

**Carleton University**  
**The Department of Sociology and Anthropology**  
**SOCI 3002B Inferential Statistics in Social Research**  
**Course Outline: Winter 2026**

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**Lectures and Computer Lab Times:** 8:35am - 11:25am Thursdays

**Method of Delivery:** in person, Carleton University campus

**Office Hours:** available by appointment either in person or over Zoom

**Important Dates for this Course:** The first class is on Jan. 8, 2026 no class on Feb. 19, and the last class on April 2, 2026.

**Prerequisites:** SOCI 3000 or CRCJ 3001 and third year standing.

**Course Description**

The purpose of this course is to provide students with an introduction to intermediary level statistical techniques for sociological data analysis. The course will focus on the theories and logics of inferential statistics, bivariate and multiple regression analysis and their applications in sociological research. Students will learn the course material through lectures, readings, problem solving and participation in the computer laboratory sessions. In each class, there are normally a two-hour lecture and a one-hour computer lab or tutorial. A major objective of the course is to give students a systematic understanding of the logic and reasoning of the inferential statistics and the "hands-on" computer experience in analyzing sociological data using the Statistical Package for the Social Sciences (SPSS). Students should be able to deal with the materials in this course if they attend all the lectures and computer labs, approach the assigned readings systematically, and are sure to ask questions on any points that puzzle them.

**Learning Outcomes:**

- (1) Students will have a good understanding of bivariate and multivariate techniques for analysis of sociological data.
- (2) will obtain the knowledge and understanding of the theory and logic underlying inferential statistics, and

(3) will be able to use the Statistical Package for Social Sciences (SPSS) to analyze sociological survey data.

### **Diversity and Inclusion Statement:**

In this course, you are expected to learn from your texts, your teacher and from one another. This requires striving towards understanding each other but it does not imply striving towards finding agreement. Our class will be racially, religiously, politically, culturally, generationally, and economically diverse. We will be of different gender identifications and sexual orientations and our lived experiences and reactions to the course material will reflect this diversity. Sharing our perspectives and interpretations on the course material will enhance everyone's learning experience and you are encouraged to openly express any disagreements with the authors you will read, with your fellow classmates, or with the Professor in the different participation fora that are available for this course. ***However, you are expected to conduct yourself in such a way that shows the utmost respect to others who may – or may not – share your views. Derogatory comments and hateful behavior towards others (and their views) will not be tolerated.***

### **Course Requirements & Methods of Evaluation**

In accordance with the Carleton University Undergraduate Calendar Regulations, the letter grades assigned in this course will have the following percentage equivalents:

A+ = 90-100	B+ = 77-79	C+ = 67-69	D+ = 57-59
A = 85-89	B = 73-76	C = 63-66	D = 53-56
A - = 80-84	B - = 70-72	C - = 60-62	D - = 50-52
F = Below 50	WDN = Withdrawn from the course	DEF = Deferred	

#### **(1) Assignments:**

(a) There will be three assignments. Each assignment will involve some calculations by hand and by computer using SPSS. Please note that all assignments must be submitted to the drop box on Brightspace course webpage. ***Students are required to retain a copy of each assignment that is submitted.***

#### **(b) Value of the Assignments:**

Assignment #1 Value: 15%;  
Assignment #2 Value: 15%;  
Assignment #3 Value: 15%;

#### **Due Dates**

February 11, 2026  
March 4, 2026  
April 2, 2026

(c) Total value: 45%.

**(2) Mid-Term Examination**

- (a) Time: 8:35am-11:25am, March 5, 2026, an open book exam, in person in classroom,
- (b) Duration: 2 hours
- (c) Content: All material covered before Feb. 26, 2026
- (d) Value: 20% of the total final grade
- (e) Please note that there will be no opportunity to write a missed exam. If the exam is missed due to illness or other reasons, the final exam will be weighted as 55 % of the total final grade.

**(3) Final Examination**

- (a) Time: scheduled by Carleton University Scheduling Office during the exam period of April 11-23.
- (b) Duration: 3 hours
- (c) Content: All material covered in the course
- (d) an open book exam, in person
- (e) Value: 35%

**Summary of Course Evaluation and Due Dates**

Evaluation Components	Value	Due Dates
Assignment#1	15%	February 12, 2026
Assignment#2	15%	March 5, 2026
Assignment#3	15%	April 2, 2026
Mid-term exam	20%	March 5, in person and open book, in classroom
Final examination	35%	Will be scheduled by the registrar's office; an open book exam.

