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**Psychology 301    Research Methods and Data Analysis in Psychology II    Winter 2022**

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<b>Instructor:</b>	Dr. Alexandra Twyman	<b>Lectures:</b>	Asynchronous Online, D2L
<b>Email:</b>	alexandra.twyman@ucalgary.ca	<b>Lab TA:</b>	Several, see D2L
<b>Office Hours:</b>	By appointment		

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**Course Description**

An integration of research methods and statistics in psychological research, with an emphasis on conducting and interpreting inferential statistical techniques.

**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.

**Student Support and Resources**

[UCalgary Student Wellness Services | University of Calgary](#)      403.210.9355.

Our mental health is just as important as our physical health, and yet we often will neglect our mental wellbeing, which in turn often influences our physical well being. There are really wonderful and qualified people who can help you out! If you are going through a tough time, there is no need to go it alone. The hardest step to take is often that first phone call, but once you have taken that step, you will be amazed at how well taken care of you will be, and much mental health can improve with help and support. These resources are free to use for University of Calgary students. So if you are in need, please give them a call!

**2-1-1 Alberta:** This is kind of like having a fairy godmother. Just call 2-1-1

This is kind of like 9-1-1, but more for the every day emergencies that you might face. This is a call center that listens to your unique needs as an individual. They know all the Alberta services. So then they custom fit a solution for you, and help connect you with services to support you. This might be something like help finding housing, food resources, support for parents or children. They are fluent in many languages.

**Walk-in Clinics/Emergency Rooms:**

If you are in distress, feel free to go to your nearest walk-in clinic or emergency room at a hospital. If you have physical or mental needs, the doctors and nurses will be there are ready to help and match you to the services to support you.

There are lots of places to go for support. One isn't any better than the other. So just pick up the phone or get help – you don't have to do this alone!

### Course Format

Instruction in this course will make use of a variety of techniques, including lectures, demonstrations, audio-visual presentations, discussions, readings, classroom problems, and (maybe) the occasional guest speaker. I outline these techniques below. As you read, I will ask you to notice that there are a number of activities in which I expect students to be **active participants** in the learning process. Research shows that this type of participation improves learning and retention of material, and – anecdotally – it makes classes a lot more fun, too!

**Lectures:** formal lectures will expand upon and emphasize key points from the readings. These lectures may be the primary method of instruction, but they are by no means the only method.

**Demonstrations:** demonstrations are common in my courses, and they often are used to highlight or emphasize concepts, methods, or techniques. Some demonstrations require the assistance of a single, brave volunteer while others may include the entire class. The key point is that students are expected to be active participants in the learning process.

**Audio-Visual Presentations:** sometimes a picture can be worth a thousand words. And a video might be worth millions. Research has shown that carefully-selected videos can make material much more memorable.

**Discussions:** we will occasionally engage in small- or large-group discussions in this course. Please be prepared to make friends with the person next to you!

**Readings:** the textbook is an excellent resource for this course, and students are expected to keep up with the assigned readings. That said, lectures do expand on the readings so I would not expect to do well by reading the book alone and not attending class.

**Classroom Problems:** I occasionally give students sample problems in class. Students are expected to try to solve the problem in pairs or in small groups. We will then go over the answers as a class. Although you might be tempted to not bother trying to answer (and just write down the correct answer later), research strongly suggests that your learning will be better for the effort – even if you don't solve the problem the first time!

**Guest Speakers:** I occasionally invite guest speakers to class, if they have a unique and valuable perspective on some aspect of the course material.

### 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)
Identify the theoretical underpinnings of various statistical analyses and assumptions that must be met to conduct these statistical analyses	Multiple choice exams, lab assignments	3,	C

Identify which statistical analysis is appropriate based on a study's research question and methodology	Multiple choice exams, lab assignments	2, 3, 4,	C
Conduct and interpret statistical calculations by hand and using statistical software	Multiple choice exams, lab assignments	3,	C
Design research using appropriate methodology to test a research question	Lab Assignments	1, 2, 3, 4, 5, 7,	C
Effectively communicate research findings	Lab Assignments	3, 4, 5, 7,	C
Write all elements of a laboratory report in APA format	Lab Assignments	3, 4, 5	C
Use PSYCINFO to locate primary research relevant to a specific topic	Lab Assignments	5	A
Draw and interpret graphical depictions of data (single factor and factorial)	Multiple choice exams, lab assignments	2, 3, 4	C

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, Region III.

