

SOCIAL STATISTICS WINTER 2024

SDS 250R / SWREN 250R

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CLASS SCHEDULE

Section	Location	Time	Instructor(s)
SDS 250R 001 [LEC]	REN 2106	Mondays & Wednesdays 10 a.m. - 11:20 a.m.	Hsiao D'Ailly hsiao.dailly@uwaterloo.ca
SWREN 250R 001 [LEC]		Mondays & Wednesdays 10 a.m. - 11:20 a.m.	
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INSTRUCTOR & TA (TEACHING ASSISTANT) INFORMATION

Instructor: Dr. Hsiao d'Ailly

Office: REN 1606

Office Phone: 519.884.4404 ext. 28643

Office Hours: Tuesdays 1:30-2:20 & Wednesdays 11:30-12:20 or by appointment

Email: hdailly@uwaterloo.ca

COURSE DESCRIPTION

Calendar Description for SDS 250R

This introductory level statistics course will emphasize the collection, manipulation, descriptive presentation, and statistical analysis of social research data. [Note: SWREN 250R is available only to students who have been given conditional admission to the BSW program; such students must have already completed their first undergraduate degree.]

Prereq: Level at least 2A; Not open to Math. Antireq: ARTS 280, ECON 221, ENVS 278, GBDA 205, ISS 250A/B, ISS 250R, KIN 232, LS/SOC 280, PSYCH 292, REC 371, SMF 230, STAT 202, 206, 211, 221, 231, 241

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Prereq: Level at least 2A; Not open to students in the Faculty of Mathematics

The primary goal of this course is to help students become informed consumers of quantitative information in social science research. Emphasis will be placed on understanding basic principles of statistics and learning when and how to apply them.

LEARNING OUTCOMES

By the end of this course students should be able to:

explain how statistics are used in social science research to organize quantitative information, test hypotheses and report research findings
identify variables in a data set and the level of measurement for each variable
use various descriptive statistics, tables, and graphs to summarize quantitative information, including data that you collect yourself, or data presented to you through different sources
describe the logic of hypothesis testing procedures and the use of inferential statistics in social research
use appropriate statistics to answer different research questions and test different hypotheses involving one or two variables
read with ease basic quantitative information, including tables and graphs, and research "findings", including hypothesis testing results in academic journals and general media

TENTATIVE COURSE SCHEDULE

An outline of the term's work follows. For various reasons, however, it is sometimes necessary to deviate from this schedule. Such deviations in the scheduling or nature of tests or other work will be announced in class and/or posted on LEARN. Missing such announcements is not an excuse for being unaware of the changes

Week	Date	Topics	Readings Due
1	Jan 8-12	Introductory, Research Methodology, Frequency Distributions	Chapter 1 & 2
2	Jan 15-19	Central Tendency, Variability	Chapter 3 & 4
3	Jan 22-26	Normal Curve, Z-Score, Sampling Distributions	Chapter 5
	Jan 24	Assignment 1 Due (5%)	
4	Jan 29-Feb 2	More on the Normal Curve, Review	Chapter 5
	Jan 31	First Exam (15%)	
5	Feb 5-9	Correlation	Chapter 10-1; 10-2
6	Feb 12-16	More on Correlation, Regression	Chapter 10-5; 10-6

	Feb 19-23	Reading Week	
7	Feb 26-Mar 1	Basic Probability, Hypothesis Testing	Appendix 3; Chapter 10-3; 10-4
	Feb 28	Assignment 2 due (5%)	
8	Mar 4-8	Z tests, Errors, Directionality, t test	Chapter 7 & 8
9	Mar 11-15	t-Test and Confidence Intervals	Chapter 8
	March 13	Second Exam (15%)	
10	Mar 18-22	t-test with 2 Samples	Chapter 9
11	Mar 25-29	The One-Way Analysis of Variance (ANOVA)	Chapter 11
12	Apr 1-5	Chi-Square & Other Non-parametric Tests	Chapter 13
		Final Exam (30%) to be scheduled	

Late or Incomplete Work

Assignments are due on the listed due dates. Online activities and quizzes will be closed on the due dates specified on Learn. Tests must be written on the scheduled date at the scheduled time (please see below the UW practices on Accommodation for Illness or Unforeseen Circumstances). Missed tests or assignments will receive a grade of zero.