**Required Texts**

- (1) Healey J., S. Prus and Lieflander, *Statistics, A Tool for Social Research*. Toronto: Nelson Education, 5th Canadian edition, 2023. (The textbook can be purchased at Carleton Bookstore; paperback: \$106, and ecopy: \$76. The prices may change. A used copy of the text can also be used, but has different exercise questions and page numbers, and different survey datasets).

**Important Conventions in This Course**

- (1) Except in the cases of documented illness, or extenuating circumstances brought to the attention of the instructor at least one day before the due date of an assignment, there will be a penalty for a late assignment of 10% of the assigned grade per day.

(2) Students who are unable to write the mid-term examination because of illness or other circumstances beyond their control must contact the instructor no later than five working days after the original examination. In this case, the final exam will be weighted as 55% of the total grade.

### **Tentative Course Schedule**

Note: The following schedule may be revised, and some topics may be dropped or added.

#### Topic and Readings

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#### **Topic 1: Introduction to the Course and Brief Review of Basic Statistical Concepts (Jan. 8, 2026)**

- The mean, variance, and the standard deviation (Readings: Healey, Prus and Lieflander's Chapter 3)

#### **Topic 2: Review of Normal Curve and Normal Distribution (Jan. 15)**

(Readings: chapter 4)

#### **Topic 3: Elementary Probability Theory (Jan. 22)**

(Reading: Class-handouts)

- (1) Introduction
- (2) Definition of probability: theoretical and empirical approaches
- (3) Formal properties of probabilities
  - The additional rules
  - The multiplicative rules

#### **Topic 4: Introduction to Statistical Inference (Jan. 28 -Feb. 5)**

(Readings: Chapter 5)

1. Random and probability sampling
2. Concept of Sampling Distribution
  - 1) Introduction
  - 2) Characteristics of a sampling distribution for the means: The Central Limit Theorem

#### **Topic 5: Statistical Estimation of Population Parameters (Feb. 12)**

(readings: Chapter 6)

- (1) Introduction

- (2) To estimate the magnitude of unobserved population parameters from sample statistics: Point estimates and Interval estimates of the means
- (3) Interpretation of interval estimate

**No Class on Feb. 19, the Winter Reading Week Break**

**Topic 6: Hypothesis Testing I (Feb. 26)**

(Readings: Chapter 10-11)

1. Introduction to Hypothesis Testing
  - 1) General hypothesis
  - 2) Working hypothesis
  - 3) Statistical hypothesis: null hypothesis and alternative hypothesis
  - 4) The process of hypothesis testing
2. T-distribution
3. The two types of errors
4. The testing statistical hypotheses
  - 1) One sample test for a means
  - 2) The one -sample test for proportions
  - 3) the two-sample case
    - (a) The two-sample test for means
    - (b) The two-sample test for proportions

**Mid-term exam, no class, March 5<sup>th</sup>**

**Topic 7: Hypothesis Testing III: Chi-Square Test (Mar. 12)**

(Readings: Chapter 7, 206-241)

**Topic 8: Simple Regression Analysis (Mar. 19-26)**

(Reading: Chapter 13, 416-450)

- (1) Equation for a regression line
- (2) Constructing a regression line
- (3) Interpretation of regression equation
- (4) The application of regression analysis
- (5) Standardized regression equation
- (6) Residual variance and standard error of estimate
- (7) Assessing explanatory power of regression equation: the R square
- (8) Association and causation
- (9) Standardized regression coefficient
- (10) Application of Regression Analysis

## **Topic 9. Introduction to Multivariate Data Analysis (Mar. 26- April 2 )**

(Reading: Chapter 14)

1. Multivariate Contingency Table Analysis
2. Multiple Regression Analysis
  - The Concept of Control
  - The Meaning of residualization and the Partial Correlation
  - Steps of residualization process (optional)
3. Calculating partial correlation
4. Application of Multiple Regression Analysis
  - 1) Partial regression coefficients
  - 2) Explained and unexplained variation
  - 3) F-test of Multiple R Square: testing the regression model.
  - 4) T-test of regression coefficients: testing for significance of a single regression coefficient.
  - 5) Differences between f-test and t-test
  - 6) Confidence intervals around the regression coefficients

