



**Department of Psychology**  
**Psych 292**  
**Basic Data Analysis**  
**Mondays, Wednesdays 1:00pm – 2:20pm, UTD 105**

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**Instructor:****Instructor:** Dr. Paul Wehr**Office:** PAS 4037**Office Hours:** Mondays/Wednesdays: 3:35pm – 3:45pm**Email:** [pwehr@uwaterloo.ca](mailto:pwehr@uwaterloo.ca)**Tutorial Leaders:**

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**Course Description**

PSYC292 will introduce students to the fundamentals of descriptive and inferential statistics commonly used in psychological science and provide foundational knowledge for more advanced statistical courses such as PSYCH392. Course content is composed of three areas: theory, computations, and computer analysis. Lectures focus on developing the theory behind statistical concepts, which is essential for deep understanding. Tutorials focus on the use of hand computations that augment students' understanding of theory by illustrating statistical concepts in action. Finally, computer analysis is the practical application of statistical concepts to real data, which will be introduced through instructional videos on how to use *R*, a free to download language and environment for statistical computing and graphics.

**COURSE GOALS AND LEARNING OUTCOMES**

Upon completion of this course, students should:

- A. Possess a deep, fundamental understanding of descriptive and inferential statistics, and be prepared to augment this understanding in upper-year statistical courses.
- B. Be able to select and conduct basic statistical analyses, both using hand calculations and using *R*.
- C. Have refined their ability to read and interpret research results reported in the literature.
- D. Become a more critical "consumer" of reported research findings in the literature and the media.

## Information Available on LEARN

The course web page can be found on LEARN (<https://learn.uwaterloo.ca/>). Here, you will find links to the syllabus, lecture slides, instructional videos, and important announcements. I will do my best to have slides for the upcoming lecture available at least 24 hours in advance of class time.

## Textbook Resource

There is no textbook assigned for this course. As such, it is critical for students who wish to do well to attend regularly and to be engaged during each lesson. Nevertheless, students may wish to obtain a textbook to supplement their classroom experience. This could prove useful in two ways. First, a textbook provides a second perspective on each of the topics covered in this course. Second, textbooks provide lots of practice questions at the end of each chapter.

Students who wish to obtain a textbook can purchase one second hand or even borrow one from the library. When choosing a textbook, be sure to select one that was developed for *Behavioural Science* (i.e., was written with disciplines like psychology in mind). Any edition of any textbook in this category would prove useful since the fundamental concepts have changed little to none in recent history.

## Calculators

Students are required to bring a calculator to all classes and tutorials. Calculators are also necessary when completing quizzes and assignments. Just about any calculator will do as long as it is capable of obtaining a square root (some are not). The one the instructor uses was purchased from a dollar store over a decade ago and still works great for this class.

## Course Assessment

Assessment	Weight
Weekly Lab Assignments:	20%
Quizzes	30%
Takehome assignments	45%
R assignment	5%
SONA Bonus	+3%

## Tutorials

Tutorials begin during the First week of the semester. Tutorial Leaders will demonstrate solutions to a number of problems and then students will work with their peers to solve a similar set of problems. Following each tutorial, an assignment will be distributed for students to complete outside of class and then submit early the following week. Tutorial guidelines and question sets will be posted on LEARN in advance. You should print these documents and bring them with you to the lab.

If your tutorial is scheduled on...	Your lab assignment is due on the following...
Wednesday	Monday
Thursday	Tuesday
Friday	Wednesday

## Assessments

**BIWEEKLY QUIZZES:** There will be six LEARN quizzes due on Fridays every two weeks. Each quiz will consist of 15 to 20 mixed format questions (multiple-choice, many-choice, etc.) with a time limit of 30 to 40 minutes (total test time = # of questions x 2 minutes). Quizzes will open at 8am on the Friday they are scheduled and will close at 11:59pm the same day. Quizzes are not closed book, but the time limit will prevent students from searching for information if they are not adequately prepared. It is recommended that students prepare their own reference page(s) consisting of important information they would like easy access to during the quiz. This aid should **including relevant formulas!** Questions will be applied/conceptual in nature, so simple memorization will not be sufficient to answer all questions! Some quizzes will require **statistical tables**, which can be found on LEARN; be sure to have easy access to these tables prior to beginning the quiz!