### **Prerequisites**

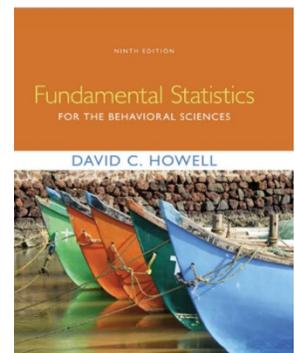
Psychology 300 (Research Methods and Data Analysis in Psychology I)

### **Anti-requisites**

Credit for both Psychology 301 and Psychology 312 will not be allowed

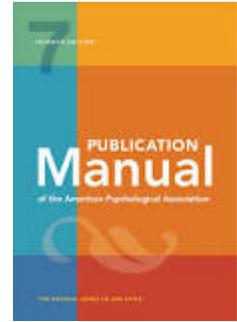
### **Recommended Text**

Howell, D. C. (2017). *Fundamental Statistics for the Behavioral Sciences* (9th Ed.). Belmont, CA: Thomson Wadsworth. Available in hard copy or e-copy from the university bookstore.



### **OPTIONAL Textbook**

It is also recommended that you obtain a copy of the Publication Manual of the American Psychological Association (7th Ed.) as you will be expected to conform to APA format in all assignments you submit for this, and all future psychology courses. There are also numerous web resources to assist you in using APA format but where there is a discrepancy in the information, the official APA guidelines will be marked as correct. The manual is available in hard copy from the bookstore.



### **Assessment Methods**

#### **Class components (60% of final grade).**

Exams. There will be two exams during this course; both exams will be multiple-choice and will focus on lecture material; both exams are worth 30%. Each test covers the material in that unit (see class schedule for exact topics in each unit test). They are posted on D2L. The tests will be available for 24 hours on the exam writing day (midnight to midnight) so that you can pick your ideal start to write the test.

***Both exams are closed book***, meaning that you may **ONLY** refer to documentation posted under the Exam 1 and Exam 2 tabs in D2L (which will contain formula sheets and relevant tables) but you may not refer to your notes, other posted lecture material, online resources, the textbook, or to consult with others during the completion of each exam.

*Exam 1:* Tuesday Feb 8<sup>th</sup>. Topics will include, One Sample t-test, Confidence Limits on the Mean, t-test for Independent Samples and the Wilcoxon Rank Sum Test, Statistical Power, One- Way ANOVA, and Multiple Comparisons. If you miss an exam without instructor approval, you will receive a score of 0 for that exam.

*Exam 2:* Thursday March 31<sup>st</sup> All material in the course with an emphasis on material since Exam 1. If you miss an exam without instructor approval, you will receive a score of 0 for that exam.

#### **Lab Components (40% of final grade).**

**ALL LABS ARE DUE AT the start of class in your lab.**

**Lab Assignments (26%).** There will be five lab assignments due as per the course schedule. The exact due date will depend on your individual lab time (labs are due by the start of class for that week). The grades allocated for each assignment are as follows:

Lab Assignment 1 (week 4) Independent Samples t-Tests 6%

Lab Assignment 2 (week 6) Draft of Intro & Method 2%

Lab Assignment 3 (week 8) Factorial ANOVA 6%

Lab Assignment 4 (week 10) Paired t-Tests 6%

Lab Assignment 5 (week 11) Repeated Measures ANOVA 6%

*Without instructor approval, **late lab assignments** will be deducted **10% per day** (including weekends) up to a maximum of 35% (7 days), at which point, late assignments will no longer be accepted. All assignments must be submitted in the Dropbox folder for that lab on D2L.*

**Lab Report (14%).** An APA-formatted report based on a study to be conducted during lab. The final version is due on Monday, April 11<sup>th</sup> at 8 a.m. to the D2L Dropbox. Instructions for completing your report will be posted on D2L and provided during your lab. *Without instructor approval, for the final lab report, late submissions WILL NOT be accepted.* All lab reports must be submitted in the Dropbox folder on D2L.

**\*Students must achieve a passing grade on BOTH the class and lab components to pass this course\***

### **Calculators and Formula Sheets**

For tests requiring computations, a calculator may be used. For some tests, formula information will be provided at the time of the test. No other resources are allowed during tests.

### **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/policies/files/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-).

### Course Credits for Research Participation (Max 2% of final grade)

Students in most psychology courses are eligible to participate in Departmentally approved research and earn credits toward their final grades. **A maximum of two credits (2%) per course, including this course, may be applied to the student's final grade. Students earn 0.5% (0.5 credits) for each full 30 minutes of participation.** The demand for timeslots may exceed the supply in a given term. Thus, students are not guaranteed that there will be enough studies available to them to meet their credit requirements. Students should seek studies early in the term and should frequently check for open timeslots. Students can create an account and participate in Departmentally approved research studies at <http://ucalgary.sona-systems.com>. The last day to participate in studies and to assign or reassign earned credits to courses is **Tuesday April 12<sup>th</sup>**.

