from your TA. The lab sessions for this class will be held in the computer lab located in the basement of the Sociology Department building (FE36; 725 Spadina Ave). The first two tutorial sessions (September 16th and 23rd) will be online.

The main purpose of the tutorials is to introduce you to SPSS, a statistical software package widely used in academic research and in industry. The videos will guide you through exercises to practice applying the statistical techniques we cover to actual data. Most of the exercises are from your textbook, so **you will need to bring your textbook to lab**.

In addition, there will be three lab assignments during the course of the semester. You will have time to work on these assignments during tutorial sessions, and we encourage you to try to finish all lab work during this time. If you find yourself needing extra time to complete the lab assignments, however, you can use computers in the Robarts Map and Data Library (MDL), which have SPSS installed. Currently, this computer lab is accessible online only via Remote Desktop. Please follow the information at the following link to access MDL computer: (https://mdl.library.utoronto.ca/technology/remote-computer-lab). You will also be able to access SPSS on Sociology lab computers through Remote Desktop. Instructions on accessing this resource will be shared on Quercus during the first week of the semester.

Students must submit the lab assignments through Quercus on or before the due date. **A penalty of 5% points per work day will be assessed for late work.**

Tutorials also provide an opportunity to dialogue with teaching assistants and with fellow classmates about concepts that are unclear to you. The lab/tutorial sessions immediately preceding the mid-term test and the final exam will be used exclusively as a review session; there will be no SPSS lab work during that week. There will be no lab/tutorial during weeks in which a test is given.

**Discussion board participation:**

We will keep an active class discussion board on Quercus. You are **required to contribute to the discussion board at least twice before the week preceding the midterm test (Oct. 25th) and twice after the midterm.** Your contribution may take one of multiple forms. You may post a question about course material or about something outside the class that relates to course material. Alternatively, you can elaborate or answer someone else's question. Explaining something does not only help the person who asks the question, but research shows that the exercise of explaining also helps the explainer understand the content more deeply and retain it better.

**Weekly homework assignments:**

To reinforce course material, students will be required to complete weekly homework assignments. These assignments will be available at 10pm each Monday and can be completed until 11:45pm each Friday. No homework will be assigned during

the week of the mid-term test. **To complete the homework, you must first create an online account through the MindTap website.** Follow the instruction on Quercus to access the course's MindTap page.

Each week a homework assignment is given, you will log in using the ID and password you created during online registration. The website will contain an assignment that corresponds with the textbook readings for the week. After answering most questions, you will receive immediate feedback on your performance—i.e., you will know which questions were correct and which ones were incorrect. Most questions allow a total of three takes. Your mark for the assignment will be based on the highest of the three attempts. Each individual homework assignment is worth only a small fraction of your final mark (1.5%), so missing one or two homework assignments will not have a drastic impact on the overall mark calculation.

### Mid-term test and final exam:

A mid-term test will be given and administered in-person on October 25, 2021.

A final assessment will be given during the End of Term Assessment period in December. **The final assessment will be administered online, allowing you to completed it remotely.** This assessment is cumulative—it will cover material from 7-12, but also from the material covered earlier in the semester. The assessment will have a similar format to the mid-term test, consisting of multiple choice and open-ended questions.

## Evaluation Components

| | Number of occasions | Percent value | Total percent of final mark |
|---|---|---|---|
| **Syllabus quiz & discussion participation** | Throughout semester | 5% | 5% |
| **Homework assignments** | 10 | 1.5% each | 15% |
| **Lab assignments** | 3 | 10% each | 30% |
| **Mid-term test** | 1 | 25% each | 25% |
| **Final Assessment** | 1 | 25% | 25% |
| | | | 100% (total) |

## Keys to Success

### Reading and lectures:

It is the rule and not the exception to find new material confusing on first reading. The philosopher René Descartes once wrote that you need to read a book three times to understand it. The point is that every additional exposure to the material deepens your understanding of the content. After a first reading of a chapter you will have a broad sense of its contents. Having this exposure will enable you to get much more out of the lecture. The lecture will reinforce the content that you read and you will be able to anticipate the parts of the lecture that require a little extra attention and ask relevant questions. To be successful in this class, you should come to the lecture having read the assigned chapters. Even a skim of the relevant pages is better than no exposure, if you are running short on time.

### Practice, Practice, Practice:

Contrary to some popular beliefs, mathematical competence is not intrinsic, but, like any skill, it improves with practice. Do not be intimidated if the ideas in the textbook do not come naturally—they don't! In statistics, as in any other class, practice makes perfect. Doing example problems distills the abstract concepts, so that you can more clearly see how they fit together. This is why the course will have weekly homework assignments designed to reinforce the content from the book and lectures. It is in your long-term interest to do these diligently and ask questions as they arise. The TAs are available for help during tutorials and I welcome your questions during my office hours.