**TAKEHOME ASSIGNMENTS:** There will be three takehome assignments due on the Friday they appear in the course schedule (below). Students will have one week to complete a series of computational questions with multiple parts. In order to get full marks, students must show each step of their solution. Students are encouraged to work together on these assignments, but each **student must complete and submit their own work!**

**ASSIGNMENT USING R:** is a free programming language and environment used for statistical analysis. Instructional videos have been posted on LEARN demonstrating how to download and install R. Subsequent videos provide instruction on how to perform various data analyses. Students should work together to replicate the lessons on their home computer, or on one of the computers in the student computer labs in PAS, which have R installed on them. There is an assignment covering R due on the final day of classes. More information on the assignment will be provided later in the course.

**POLICY ON MISSED ASSESSMENTS:** Students who miss an assessment deadline due to respiratory illness (i.e., covid, flu, cold) should self-declare their illness in Quest and then contact their instructor as soon as possible to receive further instructions. If the university once again offers self-declared two-day holidays in quest, please note that students will be expected to complete and submit their assignments within two-days of missing the deadline, so be sure to contact your instructor immediately. For reasons that take longer than two days (e.g., incarceration or kidnapping), valid documentation is required (e.g., arrest sheet or ransom note) in order to avoid receiving a zero for the missed assessment. Absence due to *religious holiday* is a valid excuse, but please notify your instructor at the beginning of the course in the event of a conflict.

## Correspondence

PSYC 292 has high enrolment. Typically, I receive an overwhelming number of e-mail messages from students with questions about course content, assignments, quizzes, etc. Several discussion forums have been created on LEARN for students to communicate with each other and with the Instructor and Tutorial Leaders. Posting queries and comments on the discussion forum is preferable to e-mail because chances are high that other students have the same question. It also helps to facilitate interaction between students in large classes.

Before posting on the discussion forums, however, please be sure to check existing postings, announcements on LEARN and the syllabus to avoid redundancies. Also, remember that the instructor has office hours following each class and welcomes students to attend as often as they wish. For sensitive or personal issues unrelated to course content, please e-mail the instructor directly or visit during office hours.

## **Succeeding in PSYC292**

MANY students struggle with statistics. If you find this is your experience, don't panic but you might find it necessary to work harder, collaborate more with classmates, and seek out more help. Here are some things you can do to more effectively learn the material and enjoy the course:

- Be sure to attend all lectures. If you are unable to attend a class, be sure to contact your classmates to access the missed content.
- Work with your peers both during the tutorial and after class while completing the assignments. Even if you think you understand the content better than your classmates, you can achieve an even deeper understanding by helping others.
- Test your understanding of content by completing practice questions available in textbooks.
- Don't be afraid to ask questions in lecture and in tutorials if you don't understand something. All students have gaps in their knowledge. Good students identify those gaps and fill them before the assessment is due.
- Visit the instructor and/or your TAs during office hours if you need additional help.

## **Accommodation for Students**

The AccessAbility Services office, located on the first floor of the Needles Hall extension, 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 the AS office at the beginning of each academic term.

<https://uwaterloo.ca/accessability-services/>

## **Counselling & Psychological Services**

The Counselling & Psychological Services office at the University of Waterloo, located on the second floor of the Needles Hall extension, offers a variety of resources for those struggling with the challenges of university life, including coping skills seminars and workshops, peer support, group therapy, and clinical referrals. Their home page is:

<https://uwaterloo.ca/campus-wellness/counselling-services>

## **Student Success Office**

The Student Success Office at the University of Waterloo, located on the second floor of South Campus Hall, offers tutoring, workshops, success coaching, and a variety of other resources for students looking for guidance to be successful in university. Their home page is:

<https://uwaterloo.ca/student-success/>

## **Writing Centre**

The Writing Centre, located on the second floor of South Campus Hall, works across all faculties to help students clarify their ideas, develop their voices, and communicate in the style appropriate to their disciplines. Writing Centre staff offer one-on-one support in planning assignments, using and documenting research, organizing papers and reports, designing presentations and e-portfolios, and revising for clarity and coherence.

