

PSYC 615**Course Name: Analysis of Variance****Fall 2020**

Instructor:	Tom O'Neill	Lecture Location:	Zoom link
Phone:	403-893-3759	Lecture Days/Time:	R 1:00PM - 3:45PM
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Office:	AD 264	Lab Location:	Zoom link
Office Hours:	By appointment	Lab Day/Time:	F 1:00PM – 3:45PM

Course Description and Objectives

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.

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.

Course Format

The course will be delivered in a hybrid of asynchronous and synchronous features. Voice-over PowerPoint asynchronous lectures will be provided by the beginning of each week on D2L. Students are expected to study these files prior to the lecture on Thursdays. During the synchronous lecture, an emphasis will be placed on an overview of the topic, participating in activities and problem-solving exercises, and question and answer periods.

The lab component of the course will be delivered via Zoom links. Students will be required to access SPSS software (available from the university software distribution portal, <https://iac01.ucalgary.ca/SDSWeb/LandingPage.aspx?ReturnUrl=%2fSDSWeb%2fdefault.aspx>) to complete the lab activities, and optionally the program R (available for free at <http://cran.utstat.utoronto.ca>).

Prerequisites

The course material is designed with the assumption that students have completed an undergraduate statistics course covering an introduction to the topics covered in this 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. Available from the university bookstore.

Optionally: Consider the Field book on R (2012).

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. The library also has copies.

Assessment Methods

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 (i.e., Fridays; except for last assignment, see schedule below). Each laboratory assignment will be graded by the lab following the deadline.

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 22. Format is very short answer, short answer, and long answer with a problem-solving and application focus. The exam will be posted to D2L at the beginning of the scheduled lecture and it must be submitted within 24 hours. The exam will be a 2-hour exam; however, students may take up to 3 hours to complete the exam. The exam should be opened only when the student is prepared to begin, and the exam should be submitted within 2-3 hours of that time, within the prescribed 24-hour exam period. The exam must be submitted using the same file name convention on D2L as lab assignments, described above. Exams in this course are open book, take-home exams. For this course, an open book, take-home exam means that the use of class notes and the textbook is permitted. The use of online resources and calculators is permitted. Students may not communicate with others about course material or the exam either in person or electronically during exams. In other words, students are required to complete the exams individually without any consultation with peers, and the exam will be open-book, take-home format so any materials can be consulted during the exam (both materials made available through this course and elsewhere).

Exam 2: 32% of final grade; Thursday, December 3. The format will be identical to Exam 1. The take-home exam will be cumulative, with emphasis on the material covered following Exam 1.

Lab Assignments: 48% 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.

Late assignments and exams will not be accepted without prior instructor approval.

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>.

Faculty of Graduate Studies Grading System

A+ = Outstanding performance, A = Excellent performance, A- = Very good performance

B+ = Good performance, B = Satisfactory performance, B- = Minimum pass

C+ All grades of "C+" or lower are indicative of failure at the graduate level and cannot be counted toward Faculty of Graduate Studies course requirements. Individual programs may require a higher passing grade

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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

Date	Topic/Activity/Readings/Due Date (revise and add columns & rows as necessary)
T Sep 8	University Lectures begin.
R Sep 10	Course Introduction <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>)
R Sep 17	Last day to drop a class without financial penalty <u>ANOVA, Power, Confidence Intervals & Assumptions</u> –

	p. 50-67, 87-90, 200-203, 186-196
F Sep 18	Last day to add or swap a course
R Sep 24	<u>Focused tests/Planned Comparisons</u> – Chapter 10, Chapter 12
F Sep 25	Fee payment deadline for Fall Term full and half courses.
R Oct 1	<u>Multiple Comparisons</u>
R Oct 8	<u>Factorial Designs: Main Effects, Interactions, and contrasts</u> – Chapter 14
M Oct 12	Thanksgiving Day, University closed (except Taylor Family Digital Library, Law, Medical, Gallagher and Business Libraries). No lectures.
R Oct 15	Finish remaining content/activities; test prep
R Oct 22	Midterm exam
R Oct 29	<u>Blocks and ANCOVA</u> – Chapter 13
R Nov 5	<u>Within Subjects (Repeated Measures)</u> – Chapter 15 (p. 477-499) <u>Higher Order Within</u> – Chapter 15 (p. 499-513)
Nov 8-14	Term Break No Classes
W Nov 11	Remembrance Day (Observed). University Closed (except Taylor Family Digital Library, Law, Medical, Gallagher and Business Libraries). No lectures.
R Nov 19	<u>Split-Plot/Mixed Design</u> – Chapter 16
R Nov 26	<u>Trend analysis</u> Test prep
R Dec 3	Final Exam
W Dec 9	Fall Term Lectures End. Last day to withdraw with permission from Fall Term half courses.
Dec 12-23	Fall Final Exam Period

Tentative Lab Schedule

Date	Lab Assignment*	Assignment	Due
Sep 11	Diving into SPSS/R, descriptives	No assignment	
Sep 18	Assumptions, normality, t-tests (all)	Assignment 1	Sep 25
Sep 25	ANOVA & follow-up tests	Assignment 2	Oct 2
Oct 2	Orthogonal contrasts	Assignment 3	Oct 9
Oct 9	Factorial ANOVA & follow-ups	Assignment 4	Oct 19
Oct 16	Midterm review/Q&A	No assignment	
Oct 23	NO LAB (week of midterm)		
Oct 30	ANCOVA & blocking Midterm exam review with Tom	Assignment 5	Nov 6
Nov 6	One-way and Higher Within-subjects Design	Assignment 6	Nov 13
Nov 13	Reading Week – NO LAB		
Nov 20	Split-Plot/Mixed Design	Assignment 7	Nov 27

Nov 27	Trend Analysis	Assignment 8 (in class)	Nov 30**
Dec 4	No LAB		

*Exact topics may be adjusted accordingly throughout semester.

** Note that this assignment is due the Monday following the last lab to allow for feedback to be given prior to the exam on December 3rd.

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/. 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) 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, September 17, 2020**. Last day add/swap a course is **Friday, September 18, 2020**. The last day to withdraw from this course is **Wednesday, December 9, 2020**.

<https://www.ucalgary.ca/pubs/calendar/current/academic-schedule.html>