TEXTS / MATERIALS

Title / Name	Notes / Comments	Required
Heiman, G.W. (2015). Behavioural Sciences 2 STAT. Toronto: Houghton Mifflin.	A printed version of the textbook is required as all the exams are open book.	Yes

Course Notes and Worksheets Available on LEARN

Extensive course notes and worksheets to be used in the class are available on Learn. Students are encouraged to print a copy of the worksheets and bring them to the class.

STUDENT ASSESSMENT

Component	Value
Module Review Exercises (weekly on Learn/Mobius)	15%
On-line Activities/Survey and Quizzes (weekly on Learn/Mobius)	15%

Component	Value
Assignment 1	5%
Assignment 2	5%
Midterm Exam 1	15%
Midterm Exam 2	15%
Final Exam	30%

Module Review Exercises (Möbius)

Eleven review exercises have been made available for you to complete in Möbius. These exercises provide an opportunity for you to test your understanding of the concepts covered in each module. There is no time limit on them, and you may take each review exercise as many times as you like—a slightly different version of the exercise will be available to you each time you complete it to give you ample opportunity to practice and test your skills in a particular module.

You will have access to the review exercises throughout the term and may complete them as often as you like to practice your skills and prepare for the online midterms and final exam.

Your best grades for each review exercise will be uploaded to LEARN at the end of the term. And only your top ten (out of eleven) exercises will be used for your final grade.

Online Quizzes (Möbius) and SDS 250R Survey (LEARN)

This activity consists of 12 online exercises. They comprise of the 11 quizzes listed on the Table of Contents and the **SDS 250R Student Survey**. The best 10 out of 12 marks will be used for your final grade calculation.

The first step in the completion of the assignments involves data collection. These data will be supplied by the students registered in this course, through the **SDS 250R Student Survey** (<https://learn.uwaterloo.ca/d2l/common/dialogs/quickLink/quickLink.d2l?ou=987163&type=survey&rCode=uWaterloo-435047>).

The weekly quizzes are available on Möbius. These quizzes are timed and can only be taken once.

Assignment 1

This assignment is a group assignment (in groups of 2 or 3). You could choose your group members and [self-enroll in a group](https://uwaterloo.ca/learn-help/students/groups) (<https://uwaterloo.ca/learn-help/students/groups>).

At the end of the data collection period, the **SDS 250R Student Survey** will be closed and I will post the compiled data from the survey. These data will be presented in aggregate form only, so that individual responses cannot be identified. You will find this compiled data file posted as a **News** item on the **Course Home** page. Use these data to perform the tasks described below.

Identify one nominal variable and one interval/ratio variable of interest from the data set, and do the following:

1. Create a frequency distribution table for each variable including relative frequencies, cumulative frequencies, and percentiles (only when appropriate and meaningful);
2. Create graphs to illustrate the distribution of each variable.

3. Write a paragraph that describes the findings including the relative frequencies, the shape of the distribution (when appropriate), the central tendency and the variability for each variable. Your grade will be based on the accuracy and completeness of your responses to these tasks.
4. **Order your work so that your results for the two variables are separate from each other.** Your grade will be based on the accuracy and completeness of your responses to these tasks.

With the assignment, the group will need to submit a **brief group process report** (describing how the group worked together and helped each other on the assignment). This report should be one or two paragraphs; no more than one page double spaced. Only one report is needed for each group and is mandatory for a grade to be assigned to the group. The report itself will not be graded.

Your submission should contain a title page with all group members' names, followed by the Group Process Report, and then the assignment.

In addition, each student will need to submit a **brief individual reflection report**. The report should include two components: your contribution to this group project and your learning from this assignment. This report should be one or two paragraphs; no more than one page double spaced. The report itself will not be graded. But the reflection report is mandatory for a grade to be assigned to each individual student.