You can make multiple appointments throughout the term, or drop in at either the Dana Porter or Davis Centre libraries for quick questions or feedback. Group appointments for team-based projects, presentations, and papers are also available. To book a 50-minute appointment and to see drop-in hours, visit:

<https://uwaterloo.ca/writing-and-communication-centre/>

### **Concerns About the Course or Instructor (Informal Stage)**

We in the Psychology Department take great pride in the high quality of our program and our instructors. Though infrequent, we know that students occasionally find themselves in situations of conflict with their instructors over course policies or grade assessments. If such a conflict arises, the Associate Chair for Undergraduate Affairs (Dr. Richard Eibach) is available for consultation and to mediate a resolution between the student and instructor. Dr. Eibach's contact information is as follows: Email: [reibach@uwaterloo.ca](mailto:reibach@uwaterloo.ca), Phone: 519-888-4567, x48790. A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. See Policy 70 and 71 below for further details.

### **Academic Integrity**

*Academic Integrity:* In order to maintain a culture of academic integrity, members of the University of Waterloo are expected to promote honesty, trust, fairness, respect and responsibility.

*Discipline:* A student is expected to know what constitutes academic integrity, to avoid committing academic offences, and to take responsibility for his/her actions. 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 professor, academic advisor, or the Undergraduate Associate Dean. When misconduct has been found to have occurred, disciplinary penalties will be imposed under Policy 71 – Student Discipline. For information on categories of offenses and types of penalties, students should refer to Policy 71 – Student Discipline.

<https://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-71>

*Grievance:* A student who believes that a decision affecting some aspect of his/her 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>

*Appeals:* A student may appeal the finding and/or penalty in a decision made under Policy 70 - Student Petitions and Grievances (other than regarding a petition) or Policy 71 - Student Discipline if a ground for an appeal can be established. Read Policy 72 – Student Appeals.

<https://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-72>

*Other sources of information for students*

Academic Integrity Office (uWaterloo): <https://uwaterloo.ca/academic-integrity/>

### **Withdrawal Dates**

Withdrawal deadline and receive no penalty: January 27<sup>th</sup>, 2023

Withdrawal deadline to receive "WD" on transcript: March 24<sup>th</sup>, 2023

Withdrawal deadline to receive "WF" on transcript: April 12<sup>th</sup>, 2023

**Term Schedule**

<b>Week</b>	<b>Dates</b>	<b>Lecture Topics</b>	<b>Lab/Assessment</b>
1	Jan 09 & 11	Introduction to Statistics, Notation, & Mathematical Operations	Lab 1
2	Jan 16 & 18	Frequency Distributions & Visual Representations of Data.	Lab 2 + Quiz 1
3	Jan 23 & 25	Measures of Central Tendency & Variability	Lab 3
4	Jan 30 & Feb 01	z-scores & Standardized Distributions	Lab 4 + Quiz 2
5	Feb 06 & 08	Probability & Distribution of Sample Means	Lab 5
6	Feb 13 & 15		Quiz 3
7	Feb 20 – 24	Reading Break	
8	Feb 27 & Mar 01	Hypothesis Testing & Introducing the t-statistic	Lab 6 + Takehome 1
9	Mar 06 – 08	Independent & Dependent Samples t-test	Lab 7 + Quiz 4
10	Mar 13 – 15	One-way ANOVA	Lab 8
11	Mar 20 – 22	Correlation	Lab 9 + Quiz 5
12	Mar 27 – 29	Regression	Lab 10 + Takehome 2
13	Apr 03 – 05	Chi Square	Quiz 6
	Apr 14		Takehome 3

Note: Lecture topics BEGIN during the week they are scheduled, but might spill over into the following week before completed.