

PSYC 411	Design and Analysis in Psychological Research		Fall 2018
Instructor:	Dr. Mark Holden	Lecture Location:	SA 235
Phone:	403-210-9552	Lecture Days/Time:	MWF 8:00 – 8:50 am
Email:	mark.holden@ucalgary.ca	Lab Info:	SS 018
Office:	Admin 214		M/W: 9:00 - 10:50 am
Office Hours:	TBA	TA Info:	TBA

Course Description

This course builds on the foundation of Psyc 312 – Experimental Design & Quantitative Research Methods in Psychology – 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 psyc.ucalgary.ca/undergraduate/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
Understand the advantages, limitations, and assumptions of different research and/or statistical methods when applying these methods to real-world problems	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 the use of APA style	Exams, Lab assignments	3, 4, 5	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, 7 = apply psychological knowledge and skills. Level of PLO achievement facilitated by this course: I = introductory, C = competency, A = advanced.

Prerequisites

Psyc 312 (A and B) – Experimental Design and Quantitative Research Methods in Psychology
OR Psyc 300 and 301 – Research Methods and Data Analysis in Psychology I and II

AND admission to either the Psychology major or Honors Program

Recommended Text

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

The recommended textbook is available in the bookstore, and a copy should be available on Reserve in the Taylor Family Digital Library. Alternatively, students may be able to find a copy of the previous (4th) edition, or an e-book online.

Supplementary Readings may be used during the semester, and will be made available on the course website.

Assessment Methods

Midterm Exam 1 (25%)

Covers all class material from Sept 7 – Oct 3

40 points, multiple choice and short answer questions

October 5th, 2018

Midterm Exam 2 (25%)

Covers all class material from Oct 10 – Nov 7

40 points, multiple choice and short answer questions

November 9th, 2018

Final Exam (29%)

Covers all class material, with emphasis on material after Nov 19

50 points, multiple choice and short answer questions

To be scheduled by the Registrar

Laboratory Assignments (21%)

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:

The use of computers, graphing calculators, iPads, phones, or any other programmable technology is NOT permitted during the exams. A simple non-programmable calculator may be used for calculation questions.

Study aids (e.g. books or notes) are also NOT permitted during exams, apart from any that may be provided by your instructor.

Short answer questions must be answered in the exam booklet provided by the instructor.

Extra Information about Lab Assignments:

Lab assignments must be handed in by 11:59 p.m. on the day that they are due.

All assignments will be handed in online, and MUST be handed in to the appropriate D2L dropbox folder. The only exception is the first lab assignment (Data Entry and Survey Completion) which will be completed and handed at the end of your first lab session.

Late lab assignments will receive a penalty of 10% per day late (including weekend days), as per standard department practice, up to a maximum of 7 days late. After this time, the assignment will receive a grade of 0.

There are 7 lab assignments over the course of the semester. When calculating your final grade, of which assignments are worth 21%, **the 7 assignments will count equally toward the 20% component (i.e. 3% per lab).**

Due dates for the assignments may be found below, included in the Lecture Schedule.

Department of Psychology Criteria for Letter Grades

Psychology professors 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%

As stated in the University Calendar, 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

Topics will be covered in the following order during the year. **Approximate** lecture dates are given, but the timing may be adjusted if more (or less) time is needed on a particular topic. Topics of the labs are also found below, as well as due dates for all assignments.

Date	Lecture Topic	Lab Topic	Assignments
F Sep 7	<i>University Lectures begin.</i> Introduction to the Course		
M Sep 10	Review: <ul style="list-style-type: none"> ▪ Experimental Design ▪ Basic Tests ▪ Type I and Type II Errors 	NO LAB	<i>None due</i>
W Sep 12	Review cont'd		
R Sep 13	<i>Last day to drop full courses (Multi-term) and Fall Term half courses.</i> <i>No refunds for full courses (Multi-term) or Fall Term half courses after this date.</i>		
F Sep 14	<i>Last Day to Add Classes</i> Review cont'd		