# Communication and Quercus

**Email:**

Please use your U of T email address to communicate with me about **personal matters**, or to communicate with the TAs. You can expect us to respond to your emails within 24 hours, M-F 9am-5pm. Here's a couple of important points about email communication:

- Please note that the instructor and TA will not respond to emails about issues that are clearly specified in the syllabus (e.g., due dates, office hours times).
- Please use the discussion board to ask questions about course content (see below).
- Address your questions about tutorials to your TA.
- Requests for make-up tests and other accommodations should be sent to the course instructor (Professor Dokshin), not the TA.
- All emails should include the course code SOC202 in the subject line, and be signed with the student's full name and student number.

**Quercus website:**

The University of Toronto Quercus system will contain the course syllabus, assignments, discussion board, and course announcements.

**Discussion boards:**

You are expected to actively participate in the online discussion (see above).  Questions about course content should be posted on the Quercus discussion board. The instructor will actively monitor the discussion board and answer questions either in text or in short videos, depending on the question. **Please use the separate "Course Logistics" board for questions that do not pertain to course content, including trouble with technology (remote desktop, MindTap etc).**

**Office hours:**

The instructor will hold online office hours through Zoom.

# Late Work and Make-up Tests

**Lab assignments:**

Lab assignments must be submitted online, through the Quercus website. See the course schedule (below) for the due dates of the three lab assignments. Late submission will result in a 5% deduction for each day the assignment is late (starting with the day the assignment is due, up to a maximum of 50% of the grade) unless you have a legitimate, documented reason beyond your control. Notify the Professor and your TA promptly, if you intend to submit your assignment late to arrange for the submission of the lab assignment with the necessary documentation. It is the student's responsibility to ensure that submitted document files are not corrupted. **If the submitted file cannot be opened, the assignment will be treated as incomplete.**

**Homework:**

Homework assignments can be completed from anywhere with an internet connection and anytime between 10pm on Mondays and 11:45pm on Fridays, so there are no make-ups offered for these assignments.

**Make-up assessment:**

Students who miss an assessment will receive a mark of zero unless reasons beyond their control prevent them from taking it. Students wishing to make-up the missed assessment must email the Professor promptly and provide appropriate documentation (see details below).

**Documentation:**

If you are unable to turn in an assignment/or miss the test for medical reasons, you will need to **email me** the instructor, not the TA, **and also** declare your absence on ACORN for that day. Further, you must present one of the following documents to request an extension or another consideration:

1. **College registrar's letter:**
   o If a **personal or family crisis** prevents you from meeting a deadline, have your college registrar email me directly (it is a good idea anyway to advise your college registrar if a crisis is interfering with your studies).
2. **Letter from Accessibility Services**
   o This documentation is useful for ongoing medical issues that require special accommodation.

## Grade Appeals

The instructor and teaching assistants do their best to mark work fairly, consistently, and accurately. Nevertheless, one of us may unintentionally err in our marking. If you believe that your test or lab assignment has been mismarked, please adhere to the following rules

- For basic mathematical errors, simply alert one of the TAs about the error.
- In the case of more substantive appeals, **you must wait at least 24 hours** after receiving your mark. If you wish to appeal, please submit a thorough written explanation to Professor Dokshin of why you think your mark should be altered. If your appeal is deemed appropriate, the entirety of your test/assignment will be re-graded. Please note that upon re-grade your mark may go down, stay the same, or go up. **You have 30 days after receiving a mark to appeal it.**

## Academic Integrity

Academic integrity is fundamental to learning and scholarship at the University of Toronto. Participating honestly, respectfully, responsibly, and fairly in this academic community ensures that the U of T degree that you earn will be valued as a true indication of your individual academic achievement, and will continue to receive the respect and recognition it deserves.

Familiarize yourself with the University of Toronto's Code of Behaviour on Academic Matters (http://www.governingcouncil.utoronto.ca/policies/behaveac.htm). It is the rule book for academic behaviour at the U of T, and you are expected to know the rules. Potential offences include, but are not limited to:

- Obtaining or providing unauthorized assistance on any assignment including:
  o working in groups on assignments that are supposed to be individual work;
  o having someone rewrite or add material to your work while "editing";
  o crowdsourcing assignment answers through Facebook or another forum.
- Lending your work to a classmate who submits it as his/her own without your permission.
- Using or possessing any unauthorized aid, including a cell phone.
- Looking at someone else's answers.
- Letting someone else look at your answers.
- Misrepresenting your identity.
- Submitting an altered test for re-grading.
- Falsifying or altering any documentation required by the University, including doctor's notes.
- Falsifying institutional documents or grades.