### Tentative Lecture Schedule

This lecture schedule is tentative and may be adapted at the lecturer's discretion.

Week	Date	Reading	Lecture Topic	Lab Topic	Lab Due
1	T Jan 11	<i>syllabus</i>	<i>Start of Classes.</i> Introduction to PSYC 301	<i>No Lab – first week of classes</i>	

	R Jan 13	Ch 12	The One Sample t-test		
2	T Jan 18	Ch 12	Confidence Limits on the Mean	Participate in Online Study & Outline Final Paper	
	R Jan 20  F Jan 21	Ch 14	Experiments with Two Groups: The t-test for Independent Samples <i>Last day to drop Winter Term half-courses.</i>		
3	T Jan 25	Ch 20	Experiments with Two Groups: The Wilcoxon Rank Sum Test	Independent Samples t-test	
	R Jan 27	Ch 15	Statistical Power		
4	T Feb 1	Ch 16	Single Factor Experiments with More Than Two Groups: One-Way Analysis of Variance (ANOVA)	Analyze Experiment & Introduction/Methods Q&A	<b>Lab #1: Independent Samples t-test due at the start of lab</b>
	R Feb 3		Multiple Comparison Procedures		
5	<b>T Feb 8</b>		<b>Exam #1 -9:30-11:30 a.m. on Tues Feb 9<sup>th</sup>.</b> Dr. Twyman available from 9:30 to 10:45 a.m. on Tuesday Feb 9 <sup>th</sup> for exam questions. Exams due by Wed Feb 10 <sup>th</sup> at 9:30 a.m.	No Lab – Exam Week	
	R Feb 10		Factorial Designs I		
6	T Feb 15		Factorial Designs II	Factorial ANOVA	<b>Lab #2 – Draft of Intro and Method Lab for Final Paper- Due at start of lab</b>
	R Feb 17	Ch 17	Between Subjects Factorial ANOVA		
7	M Feb 21		<i>Family Day No Classes</i>	<i>No lab – reading week</i>	

	Feb 22- 26		<i>Term Break No Classes</i>		
8	T Mar 1	Ch 17	Between Subjects Factorial ANOVA		<b>Lab #3– Factorial ANOVA- Due at start of lab</b>
	R Mar 3	Ch 13	Within-Subjects Designs: The Paired t-test		
9	T Mar 8	Ch 20	Within-Subjects Designs: The Wilcoxon Signed Rank Test	Paired t	
	R Mar 10	Ch 18	Repeated Measures ANOVA		
10	T Mar 15	Ch 18	Repeated Measures ANOVA	Repeated Measures ANOVA	<b>Lab #4 – Paired t-test-Due at start of lab</b>
	R Mar 17	Ch 9	Correlation		
11	T Mar 22	Ch 10	Regression	Applying to Graduate School	<b>Lab #5 – Repeated measures ANOVA - Due at start of lab</b>
	R Mar 24	Ch 11	Multiple Regression		
12	T Mar 29	Ch 19	Chi-Square	No lab – exam week	
	R Mar 31		<b>Exam #2</b>		
13	T Apr 5		Final Lab Report Work Period	Career Options in Psychology	
	R Apr 7		Final Lab Report Work Period		
14	M Apr 11		<b><i>Final Lab Report Due</i></b>		<b><i>Final Lab Report Due at 8 a.m. on D2L</i></b>
	T Apr 12		<i>Last day of classes, last day to withdraw from winter courses</i>		

### **Absence From A Test/Exam**

Makeup tests/exams are **NOT** an option without the approval of the instructor. Students who miss a test/exam have up to 48 hours to contact the instructor to ask for a makeup test/exam. It's the instructor's discretion if they will allow a make-up exam. Students who do not schedule a makeup test/exam with the instructor within this 48-hour period forfeit the right to a makeup test/exam. 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** <https://www.ucalgary.ca/registrar/exams/deferred-exams>. **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/](http://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 <http://www.ucalgary.ca/policies/files/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 ([www.ucalgary.ca/policies/files/policies/acceptable-use-of-material-protected-by-copyright.pdf](http://www.ucalgary.ca/policies/files/policies/acceptable-use-of-material-protected-by-copyright.pdf)) 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 21, 2021**. Last day add/swap a course is **Friday, January 22, 2021**. The last day to withdraw from this course is **Thursday, April 15, 2021** <https://www.ucalgary.ca/pubs/calendar/current/academic-schedule.html>