M Sep 17	The Replication Crisis: <ul style="list-style-type: none"> Power Analysis Effect Sizes the “M-Error” 	Introduction to Psyc 411 lab and SPSS	Lab Assignment 1: Survey Completion and Data Entry (due in lab)
W Sep 19	The Replication Crisis cont’d		
F Sep 21	<i>Fee payment deadline for Fall Term full and half courses.</i> The Replication Crisis cont’d		
M Sep 24	ANOVA <ul style="list-style-type: none"> 2- and 3-way ANOVA Repeated Measures ANOVA 	Effect Sizes and Power Analysis	<i>None due</i>
W Sep 26	ANOVA cont’d		
F Sep 28	ANOVA cont’d		
M Oct 1	ANOVA cont’d	NO LAB (Midterm 1)	Lab Assignment 2: Effect Sizes & Power Analysis due 10/1
W Oct 3	ANOVA cont’d		
F Oct 5 MIDTERM EXAM 1			
M Oct 8	<i>Thanksgiving Day, University closed (except Taylor Family Digital Library, Law, Medical, Gallagher and Business Libraries). No lectures.</i>	NO LAB (Thanksgiving)	<i>None due</i>
W Oct 10	Post-Exam Review Contrasts: <ul style="list-style-type: none"> Simple, Difference, Helmert, Polynomial Planned Comparisons 		
F Oct 12	Contrasts cont’d		
M Oct 15	Contrasts cont’d	ANOVA	<i>None due</i>
W Oct 17	Contrasts cont’d		
F Oct 19	MANOVA <ul style="list-style-type: none"> One-way MANOVA Two-way MANOVA 		
M Oct 22	MANOVA cont’d	Contrasts	Lab Assignment 3: ANOVA due 10/22
W Oct 24	MANOVA cont’d		
F Oct 26	Correlation <ul style="list-style-type: none"> Pearson (simple) Correlations (review) Point-Biserial Correlations Partial Correlations 		
M Oct 29	Correlation cont’d	MANOVA	Lab Assignment 4: Contrasts due 10/29
W Oct 31	Regression (Part 1) <ul style="list-style-type: none"> Simple Linear Regression Categorical Variables Multiple Regression 		
F Nov 2	Regression (Part 1) cont’d		
M Nov 5	Regression (Part 1) cont’d	NO LAB (Midterm 2)	Lab Assignment 5: MANOVA due 11/5
W Nov 7	Regression (Part 1) cont’d		
F Nov 9 MIDTERM EXAM 2			

Nov 11-17	Reading Days. No lectures.	NO LAB (Reading Days)	<i>None due</i>
M Nov 12	Remembrance Day (Observed). University Closed (except Taylor Family Digital Library, Law, Medical, Gallagher and Business Libraries). No lectures.		
M Nov 19	Post-Exam Review Regression (Part 2): <ul style="list-style-type: none"> ▪ Hierarchical Regression ▪ Non-linear Regression ▪ Model Abuse (overfitting, etc) 	Regression	<i>None due</i>
W Nov 21	Regression (Part 2) cont'd		
F Nov 23	Factor Analysis & S.E.M. <ul style="list-style-type: none"> ▪ Exploratory Factor Analysis ▪ Confirmatory Factor Analysis 		
M Nov 26	Factor Analysis & S.E.M. cont'd	Exploratory Factor Analysis	Lab Assignment 6: Regression due 11/26
W Nov 28	Factor Analysis & S.E.M. cont'd		
F Nov 30	Factor Analysis & S.E.M. cont'd		
M Dec 3	Circular Statistics <ul style="list-style-type: none"> ▪ Angular Data ▪ Cyclical Data (e.g. hours, months, etc) 	NO LAB	Lab Assignment 7: Exploratory Factor Analysis due 12/3
W Dec 5	Circular Statistics cont'd		
F Dec 7	Circular Statistics cont'd		
	<i>Fall Term Lectures End. Last day to withdraw with permission from Fall Term half courses.</i>		
Dec 10-20		Fall Term Exam Period.	

Reappraisal of Graded Term Work <http://www.ucalgary.ca/pubs/calendar/current/i-2.html>

A student who feels that a piece of graded term work (term paper, essay, test, etc.) has been unfairly graded, may have the paper re-graded as follows. The student shall discuss the work with the instructor **within fifteen days** of being notified about the mark or of the item's return to the class. If not satisfied, the student shall **immediately** take the matter to the Director of Undergraduate Studies who will arrange for a reassessment of the work **within the next fifteen days**. Students in faculties without a departmental structure should take the matter to the dean or the associate/assistant dean (Academic/Student Affairs) of the faculty offering the course. The result of that reassessment should be given to the student in writing. ***The reappraisal of term work may cause the grade to be raised, lowered or to remain the same.***

Reappraisal of Final Grade <http://www.ucalgary.ca/pubs/calendar/current/i-3.html>

In the reappraisal of a final grade, the only element that will be considered is the grading of the final assessment that makes up the final mark (e.g., final examination, final project, final paper). An exception may occur when the Instructor of Record evaluates a piece of graded term work at the end of the term; that grade may also be considered in a reappraisal of final grade.

A student wishing a reappraisal of a final grade should first attempt to review the final assessment with the department or faculty offering the course. After which, the student shall obtain a Reappraisal of Final Grade form from ucalgary.ca/registrar (under Student Forms). Students must indicate exactly what error was made in marking the final assessment and/or in computing the final grade. The reappraisal will only be considered if the student provides a detailed rationale that outlines where and for what reason an error is suspected.

