UNIVERSITY OF CALGARY

DEPARTMENT OF PSYCHOLOGY
Faculty of Arts

PSYC 411	Design and Analysis in Psychological Research.	Winter 2024

Instructor:	Dr. Vicki Smith	**Lecture Info:**	Hybrid; lectures will be delivered asynchronously. Exams will be delivered in person.
Phone:	N/A	**Lab info:**	In-person W 14:00-15:50 R 17:00-18:50
Email:	smithvm@ucalgary.ca	**TA info:**	Alvan Yuan
Office:	Admin 155B		Nan.yuan@ucalgary.ca
Office Hours:	Email to book an appt.		

Course Description

This course builds on the foundation of Psyc 300/301 (Research Methods and Data Analysis in Psychology I and II) by introducing students to numerous statistical methods and experimental design considerations that are frequently encountered in Psychological Research. The aim of this course is to provide students with an overview of different design considerations or methods that they are likely to encounter, whether through their own research or when evaluating research by other psychologists. These skills are useful for psychology majors, those considering graduate studies in psychology, or even those who simply wish to be better consumers of research.

Note: This course focuses on quantitative approaches. Students interested in qualitative psychological research should consider Psyc 415 - Qualitative Inquiry in Psychology.

Because this course seeks to introduce students to various statistical procedures, there is a laboratory component in which students will gain direct experience with these methods. This experiential learning (learning by doing) component of the course will therefore be integrated with the lecture material, as a way of reinforcing the concepts discussed in class.

Course Learning Outcomes

The Department of Psychology is committed to student knowledge and skill development. The table below lists the key learning outcomes for this course, the program-learning outcomes they facilitate (see https://live-arts.ucalgary.ca/psychology/about#program-learning-outcomes), and the expected level of achievement.

Course Learning Outcomes	Assessment Methods	PLO(s)	Level(s)
Interpret and evaluate psychological research – including interpreting graphical depictions of data, critically assessing statistical methods, and drawing appropriate conclusions.	Exams, Lab assignments	2, 3, 4, 5, 7	A
Identify and apply the appropriate quantitative analysis techniques required to address questions in psychological research or to help inform or generate solutions to personal, social, and/or societal problems.	Exams, Lab assignments	2, 3, 4, 7	A
Input, organize, and manipulate data, and conduct statistical analyses using statistical software (or by hand)	Exams, Lab assignments	3	A
Describe the advantages, limitations, and assumptions of different research and/or statistical methods and apply these methods to real-world problems (e.g. scenarios given in lab assignments).	Exams, Lab assignments	2, 3, 4, 7	A
Communicate psychological research findings effectively, to both scientific and non-scientific audiences, including the appropriate and effective use of figures, graphs, and tables (and APA style)	Exams, Lab assignments	3, 4, 5	A
Critically assess the limitations of psychological research that is not diverse or representative. Describe how these factors can affect the validity and reliability of statistical analysis, and how to correct these issues.	Exams, Lab assignments	1, 2, 5, 8	C
Interpret and evaluate psychological research – including interpreting graphical depictions of data, critically assessing statistical methods, and drawing appropriate conclusions.	Exams, Lab assignments	2, 3, 4, 5, 7	A

Notes. PLOs = Program-Learning Outcomes: 1 = demonstrate knowledge of psychological sciences, 2 = think critically and solve problems, 3 = conduct research and analyze data, 4 = communicate effectively, 5 = demonstrate information literacy, 6 = understand and implement ethical principles in a diverse world, 7 = apply psychological knowledge and skills, 8 = Demonstrate multicultural competence and awareness of issues related to equity, diversity, and inclusion. Level of PLO achievement facilitated by this course: I = introductory, C = competency, A = advanced.

Acknowledgments and Respect for Diversity

Our classrooms view diversity of identity as a strength and resource. Your experiences and different perspectives are encouraged and add to a rich learning environment that fosters critical thought through respectful discussion and inclusion. The Department of Psychology would also like to acknowledge the traditional territories of the people of the Treaty 7 region in southern Alberta. The City of Calgary is also home to Métis Nation of Alberta (Districts 5 and 6).

Course Format

Hybrid:

- Course lectures will be delivered in an online asynchronous modality. Course material will be posted prior to the start of the week, to ensure that students have time to interact with the material
- Labs will be run in-person according to the original schedule:
    1. **W 14:00 – 15:50**
    2. **R 75:00 – 18:50**
- Exams will be delivered in-person during your regularly scheduled lab period (there will be no labs that week), according to the following schedule:
    1. **Exam 1 (23%)** **February 7th/8th**
    2. **Exam 2 (23%)** **March 20th/21st**

3. **Exam 3 (22%) Scheduled by Registrar**

Prerequisites
Psyc 300 and 301 – Research Methods and Data Analysis in Psychology I and II AND admission to either the Psychology major or Honors Program

Required Text
Field, A. (2017). *Discovering statistics using IBM SPSS statistics* (5th North American ed.). London: Sage Publications Ltd.