## **Academic Regulations, Accommodations, Plagiarism, Etc.**

University rules regarding registration, withdrawal, appealing marks, and most anything else you might need to know can be found on the university's website, here:

<https://calendar.carleton.ca/undergrad/regulations/academicregulationsoftheuniversity/>

Carleton is committed to providing academic accessibility for all individuals. You may need special arrangements to meet your academic obligations during the term. The accommodation request processes, including information about the Academic Consideration Policy for Students in Medical and Other Extenuating Circumstances, are outlined on the Academic Accommodations website (<https://students.carleton.ca/course-outline/>). For an accommodation request, the processes are as follows:

### **Academic Accommodations for Students with Disabilities**

The Paul Menton Centre for Students with Disabilities (PMC : <https://carleton.ca/pmc/> ) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at **613-520-6608** or [pmc@carleton.ca](mailto:pmc@carleton.ca) for a formal evaluation. If you are already registered with the PMC, contact your PMC coordinator to send your **Letter of Accommodation** at the beginning of the term, and no later than two weeks before the first in-class scheduled test or exam requiring accommodation (*if applicable*).

\*The deadline for contacting the Paul Menton Centre regarding accommodation for February/March examinations is **February 1, 2026** and **March 15, 2026** for April examinations.

### **For Religious Obligations:**

Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, visit the Equity Services website: [www.carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf](http://www.carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf)

### **For Pregnancy:**

Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, visit the Equity Services website: [www.carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf](http://www.carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf)

### **For Survivors of Sexual Violence**

As a community, Carleton University is committed to maintaining a positive learning, working and living environment where sexual violence will not be tolerated, and where survivors are supported through academic accommodations as per Carleton's Sexual Violence Policy. For more information about the services available at the university and to obtain information about sexual violence and/or support, visit: [www.carleton.ca/sexual-violence-support](http://www.carleton.ca/sexual-violence-support)

### **Accommodation for Student Activities**

Carleton University recognizes the substantial benefits, both to the individual student and for the university, that result from a student participating in activities beyond the classroom experience. Reasonable accommodation must be provided to students who compete or perform at the national or international level. Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. <https://carleton.ca/senate/wp-content/uploads/Accommodation-for-Student-Activities-1.pdf>

### **Plagiarism**

Plagiarism is the passing off of someone else's work as your own and is a serious academic offence. For the details of what constitutes plagiarism, the potential penalties and the procedures refer to the section on Instructional Offences in the Undergraduate Calendar. Students are expected to familiarize themselves with and follow the Carleton University Student Academic Integrity Policy (See <https://carleton.ca/registrar/academic-integrity/> ). The Policy is strictly enforced and is binding on all students. Academic dishonesty in any form will not be tolerated. Students who infringe the Policy may be subject to one of several penalties.

## **Generative Artificial Intelligence Tools (e.g. ChatGPT)**

Unless explicitly permitted, either generally or for a specific assignment, any use of generative AI tools to produce assessed content is considered a violation of academic integrity standards. As our understanding of the uses of AI and its relationship to student work and academic integrity continue to evolve, students are required to discuss their use of AI in any circumstance not described here with the course instructor to ensure it supports the learning goals for the course.

Note: Students can also access resources related to citing Generative AI on the [MacOdrum Library website](#).

## **What are the Penalties for Plagiarism?**

A student found to have plagiarized an assignment may be subject to one of several penalties including but not limited to: a grade of zero, a failure or a reduced grade for the piece of academic work; reduction of final grade in the course; completion of a remediation process; resubmission of academic work; withdrawal from course(s); suspension from a program of study; a letter of reprimand.

## **What are the Procedures?**

All allegations of plagiarism are reported to the faculty of Dean of FASS and Management. Documentation is prepared by instructors and departmental chairs. The Dean writes to the student and the University Ombudsperson about the alleged plagiarism. The Dean reviews the allegation. If it is not resolved at this level then it is referred to a tribunal appointed by the Senate.