Students wishing a reappraisal of a final grade (excluding Law courses) must submit their request by the following dates:

Fall Term – March 1

Winter Term – June 30

Spring Intersession – August 15

Summer Term – October 15

Supplemental Examinations: 30 calendar days from the date the examination was written

The reappraisal form shall be submitted to Enrolment Services who will forward it to the department head or dean of the faculty offering the course. Reappraisals of final grades are dealt with by the head of the academic unit in consultation with members of academic staff. Normally, the department/faculty will respond to a reappraisal request within thirty calendar days of its initiation. After the reappraisal is completed, the department shall return the form to the Registrar's Office who shall inform the student in writing of the decision. ***Students should be aware that the grade being reappraised may be raised, lowered or remain the same. A student may request a reappraisal of final grade only twice in one academic year (September 1 – August 31).***

Plagiarism and Other Academic Misconduct

Intellectual honesty is the cornerstone of the development and acquisition of knowledge and requires that the contribution of others be acknowledged. Consequently, plagiarism or cheating on any assignment is regarded as an extremely serious academic offense. Plagiarism involves submitting or presenting work in a course as if it were the student's own work done expressly for that particular course when, in fact, it is not. Students should examine sections of the University Calendar that present a Statement of Intellectual honesty and definitions and penalties associated with Plagiarism/Cheating/Other Academic Misconduct <http://www.ucalgary.ca/pubs/calendar/current/k-5.html>.

Academic Accommodations

The student accommodation policy can be found at: ucalgary.ca/access/accommodations/policy. Students needing an Accommodation because of a Disability or medical condition should communicate this need to Student Accessibility Services in accordance with the Procedure for Accommodations for Students with Disabilities ucalgary.ca/policies/files/policies/student-accommodation-policy. Students needing an Accommodation based on a Protected Ground other than Disability, should communicate this need, preferably in writing, to the instructor.

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 A Test/Exam

Makeup tests/exams are **NOT** an option without an official University medical excuse (see the University Calendar). A completed Physician/Counselor Statement will be required to confirm absence from a test/exam for health reasons; the student will be required to pay any cost associated with this Statement. Students who miss a test/exam have up to 48 hours to contact the instructor and to schedule a makeup test/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.

Except in extenuating circumstances (documented by an official University medical excuse), a makeup test/exam must be written within 2 weeks of the missed test/exam during exam make-up hours provided by the department <http://psychology.ucalgary.ca/undergraduate/exam-and-course-information#mues>. 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 http://www.ucalgary.ca/registrar/exams/deferred_final.

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 http://www.ucalgary.ca/registrar/exams/deferred_final. Students with an exceptional extenuating circumstance (e.g., a family emergency) should contact the Department of Psychology (psyugrd@ucalgary.ca).

Freedom of Information and Protection of Privacy (FOIP) Act

The FOIP legislation disallows the practice of having student's retrieve tests and assignments from a public place. Therefore, tests and assignments may be returned to students during class/lab, or during office hours, or will be made available only for viewing during exam review sessions scheduled by the Department. Tests and assignments will be shredded after one year. Instructors should take care to not link students' names with their grades, UCIDs, or other FOIP-sensitive information.

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.

Wellness and Mental Health Resources

The University of Calgary recognizes the pivotal role that student mental health plays in physical health, social connectedness and academic success, and aspires to create a caring and supportive campus community where individuals can freely talk about mental health and receive supports when needed. We encourage you to explore the excellent mental health resources available throughout the university community, such as counselling, self-help resources, peer support or skills-building available through the SU Wellness Centre (Room 370, MacEwan Student Centre, <https://www.ucalgary.ca/wellnesscentre/services/mental-health-services>) and the Campus Mental Health Strategy website (<http://www.ucalgary.ca/mentalhealth/>).

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 reassigned earned credits to courses is **Dec 7, 2018**.

Evacuation Assembly Point

In case of an emergency evacuation during class, students must gather at the designated assembly point nearest to the classroom. The list of assembly points is found at <http://www.ucalgary.ca/emergencyplan/assemblypoints>. Please check this website and note the nearest assembly point for this course.

Student Organizations

Psychology students may wish to join the Psychology Undergraduate Students' Association (PSYCHS). They are located in Administration 130 and may be contacted at 403-220-5567.

Student Union VP Academic: Phone: 403-220-3911 suvpaca@ucalgary.ca
Student Union Faculty Rep.: arts1@su.ucalgary.ca

Student Ombudsman's Office

The Office of the Student Ombudsmen provides independent, impartial and confidential support for students who require assistance and advice in addressing issues and concerns related to their academic careers. The office can be reached at 403-220-6420 or ombuds@ucalgary.ca (<http://www.ucalgary.ca/provost/students/ombuds>)

Safewalk

The safewalk program provides volunteers to walk students safely to their destination anywhere on campus. This service is free and available 24 hrs/day, 365 days a year.

Call 403-220-5333.

Important Dates

The last day to drop this course with no "W" notation and **still receive a tuition fee refund** is **September 13, 2018**. Last day to add a course is **September 14, 2018**. The last day to withdraw from this course is **December 7, 2018**.