The textbook is available in the bookstore, as well as through online retailers. Please ensure that you are getting the North American edition, though.

Course Website
The course website is on D2L at https://d2l.ucalgary.ca

It is on this website that you will find important announcements, download lecture slides, hand in assignments, and find links to other resources (as necessary). Please check it often.

Assessment Methods

Exam 1 (23%) **February 7th/8th, 2024**
Covers all class material up to and including Feb 5 (approx. topics 1-3)
Combination of multiple choice and short answer questions

Exam 2 (23%) **March 20th/21st, 2024**
Covers all class material from Feb 12 – Mar 18 (approx. topics 4-8)
Combination of multiple choice and short answer questions

Exam 3 (22%) **Registrar Scheduled**
Covers all class material from Mar 25 – Apr 9 (approx. topics 9-12)
Combination of multiple choice and short answer questions

Laboratory Assignments (32%)
Several lab assignments will be due during the course of the semester.
For more information on the topics, due dates, and more, please see below
Students must achieve a passing grade in both the class and lab components to pass this course.

Extra Information about Exams:

Exams in this course are closed-book. The use of resources, including class notes, textbooks, study aids, online resources, and programmable calculators is prohibited during the exams in this course. Similarly, the use of computers, iPads, phones, graphing calculators, or any other programmable technology is NOT permitted during the exams.
Students may not communicate with others about course material or the exam either in person or electronically during the exams. A non-programmable calculator will be required for exams

Extra Information about Lab Assignments:

Lab assignments will be handed in online using the D2L dropbox. For most of the labs, the due date is on the day of your lab section, at 11:59 p.m. Please see the listing of lab topics OR

lecture schedule (both are below) for more detail about lab due dates. Emailed lab assignments <u>will not</u> be accepted.

All students will be given two free "late pass" which will allow you to hand in your assignment up to 3 total days beyond the due date (no questions asked). The late pass CANNOT be split across multiple assignments (e.g. cannot be 1 day late on 3 different assignments). Late passes cannot be combined for a single assignment (e.g. 6 days late for one assignment). Late passes are also non-transferrable (i.e. you cannot "gift" them to someone else).

Without instructor approval, any *other* late assignments (i.e. after the passes have been used) will receive a penalty of 20% per day late (including weekend days), up to a maximum of 4 days late. After this time, the assignment will receive a grade of 0.

There are 8 lab assignments over the course of the semester. When calculating your final grade, of which assignments are worth 32%, **the 8 assignments will count equally toward the 32% component (i.e. 4% per lab).**

<u>Lab Topics</u>:
Note: Dates for labs, and due dates for the lab assignments may be found below, and are included in the Lecture Schedule.

Lab 1: Refresher on SPSS, Critical Thinking, Defining Variables – due Jan 24/25
Lab 2: Experimental and Non-Experimental Research Methods – due Jan 31/Feb 1
Midterm 1: midterm written in person during scheduled lab time – Feb 7/8
Lab 3: T-tests, Effect Sizes, and Power Analysis – due Feb 14/15
Lab 4: One way and Factorial ANOVA – due Feb 28/29
Lab 5: Post-hoc Contrasts in One way and Factorial Designs – due Mar 6/7
Lab 6: Planned & Complex Contrasts in One way and Factorial Designs – due Mar 13/14
Midterm 2: midterm written in in person during scheduled lab time – Mar 20/21
Lab 7: Within-Subjects ANOVA (and contrasts) – due Mar 27/28
Lab 8: Correlations and (Semi-)Partial Correlations – due Apr 3/4
Lab 9: Simple and Multiple Regression – *no assignment due*

Once approved by the course instructor, and at their discretion, alternative arrangements for missed assessments may be considered. https://www.ucalgary.ca/pubs/calendar/current/g-1-2.html. Students may be asked for documentation https://www.ucalgary.ca/pubs/calendar/current/m-1.html.

University of Calgary Academic Integrity Policy
Academic integrity is the foundation of the development and acquisition of knowledge and is based on values of honesty, trust, responsibility, and respect. We expect members of our community to act with integrity.
Research integrity, ethics, and principles of conduct are key to academic integrity. Members of our campus community are required to abide by our institutional code of conduct and promote academic integrity in upholding the University of Calgary's reputation of excellence. It is your responsibility to ensure that you have read and are familiar with the student academic misconduct policy: https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Student-Academic-Misconduct-Policy.pdf.

