

PSYC 615
Analysis of Variance

Instructor:	Tom O'Neill	Lecture Location:	AD 051
Phone:	587 893 3759	Lecture Days/Time:	Th 1:00PM - 3:45PM
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Office:	AD 264	Lab Location:	SS 018
Office Hours:	By appointment	Lab Day/Time:	F 1:00PM - 3:45PM

Course Description and Goals

This course covers statistical techniques that are commonly used in behavioural research, especially Psychology, and therefore emphasizes the use of linear models to analyze data that have been collected with emphasis on balanced experimental designs. The labs will provide students with opportunities to work on statistical problems related to the lectures.

Prerequisites

The course material is designed with the assumption that students have completed an undergraduate statistics course.

Required Text

Field, A., (2018). *Discovering Statistics Using IBM SPSS Statistics (North American Edition; FIFTH ed.)*. University of Sussex, UK: SAGE publishing Ltd. 816 pages.

Advanced, Optional Text

Maxwell, S. E., & Delaney, H. D. (2004). *Designing Experiments and Analyzing Data: A model comparison perspective (2nd ed.)*. Mahwah, N.J.: Lawrence Erlbaum Associates. The companion website for this book is at www.designingexperiments.com. This text should be available from other graduate students and faculty in the department... there are many copies around.

Evaluation

Exams: There will be a midterm and final exam, with weightings detailed below. **Please refer to *Absence From A Test/Exam* section in case of absence from the exams.**

Lab Assignments: Due by 11:59PM one week after assigned. Each laboratory assignment will be graded one week after it is assigned. **Assignments must be uploaded to D2L.** Save the file as: Lastname_Firstname_initial_Assignment#. **Late assignments will receive a grade of zero unless prior accommodations have been confirmed.** If you cannot submit your assignment by the due date you must contact the instructor or TA *prior to the deadline* to be considered for accommodation.

Dates and Weighting*:

Exam 1: 20% of final grade; Thursday, October 25

Exam 2 (30% of final grade; Friday, December 7)

Lab Assignments (50% of final grade; see Lab and Exam Schedule)

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

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-).

Important dates [Fall 2018]

Date	
Sep. 6	Lecture begins.
Sep. 13	Last day to drop full courses (Multi-term) and Fall Term half courses. No refunds for full courses (Multi-term) or Fall Term half courses after this date.
Sep. 14	Last day to add or swap full courses (Multi-term) and Fall Term half courses. Last day for change of registration from audit to credit or credit to audit.
Sep. 21	Tuition and Fee payment due.
Nov. 11-17	Reading Days. No lectures.
Dec. 7	Fall Term Lectures End. Last day to withdraw with permission from Fall Term half courses.

Lecture Schedule

The following schedule is approximate. Dates for specific lecture topics may change as we progress through the term, but every attempt will be made to keep the same dates for the exams.

Date	Course Introduction
Sep 6	<u>Course Introduction</u>
	<u>SPINE of Statistics: A Review of the Basics</u> – p. 39-69 & 171-181 <u>Tests to Compare Between & Within Groups</u> – p. 325-356 & 384-396 (<i>pretty much the whole text though...</i>)
Sep 13	<u>ANOVA, Power, Confidence Intervals & Assumptions</u> – p. 50-67, 87-90, 200-203, 186-196
Sep 20	<u>Focused tests/Planned Comparisons</u> – Chapter 10, Chapter 12
Sep 27	<u>Multiple Comparisons</u> <u>Trend Analysis</u> – p. 405-406
Oct 4	<u>Factorial Designs: Main Effects, Interactions, and contrasts</u> – Chapter 14
Oct 11	<u>SS types (Weighted and unweighted sum of squares)</u>
Oct 18	<u>Blocks and ANCOVA</u> – Chapter 13
Oct 25	Midterm exam
Nov 1	<u>Within Subjects (Repeated Measures)</u> – Chapter 15 (p. 477-499) <u>Higher Order Within</u> – Chapter 15 (p. 499-513)
Nov 8	TBD
Nov 15	Reading week
Nov 22	<u>Split-Plot/Mixed Design</u> – Chapter 16
Nov 29	Finish remaining content
Dec 6	Exam review

Note. We will not be covering Bayesian statistics so you can skip any readings on that topic.

Lab and Exam Schedule

The following schedule is approximate. Dates for specific LAB topics, assignments and assignment due dates may change as we progress through the term, but every attempt will be made to keep the same dates for the exams. We will be using Statistical Package for the Social Sciences (SPSS Statistics) software. It is strongly recommended you download and install your own copy. A personal copy may be downloaded from the University of Calgary IT website.

Date	Lab Assignment	Assignment	Due
Sep 7	Diving into SPSS, limits, and figures	Assignment 1	Sep 14
Sep 14	Means, medians, normality, one-sample t-test	Assignment 2	Sep 21
Sep 21	Assumptions & the t-Test	Assignment 3	Oct 28
Oct 28	Analysis of Variance (ANOVA) & Linear/Complex Contrasts	Assignment 4	Oct 5
Oct 5	Factorial ANOVA	Assignment 5	Oct 12
Oct 12	Factorial ANOVA and follow ups	Assignment 6	Oct 19
Oct 19	In-Lab Review/Question Period		
Oct 26	TBD		
Nov 2	ANCOVA	Assignment 7	Nov 9
Nov 9	One-way and Higher Within-subjects Design	Assignment 8	Nov 16
Nov 16	Reading Days – No Lab		
Nov 23	Split-Plot/Mixed Design	Final Assignment	Nov 30
Nov 30	In-Lab Review/Question Period		
Dec 7	Final Exam		

Reappraisal of Grades

A student who feels that a piece of graded term work (e.g., term paper, essay, test) has been unfairly graded, may have the work re-graded as follows. The student shall discuss the work with the instructor within 15 days of being notified about the mark or of the item's return to the class; no reappraisal of term work is permitted after the 15 days. If not satisfied, the student shall immediately take the matter to the Head of the department offering the course, who will arrange for a reassessment of the work within the next 15 days. The reappraisal of term work may cause the grade to be raised, lowered, or to remain the same. If the student is not satisfied with the decision and wishes to appeal, the student shall address a letter of appeal to the Dean of the faculty offering the course within 15 days of the unfavourable decision. In the letter, the student must clearly and fully state the decision being appealed, the grounds for appeal, and the remedies being sought, along with any special circumstances that warrant an appeal of the reappraisal. The student should include as much written documentation as possible.

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.

Academic Accommodation

It is the student's responsibility to request academic accommodations. If you are a student with a documented disability who may require academic accommodation and have not registered with

the Disability Resource Centre, please contact their office at 403-220-8237. Students who have not registered with the Disability Resource Centre are not eligible for formal academic accommodation. You are also required to discuss your needs with your instructor no later than 14 days after the start of this course.

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>.

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. Under no circumstances will this be accommodated by the department.

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.

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 suypaca@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.