Assignment 1 must be submitted online using Dropbox by the due date.

Your graded assignment will be returned to you online via the dropbox.

Assignment 2

This assignment is a group assignment (in groups of 2 or 3). You could choose your group members and [self-enroll in a group](https://uwaterloo.ca/learn-help/students/groups#How) (https://uwaterloo.ca/learn-help/students/groups#How) .

The **Study Social Hours** file contains data from two variables collected from the class survey that you completed at the beginning of the term. I will post a **News** item when this file is available. Use these data to do the following:

1. Create a scatter plot for these two variables with "Study Hours" as the Predictor variable (x) (make sure the axes are labelled properly).
2. Calculate the correlation coefficient for these two variables.
3. Calculate the regression equation for these two variables and show the regression line on the scatterplot.
4. Discuss the proportion of variance accounted for (r^2) and the proportion of variable Not accounted for ($1-r^2$).
5. Compare and comment on the size of S_y and $S_{y'}$ (give numbers).

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Your submission should contain a title page with all group members' names, followed by the Group Process Report, and then the assignment.

In addition, each student will need to submit a **brief individual reflection report**. The report should include two components: your contribution to this group project and your learning from this assignment. This report should be one or two paragraphs; no more than one page double spaced. The report itself will not be graded. But the reflection report is mandatory for a grade to be assigned to each individual student.

A sample submission is available for you to review on Learn.

Assignment 2 must be submitted to Dropbox online **in one Word file** by the due date.

Your graded assignment will be returned to you online via the dropbox.

Midterm and Final Exams

All the exams in this course are **open book**. However, students **cannot bring any internet-enabled devices**, such as phones or laptops, to the exam. Notes and calculators are allowed. Students should also bring their textbooks to the exams so that they have access to the formulas and tables in their textbook (e.g., Z table, t table and ANOVA table etc).

ASSIGNMENT SCREENING

No assignment screening will be used in this course.

ADMINISTRATIVE POLICY

RENISON UNIVERSITY COLLEGE LAND ACKNOWLEDGEMENT

With gratitude, we acknowledge that Renison University College is located on the traditional territory of the Anishinaabeg, Hodinohsyó:ni, and Attawandaran (Neutral) Peoples, which is situated on the Haldimand Tract, the land granted to the Six Nations that includes ten kilometres on each side of the Grand River from mouth to source. Our active work toward reconciliation takes place in all corners of our campus through research, learning, teaching, community building and outreach. We are guided by the work of our Reconciliation and Re-storying Steering Committee and Anti-Racism and Decolonization Spokesouncil, as well as the [University of Waterloo's Office of Indigenous Relations](http://uwaterloo.ca/hrei/indigenoussinitiatives) (<http://uwaterloo.ca/hrei/indigenoussinitiatives>).

ACADEMIC FREEDOM AT THE UNIVERSITY OF WATERLOO

[Policy 33, Ethical Behaviour](https://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-33) (<https://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-33>) states, as one of its general principles (Section 1), "The University supports academic freedom for all members of the University community. Academic freedom carries with it the duty to use that freedom in a manner consistent with the scholarly obligation to base teaching and research on an honest and ethical quest for knowledge. In the context of this policy, 'academic freedom' refers to academic activities, including teaching and scholarship, as is articulated in the principles set out in the Memorandum of Agreement between the FAUW and the University of Waterloo, 1998 (Article 6). The academic environment which fosters free debate may from time to time include the presentation or discussion of unpopular opinions or controversial material. Such material shall be dealt with as openly, respectfully and sensitively as possible." This definition is repeated in Policies 70 and 71, and in the Memorandum of Agreement, Section 6

COMMUNICATION POLICY

Email, using the uWaterloo provided email address, is the approved method of communication for Renison. The Office 365 email that you use to login using your WatIAM login and password is secure and confidential. Take caution when forwarding your WatIAM email to an external email service as confidential information forwarded to a third-party provider could be a data security breach and violation of FIPPA (Freedom of Information and Protection of Privacy Act) under which all students, staff, and faculty are bound by law.