Department of Psychology Criteria for Letter Grades

Psychology course instructors use the following criteria when assigning letter grades:

A+ grade: *Exceptional Performance.* An A+ grade indicates near perfect performance on multiple choice and short answer exams. For research papers/essays/course projects/presentations, an A+ grade is awarded for exceptional work deserving of special recognition and is therefore not a common grade.

A, A- Range: *Excellent Performance.* Superior understanding of course material. Written work is very strong in terms of critical and original thinking, content, organization, and the expression of ideas, and demonstrates student's thorough knowledge of subject matter.

B Range: *Good Performance.* Above average understanding of course material. Written work shows evidence of critical thinking and attention to organization and editing but could be improved in form and/or content.

C Range: *Satisfactory Performance.* Adequate understanding of course material. Knowledge of basic concepts and terminology is demonstrated. Written work is satisfactory and meets essential requirements but could be improved significantly in form and content. Note: All prerequisites for courses offered by the Faculty of Arts must be met with a minimum grade of C-.

D range: *Marginally meets standards.* Minimal understanding of subject matter. Written work is marginally acceptable and meets basic requirements but requires substantial improvements in form and content. Student has not mastered course material at a level sufficient for advancement into more senior courses in the same or related subjects.

F grade: *Course standards not met.* Inadequate understanding of subject matter. Written work does not meet basic requirements. Student has not demonstrated knowledge of course material at a level sufficient for course credit.

Grading Scale

A+	96-100%	B+	80-84%	C+	67-71%	D+	54-58%
A	90-95%	B	76-79%	C	63-66%	D	50-53%
A-	85-89%	B-	72-75%	C-	59-62%	F	0-49%

It is at the instructor's discretion to round off either upward or downward to determine a final grade when the average of term work and final examinations is between two letter grades.

To determine final letter grades, final percentage grades will be rounded up or down to the nearest whole percentage (e.g., 89.5% will be rounded up to 90% = A but 89.4% will be rounded down to 89% = A-).

Tentative Lecture Schedule

Below is a tentative schedule for the lecture topics. However, this schedule is just a general guideline.

Some topics may require more/less time, depending on many factors, such as class questions. The due date for lab assignments is, as stated above, typically on the day of your lab section, at 11:59 p.m.

Date	Topic	Lab Topic	Assignment
Week 1: **Jan 8-12**	First day of lectures (Jan 8) **Topic 1:** Part 1 – Critical Thinking, Measuring Variables Part 2 – Correlational Research Methods	No lab	
Week 2: **Jan 15-19**	**Topic 1:** Part 3 – Experimental Design, Reliability, Validity Part 4 – Threats to Validity, Descriptives	Lab 1: Refresher on SPSS, Critical Thinking and Defining Variables	
R Jan 18	Last day to drop a class without financial penalty		
F Jan 19	Last day to add or swap a course		
Week 3: **Jan 22-26**	**Topic 2:** Hypothesis Testing and T-Tests	Lab 2: Non-experimental Research Methods	Lab Assignment 1 due
F Jan 26	Fee payment deadline for Winter Term full and half courses.		
Week 4: **Jan 29-Feb 2**	**Topic 3:** Replication Crisis	Lab 3: T-Tests, Effect Sizes, Power Analysis	Lab Assignment 2 due
Week 5: **Feb 5-9**	**Topic 3:** Replication Crisis (cont.) **Exam 1 (IN PERSON DURING LAB) – Topics 1-3**	***Midterm Exam in person during regularly scheduled Lab Period for the week***	
Week 6: **Feb 12-16**	**Topic 4:** Between-Subjects ANOVA **Topic 5:** Part 1 – Between-Subjects Factorial ANOVA	Lab 4: One-way and Factorial ANOVA	Lab Assignment 3 due
Week 7: Feb 18-24	**Term Break, no classes**		
Week 8: **Feb 26-Mar 1**	**Topic 5:** Part 2 – ANOVA Contrasts Part 3 – Factorial ANOVA 2-way Example	Lab 5: Post-hoc contrasts in one-way and Factorial ANOVA	Lab Assignment 4 due
Week 9: **Mar 4-8**	**Topic 5:** Part 4 – Factorial ANOVA 3-way Example Part 5 – Factorial ANOVA 3-way Example (cont)	Lab 6: Planned Contrasts in One-way and Factorial ANOVA	Lab Assignment 5 due
Week 10: **Mar 11-15**	**Topic 6:** Repeated Measures ANOVA **Topic 7:** Repeated Measures Factorial ANOVA	Lab 7: Within-Subjects ANOVA (and contrasts)	Lab Assignment 6 due
Week 11: **Mar 18-22**	**Topic 8:** Mixed ANOVA and Contrasts **Exam 2 (IN PERSON DURING LAB) – Topics 4-8**	***Midterm Exam in person during regularly scheduled Lab Period for the week***	
Week 12: **Mar 25-29**	**Topic 9:** Correlations **Topic 10:** Point Biserial, Biserial, Partial, Semi-Partial Correlations	Lab 8: Correlations and (Semi-)Partial Correlations	Lab Assignment 7 due