## **Statement on Student Mental Health:**

“As a student you may experience a range of mental health challenges that significantly impact your academic success and overall well-being. If you need help, please speak to someone. There are numerous resources available both on- and off-campus to support you. For more information, please consult <https://wellness.carleton.ca/>”

## **Emergency Resources ([on and off campus](#))**

- Crisis/Urgent Counselling Support: 613-520-6674 (Mon-Fri, 8:30-4:30)
- Suicide Crisis Helpline: call or text 9-8-8, 24 hours a day, 7 days a week.
- For immediate danger or urgent medical support: call 9-1-1

## **Carleton Resources**

- Mental Health and Wellbeing: <https://carleton.ca/wellness/>
- Health & Counselling Services: <https://carleton.ca/health/>
- Paul Menton Centre: <https://carleton.ca/pmc/>
- Academic Advising Centre (AAC): <https://carleton.ca/academicadvising/>



- Centre for Student Academic Support (CSAS): <https://carleton.ca/csas/>
- Equity & Inclusivity Communities: <https://carleton.ca/equity/>

### **Off Campus Resources**

- Distress Centre of Ottawa and Region: call 613-238-3311, text 343-306-5550, or connect online at <https://www.dcottawa.on.ca/>
- Mental Health Crisis Service: call 613-722-6914 or toll-free 1-866-996-0991, or connect online at <http://www.crisisline.ca/>
- Good2Talk: call 1-866-925-5454 or connect online at <https://good2talk.ca/>
- The Walk-In Counselling Clinic: for online or on-site service  
<https://walkincounselling.com>

### **Important Information:**

- Student or professor materials created for this course (including presentations and posted notes, labs, case studies, assignments and exams) remain the intellectual property of the author(s). They are intended for personal use and may not be reproduced or redistributed without prior written consent of the author(s).
- Students must always retain a hard copy of all work that is submitted.
- Standing in a course is determined by the course instructor subject to the approval of the Faculty Dean. This means that grades submitted by the instructor may be subject to revision. No grades are final until they have been approved by the Dean.
- Carleton University is committed to protecting the privacy of those who study or work here (currently and formerly). To that end, Carleton's Privacy Office seeks to encourage the implementation of the privacy provisions of Ontario's *Freedom of Information and Protection of Privacy Act* (FIPPA) within the university.
- In accordance with FIPPA, please ensure all communication with staff/faculty is via your Carleton email account. To get your Carleton Email you will need to activate your [MyCarletonOne account](#) through Carleton Central. Once you have activated your MyCarletonOne account, log into the [MyCarleton Portal](#).
- Please note that you will be able to link your MyCarletonOne account to other non-MyCarletonOne accounts and receive emails from us. However, for us to respond to your emails, we need to see your full name, CU ID, and the email must be written from your valid MyCarletonOne address. Therefore, it would be easier to respond to your inquiries if you would send all email from your connect account. If you do not have or have yet to activate this account, you may wish to do so by visiting <https://students.carleton.ca/>.

### **WINTER TERM 2026 – Important Dates and Deadlines**

Date	Activity
WINTER TERM 2026	
December 29, 2025	Deadline for course outlines to be made available to students registered in full winter and early winter term courses.
January 5, 2026	University reopens.
	Winter term begins. Full winter and early winter classes begin.
January 9, 2026	Last day for registration and course changes (including auditing) in early winter courses.
January 16, 2026	Last day for registration and course changes (including auditing) in full winter and late winter courses.
	Last day to withdraw from early winter courses with a full fee adjustment.
	Graduate students who have not electronically submitted their final thesis copy to Graduate Studies will not be eligible to graduate in winter 2026 and must register for the winter 2026 term.
January 23-25, January 30- February 1, 2026	Full fall and late fall term deferred final examinations will be held.
January 31, 2026	Last day to withdraw from full winter courses and the winter portion of fall/winter courses with a full fee adjustment.