FINAL EXAMINATION POLICY

For **Winter 2024**, the established examination period is **April 11 – April 25**. The schedule will be available early October. Students should be aware that student travel plans are not acceptable grounds for granting an alternative final

examination time. See the [Final Examination Schedule](https://uwaterloo.ca/registrar/final-examinations/exam-schedule) (https://uwaterloo.ca/registrar/final-examinations/exam-schedule) .

DECLARING ABSENCES

For all of the following categories of absence students are responsible for getting in touch with their course instructors as soon as possible to discuss possible accommodations for the missed course component(s). The course instructor will determine how the missed work is accommodated. Absences will be accommodated according to the [academic regulations section of the undergraduate calendar](https://ugradcalendar.uwaterloo.ca/page/Acad-Regs-Accommodations) (https://ugradcalendar.uwaterloo.ca/page/Acad-Regs-Accommodations) .

If you are unable to complete a course component due to [self-declared COVID-related reasons](https://uwaterloo.ca/quest/help/students/how-do-i/self-declare-absence-undergraduate-students#public-health) (https://uwaterloo.ca/quest/help/students/how-do-i/self-declare-absence-undergraduate-students#public-health) or a [two-day short-term absence](https://uwaterloo.ca/registrar/current-students/undergraduate-student-short-term-absences) (https://uwaterloo.ca/registrar/current-students/undergraduate-student-short-term-absences) then you should submit a self-declaration of absence through [Quest](https://uwaterloo.ca/quest/help/students/how-do-i/self-declare-absence-undergraduate-students) (https://uwaterloo.ca/quest/help/students/how-do-i/self-declare-absence-undergraduate-students) .

If your absence is due to an [illness not pandemic-related](https://uwaterloo.ca/arts/undergraduate/student-support/accommodations-illness-or-extenuating-circumstances#VIF) (https://uwaterloo.ca/arts/undergraduate/student-support/accommodations-illness-or-extenuating-circumstances#VIF) , then a [UW Verification of Illness form](https://uwaterloo.ca/arts/undergraduate/student-support/accommodations-illness-or-extenuating-circumstances#VIF), (https://uwaterloo.ca/arts/undergraduate/student-support/accommodations-illness-or-extenuating-circumstances#VIF) completed by a health professional, must be uploaded and submitted through the [Verification of Illness or Extenuating Circumstances Process](https://uwaterloo.ca/arts/undergraduate/student-support/accommodations-illness-or-extenuating-circumstances#submit-other). (https://uwaterloo.ca/arts/undergraduate/student-support/accommodations-illness-or-extenuating-circumstances#submit-other) The VIF is the only acceptable documentation for an absence due to illness. Do not submit the VIF or any other medical documentation to your instructors, teaching assistants, or other course personnel.

If your absence is due to other [extenuating circumstances](https://uwaterloo.ca/arts/undergraduate/student-support/accommodations-illness-or-extenuating-circumstances#submit-other) (https://uwaterloo.ca/arts/undergraduate/student-support/accommodations-illness-or-extenuating-circumstances#submit-other) (e.g., bereavement), then you must submit all documentation related to the absence (e.g., obituary) through the [Verification of Illness or Extenuating Circumstances Process](https://uwaterloo.ca/arts/undergraduate/student-support/accommodations-illness-or-extenuating-circumstances#submit-other) (https://uwaterloo.ca/arts/undergraduate/student-support/accommodations-illness-or-extenuating-circumstances#submit-other) .

Submission through the VIF or Extenuating Circumstances System, once approved, will notify your instructors of your absence.

If your absence is due to a [religious or spiritual observance](https://ugradcalendar.uwaterloo.ca/page/Acad-Regs-Accommodations) (https://ugradcalendar.uwaterloo.ca/page/Acad-Regs-Accommodations) please inform the instructor within two weeks of the announcement of the due date for which the accommodation is being sought. However, you are responsible for contacting instructors to discuss accommodation arrangements.