**Plagiarism software policy:**

All your written will be checked through *Ouriginal*, a plagiarism detection tool, which is now embedded in Quercus.

Students agree that, by taking this course, all required papers may be subject to submission for textual similarity review to *Ouriginal* for the detection of plagiarism. All submitted papers will be included as source documents in the *Ouriginal* reference database solely for the purpose of detecting plagiarism of those papers. The terms that apply to the University's use of the *Ouriginal* service are described on the *Ouriginal* web site.

Assignments not submitted through *Ouriginal* will receive a grade of zero (0 %) unless students instead provide, along with their exams, sufficient secondary material (e.g., reading notes, outlines of the paper, rough drafts of the final draft, etc.) to

establish that the exam they submit is truly their own. The alternative (not submitting via *Ouriginal*) is in place because, strictly speaking, using *Ouriginal* is voluntary for students at the University of Toronto.

## Accessibility Needs

The University of Toronto is committed to accessibility. If you require accommodations or have any accessibility concerns, please visit http://studentlife.utoronto.ca/accessibility as soon as possible.

# Course Schedule

| Week | Class | Tutorials | Topic & Reading | Assignments Due |
|------|-------|-----------|-----------------|-----------------|
| 1 | 13-Sep | 16-Sep | Introduction, level of measurement<br><br>Reading: Basic Mathematics Review; Chapter 1 | Syllabus/start of semester quiz due on Fri, 18-Sep, 11:45pm<br><br>HW 1 due on Fri, 17-Sep, 11:45pm |
| 2 | 20-Sep | 23-Sep | Descriptive statistics, measures of central tendency and dispersion<br><br>Reading: Chapter 2 & Chapter 3 | HW 2 due on Fri, 24-Sep, 11:45pm |
| 3 | 27-Sep | 30-Sep | More dispersion, the normal curve, z-scores, estimating probabilities<br><br>Reading: Chapter 4 (Re-read Ch. 3 p. 96-102 about standard deviation) | HW 3 due on Fri, 1-Oct, 11:45pm |
| 4 | 04-Oct | 07-Oct | Sampling, sampling distributions, and introduction to estimation<br><br>Reading: Chapters 5 | HW 4 due on Fri, 8-Oct, 11:45pm<br><br>Lab Assignment 1 due on Fri, 8-Oct, 11:45pm |
| | | | **11-Oct: University closed for Thanksgiving—No lecture or tutorial** | |
| 5 | 18-Oct | 21-Oct | Estimating means and proportions from sample data<br><br>Reading: Chapter 6 | HW 5 due on Fri, 22-Oct, 11:45pm |
| 6 | 25-Oct | No tutorial | Midterm 1 | No homework |
| 7 | 01-Nov | 04-Nov | Introduction to hypothesis testing<br><br>Reading: Chapter 7 up to (not including) section 7.5, section 7.10 and Chapter 10 | HW 6 due on Fri, 5-Oct, 11:45pm |
| | | | **Reading week—No Class** | |
| 8 | 15-Nov | 18-Nov | Two sample hypothesis tests<br><br>Reading: Chapter 11 up to (not including) section 11.4 | HW 7 due on Fri, 19-Nov, 11:45pm<br><br>Lab Assignment 2 Due on Fri, 6-Nov, 11:45pm |
| 9 | 22-Nov | 25-Nov | Analysis of Variance (ANOVA)<br><br>Reading: Chapter 12 | HW 8 due on Fri, 26-Nov, 11:45pm |
| 10 | 29-Nov | 02-Dec | Independence/association, measures and hypothesis tests for nominal and ordinal data<br><br>Reading: Chapter 7 (section 7.5 and onward, but not 7.10) and Chapter 8 | HW 9 due on Fri, 3-Dec, 11:45pm |
| 11 | 06-Dec | Remote | Hypothesis testing and measures of association for interval-ratio variables<br><br>Reading: Chapter 13 | HW 10 due on Fri, 10-Dec, 11:45pm |
| 12 | 09-Dec<br><br>Make-up for Thanksgiving | Remote | Introduction to multiple regression<br><br>Reading: Chapter 14 | HW 11 due on Fri, 10-Dec, 11:45pm<br><br>Lab 3 Assignment Due on Fri, 10-Dec, 11:45pm |

| Week | Class | Tutorials | Topic & Reading | Assignments Due |
|------|-------|-----------|-----------------|-----------------|
| **FINAL ASSESSMENT: Date/Time TBA** | | | | |