Week 13: **Apr 1-5**	**Topic 11:** Simple Linear Regression **Topic 12:** Part 1 – Multiple Regression	Lab 9: Simple and Multiple Regression	Lab Assignment 8 due
Week 14 **Apr 8-9**	**Topic 12:** Part 2 – Multiple Regression Winter Term Lectures End. Last day to withdraw with permission from Winter Term half courses.	*No Labs*	
Apr 12-23	**Winter Final Exam Period**		

Extra Research Participation Course Credit is Not Offered for this Course.

Seating During Exams

Instructors and exam invigilators are free to ask students to move seats before an exam begins or even during an exam. Students must comply with this request and refusal to do so may warrant a charge of academic misconduct.

Absence From Test/Exam

Makeup tests/exams are **NOT** an option without the approval of the instructor https://www.ucalgary.ca/pubs/calendar/current/g-1-1.html At the instructor's discretion, a makeup test/exam may differ significantly (in form and/or content) from a regularly scheduled test/exam. Once approved by the instructor a makeup test/exam must be written within 2 weeks of the missed test/exam on a day/time scheduled by the instructor. If a student cannot write their final exam on the date assigned by the Registrar's Office, they need to apply for a deferred exam https://www.ucalgary.ca/registrar/exams/deferred-exams

Travel During Exams

Consistent with University regulations, students are expected to be available to write scheduled exams at any time during the official December and April examination periods. Requests to write a make-up exam because of conflicting travel plans (e.g., flight bookings) will NOT be considered by the department. Students are advised to wait until the final examination schedule is posted before making any travel arrangements. If a student cannot write their final exam on the date assigned by the Registrar's Office, they need to apply for a deferred exam Deferred Final Exams | University of Calgary (ucalgary.ca) Students with an exceptional extenuating circumstance (e.g., a family emergency) should contact the Department of Psychology psyugrd@ucalgary.ca

Reappraisal of Graded Term Work http://www.ucalgary.ca/pubs/calendar/current/i-2.html
Reappraisal of Final Grade http://www.ucalgary.ca/pubs/calendar/current/i-3.html

Academic Accommodations

Students seeking an accommodation based on disability or medical concerns should contact Student Accessibility Services; SAS will process the request and issue letters of accommodation to instructors. For additional information on support services and accommodations for students with disabilities, visit

www.ucalgary.ca/access/. Students who require an accommodation in relation to their coursework based on a protected ground other than disability should communicate this need in writing to their Instructor. The full policy on Student Accommodations is available at https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Student-Accommodation-Policy.pdf.

Academic Misconduct
For information on academic misconduct and its consequences, please see the University of Calgary Calendar at http://www.ucalgary.ca/pubs/calendar/current/k.html

Instructor Intellectual Property
Course materials created by professor(s) (including course outlines, presentations and posted notes, labs, case studies, assignments, and exams) remain the intellectual property of the professor(s). These materials may NOT be reproduced, redistributed, or copied without the explicit consent of the professor. The posting of course materials to third party websites such as note-sharing sites without permission is prohibited. Sharing of extracts of these course materials with other students enrolled in the course at the same time may be allowed under fair dealing.

Copyright Legislation
All students are required to read the University of Calgary policy on Acceptable Use of Material Protected by Copyright (https://library.ucalgary.ca/services/copyright?_gl=1*bcjlpn*_ga*OTY1ODc0Njg0LjE2NjkxNTA1NTM.*_ga_X4GN9Y4W7D*MTY3Nzc5MjM3Ni4xNy4xLjE2Nzc3OTI4MDYuMC4wLjA) and requirements of the copyright act (https://laws-lois.justice.gc.ca/eng/acts/C-42/index.html) to ensure they are aware of the consequences of unauthorized sharing of course materials (including instructor notes, electronic versions of textbooks etc.). Students who use material protected by copyright in violation of this policy may be disciplined under the Non-Academic Misconduct Policy.

Freedom of Information and Protection of Privacy
Student information will be collected in accordance with typical (or usual) classroom practice. Students' assignments will be accessible only by the authorized course faculty. Private information related to the individual student is treated with the utmost regard by the faculty at the University of Calgary

Student Support and Resources
https://www.ucalgary.ca/registrar/registration/course-outlines

Important Dates
The last day to drop this course with no "W" notation and **still receive a tuition fee refund** is **Thursday, January 18th, 2024**. Last day add/swap a course is **Friday, January 19th, 2024**. The last day to withdraw from this course is **Tuesday, April 9th, 2024**.