ANTI-RACISM STATEMENT

The University of Waterloo does not tolerate racism or any other form of discrimination and expects campus community members to contribute to a culture where all members feel safe and valued. Any member of the campus community who has experienced racism or discrimination at the University is encouraged to review available processes for addressing their concerns under Policy 33 – Ethical Behaviour and to seek guidance from the Equity Office via email at equity@uwaterloo.ca (https://uwaterloo.ca/presidents-anti-racism-taskforce/part-report/equity@uwaterloo.ca) or through their [website](https://uwaterloo.ca/equity-diversity-inclusion-anti-racism/) (https://uwaterloo.ca/equity-diversity-inclusion-anti-racism/)

PRONOUNS AND CHOSEN OR PREFERRED FIRST NAME

Students can verify their chosen or preferred first name by logging into [WatIAM](https://idm.uwaterloo.ca/watiam/) (https://idm.uwaterloo.ca/watiam/) . Your chosen or preferred first name listed in WatIAM will be used across campus (e.g., in LEARN, Quest,

WaterlooWorks, WatCard, etc). Your legal first name will always be used on certain official documents, such as diplomas and transcripts.

Students can view and change their pronouns in [Quest](https://uwaterloo.ca/quest/help/students/how-do-i/view-or-update-my-personal-information) (https://uwaterloo.ca/quest/help/students/how-do-i/view-or-update-my-personal-information) . Should you choose to include your pronouns in Quest, your pronouns will be accessible by instructors, advisors, and employees with access to Quest. If no pronoun is added, the field in Quest will remain blank.

MENTAL HEALTH SUPPORT

All of us need a support system. The faculty and staff in Arts encourage students to seek out mental health support if they are needed.

On campus supports

All of us need a support system. The faculty and staff in Arts encourage students to seek out mental health and counselling if they are needed. For counselling (individual or group) reach out to [Campus Wellness and Counselling Services](https://uwaterloo.ca/campus-wellness/counselling-services). (https://uwaterloo.ca/campus-wellness/counselling-services) Counselling Services strives to provide a secure, supportive environment for students of all orientations and backgrounds. They offer confidential counselling for a variety of areas including anxiety, stress management, depression, grief, substance use, sexuality, relationship issues, and much more.

Other on-campus supports

- [MATES](https://wusa.ca/services/uw-mates) (https://wusa.ca/services/uw-mates) : one-to-one peer support program offered by the Waterloo Undergraduate Student Association (WUSA) and Counselling Services
- Download the [WatSafe app](https://uwaterloo.ca/watsafe/) (https://uwaterloo.ca/watsafe/) to your phone to quickly access mental health support information
- [Empower Me](https://uwaterloo.us11.list-manage.com/track/click?u=f5194df42b6fc63ac2f0875eb&id=6859501915&e=d4e4205e24) (https://uwaterloo.us11.list-manage.com/track/click?u=f5194df42b6fc63ac2f0875eb&id=6859501915&e=d4e4205e24) : to access create an account on the Dialogue mobile app or on the web at www.studentcare.ca/dialogue (http://www.studentcare.ca/dialogue)
- [Sexual Violence Prevention and Response Centre](https://uwaterloo.ca/sexual-violence-prevention-response-office/) (https://uwaterloo.ca/sexual-violence-prevention-response-office/) - supports all members of the University of Waterloo campus community who have experienced or been impacted by sexual violence.