Date	Activity
February 1, 2026	Last day for academic withdrawal from early winter courses.
	Last day to request Formal Examination Accommodations for Feb/Mar final examinations from the Paul Menton Centre for Students with Disabilities. Note that it may not be possible to fulfil accommodation requests received after the specified deadlines.
February 6, 2026	Last day for summative tests or examinations, or formative tests or examinations totaling more than 15% of the final grade, in early winter undergraduate courses, before the official Feb/Mar final examination period (see examination regulations in the Academic Regulations of the University section of the Undergraduate Calendar/General Regulations of the Graduate Calendar).
February 13, 2026	Last day of early winter classes.
	Last day for final take-home examinations to be assigned in early winter courses, with the exception of those conforming to the examination regulations in the Academic Regulations of the University section of the Undergraduate Calendar/General Regulations of the Graduate Calendar.
	Last day that can be specified by an instructor as a due date for term work for early winter courses.
	April examination schedule available online.
February 16, 2026	Statutory holiday. University closed.

Date	Activity
	Deadline for course outlines to be made available to students registered in late winter courses.
February 16-20, 2026	Winter break, no classes.
February 21-22, February 28-March 1, 2026	Final examinations in early winter undergraduate courses will be held.
February 23, 2026	Late winter classes begin.
February 27, 2026	Last day for registration and course changes (including auditing) in late winter courses.
March 1, 2026	Last day for receipt of applications for admission to an undergraduate degree program for the fall/winter session from applicants whose documents originate outside Canada or the United States.
	Last day for receipt of applications to Bachelor of Architecture, Bachelor of Industrial Design, Bachelor of Information Technology (Interactive Multimedia and Design), Bachelor of Music, Bachelor of Science in Nursing and Bachelor of Social Work degree programs for the fall/winter session.
	Last day for receipt of applications for admission from candidates who wish to be guaranteed consideration for financial assistance (including Carleton fellowships, scholarships and teaching assistantships) administered by Carleton University. Candidates whose applications are received after the March 1 deadline may be considered for

Date	Activity
	the award of a fellowship, scholarship or teaching assistantship (Graduate students only).
March 6, 2026	Last day to withdraw from late winter term courses with a full fee adjustment.
March 13-15, 2026	Early winter undergraduate deferred final examinations will be held.
March 15, 2026	Last day for academic withdrawal from full winter, late winter, and fall/winter courses.
	Last day to request Formal Examination Accommodations for April full winter, late winter, and fall/winter final examinations from the Paul Menton Centre for Students with Disabilities. Note that it may not be possible to fulfil accommodation requests received after the specified deadlines.
March 25, 2026	Last day for summative tests or examinations, or formative tests or examinations totaling more than 15% of the final grade, in full winter term or fall/winter undergraduate courses, before the official April final examination period (see examination regulations in the Academic Regulations of the University section of the Undergraduate Calendar/General Regulations of the Graduate Calendar).
April 1, 2026	Last day for graduate students to submit their supervisor-approved thesis, in examinable form to the department.
	Last day for receipt of applications from potential spring (June) graduates.

Date	Activity
	Last day for summative tests or examinations, or formative tests or examinations totaling more than 15% of the final grade, in late winter term undergraduate courses, before the official final examination period (see examination regulations in the Academic Regulations of the University section of the Undergraduate Calendar/General Regulations of the Graduate Calendar).
April 3, 2026	Statutory holiday. University closed.
April 8, 2026	Winter term ends.
	Classes follow a Friday schedule.
	Last day of full winter, late winter, and fall/winter classes.
	Last day for final take-home examinations to be assigned, with the exception of those conforming to the examination regulations in the Academic Regulations of the University section of the Undergraduate Calendar/General Regulations of the Graduate Calendar.
	Last day that can be specified by an instructor as a due date for term work for full winter, late winter, and fall/winter courses.
April 9-10, 2026	No classes or examinations take place.
April 11-23, 2026	Final examinations in full winter, late winter, and fall/winter courses will be held. Examinations are normally held all seven days of the week.
April 23, 2026	All final take-home examinations are due on this day, with

Date	Activity
	the exception of those conforming to the examination regulations in the Academic Regulations of the University section of the Undergraduate Calendar/General Regulations of the Graduate Calendar.
May 1, 2026	Last day for receipt of applications for undergraduate internal degree transfers to allow for registration for the summer session.
May 15-27, 2026	Full winter, late winter term, and fall/winter deferred final examinations will be held.
June 1, 2026	Last day for receipt of applications for admission to an undergraduate program for the fall/winter session except for applications due March 1.
June 15, 2026	Last day for receipt of applications for undergraduate degree program transfers for the fall term.