Off campus supports

- [Good2Talk](https://good2talk.ca/) (https://good2talk.ca/) : Free confidential help line for post-secondary students. Phone: 1-866-925-5454
- Grand River Hospital: Emergency care for mental health crisis. Phone: 519-749-4300
- [St. Mary's Hospital](https://uwaterloo.us11.list-manage.com/track/click?u=f5194df42b6fc63ac2f0875eb&id=f9ffc07602&e=d4e4205e24) (https://uwaterloo.us11.list-manage.com/track/click?u=f5194df42b6fc63ac2f0875eb&id=f9ffc07602&e=d4e4205e24) - 519-744-3311
- [Here 24/7](https://here247.ca/) (https://here247.ca/) : Mental Health and Crisis Service Team. Phone: 1-844-437-3247
- 988 Suicide Crisis Helpline: a 24/7 urgent mental health care three-digit helpline
- [OK2BME](https://ok2bme.ca/) (https://ok2bme.ca/) : set of support services for Two-Spirit, lesbian, gay, bisexual, trans, queer, intersex, asexual (@SLGBTQIA+) and questioning kids, teens, adults, and their families in Waterloo Region. Phone: 519-884-0000 or e-mail ok2bme@caminowellbeing.ca (mailto:ok2bme@caminowellbeing.ca)
- [Sexual Assault Support Centre of Waterloo Region](http://www.sascwr.org/) (http://www.sascwr.org/) - offers individual counselling to people of all genders, 16+ who have been sexually assaulted at any point in their lives. As well as short-term support for family members or friends of sexual assault survivors. Also, information and referrals

More information about resources and supports for students can be found online in on the [Faculty of Arts Student Support](https://uwaterloo.ca/arts/undergraduate/student-support/) (<https://uwaterloo.ca/arts/undergraduate/student-support/>) page.

UNIVERSITY POLICY

Academic integrity: In order to maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trust, fairness, respect and responsibility. [Check [the Office of Academic Integrity](https://uwaterloo.ca/academic-integrity/) (<https://uwaterloo.ca/academic-integrity/>) for more information.]

Grievance: A student who believes that a decision affecting some aspect of their university life has been unfair or unreasonable may have grounds for initiating a grievance. Read [Policy 70, Student Petitions and Grievances, Section 4](https://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-70) (<https://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-70>) . When in doubt, please be certain to contact the department's administrative assistant who will provide further assistance.

Discipline: A student is expected to know what constitutes academic integrity to avoid committing an academic offence, and to take responsibility for their actions. [Check [the Office of Academic Integrity](https://uwaterloo.ca/academic-integrity/) (<https://uwaterloo.ca/academic-integrity/>) for more information.] A student who is unsure whether an action constitutes an offence, or who needs help in learning how to avoid offences (e.g., plagiarism, cheating) or about "rules" for group work/collaboration should seek guidance from the course instructor, academic advisor, or the undergraduate associate dean. For information on categories of offences and types of penalties, students should refer to [Policy 71, Student Discipline](https://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-71) (<https://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-71>) . For typical penalties, check [Guidelines for the Assessment of Penalties](https://uwaterloo.ca/secretariat/guidelines/guidelines-assessment-penalties) (<https://uwaterloo.ca/secretariat/guidelines/guidelines-assessment-penalties>) .

Appeals: A decision made or penalty imposed under [Policy 70, Student Petitions and Grievances](https://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-70) (<https://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-70>) (other than a petition) or [Policy 71, Student Discipline](https://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-71) (<https://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-71>) may be appealed if there is a ground. A student who believes they have a ground for an appeal should refer to [Policy 72, Student Appeals](https://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-72) (<https://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-72>) .

Note for students with disabilities: [AccessAbility Services](https://uwaterloo.ca/accessability-services/) (<https://uwaterloo.ca/accessability-services/>) , located in Needles Hall, Room 1401, collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with AccessAbility Services at the beginning of each academic term.

Turnitin.com: Text matching software (Turnitin®) may be used to screen assignments in this course. Turnitin® is used to verify that all materials and sources in assignments are documented. Students' submissions are stored on a U.S. server, therefore students must be given an alternative (e.g., scaffolded assignment or annotated bibliography), if they are concerned about their privacy and/or security. Students will be given due notice, in the first week of the term and/or at the time assignment details are provided, about arrangements and alternatives for the use of Turnitin in this course.

It is the responsibility of the student to notify the instructor if they, in the first week of term or at the time assignment details are provided, wish to submit alternate assignment.