

Psyc 617	Multivariate Data Analysis		Winter 2020
Instructor:	Dr. Andrea Protzner Dr. Tom O'Neill	Lecture Location:	A051
Phone:	403-220-5566 403-893-3759	Lecture Days/Time:	T 1:00pm-3:45pm
Email:	protzner@ucalgary.ca toneill@ucalgary.ca	Lab Day/Time	Th 9:00-11:45am
Office:	Education Tower 1424 AD 264	Lab Location	SS018
Office Hours:	TBA	Teaching Assistants:	Brittany Lindsay (blindsa@ucalgary.ca) Emiko Muraki (ejmuraki@ucalgary.ca)

Course Description

Multivariate techniques and design issues, including correlations, multiple regression, canonical correlation, logistic regression, discriminant analysis, MANOVA, linear mixed models with nested and longitudinal designs (e.g., “hierarchical linear modeling”), exploratory factor analysis, confirmatory factor analysis, path analysis, and structural equation modeling. By the end of this course you should have working knowledge of the theory and application of each statistical technique.

Required Text

Meyers, L. S., Gamst, G., & Guarino, A. J. (2013). Applied multivariate research: Design and interpretation (2nd OR 3rd ed.). Sage.

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Evaluation

1. Midterm exam

- Weighting: 25% of final grade
- Exam date: February 25th, during the regular class hours
- Exam content: ALL of the materials covered up to February 11th
- Study aids (textbook and class notes) are allowed for part of the exam.
- Calculators are allowed for part of the exam.

2. Final exam

- Weighting: 35% of final grade
 - Exam date: TBD
 - Exam content: ALL of the materials (cumulative)
 - **Take home exam**
- Study aids (textbook and class notes) are allowed for part of the exam.
- Calculators are allowed for part of the exam.

3. Lab assignments

Weighting: 40% of final grade

Topic & Due Date

Mediation & Moderation	January 30 th
Logistic Regression	February 6 th
MANOVA & DFA	February 13 th
Exploratory Factor Analysis	March 12 th
Confirmatory Factor Analysis	March 19 th
Structural Equation Modeling	March 26 th
Multi-Level Modeling Nested	April 2 nd
Multi-Level Modeling Longitudinal	April 9 th

Due by 5:00PM one week after assigned (i.e., Thursdays). **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 *within 48 hours of the deadline* to be considered for accommodation.

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.

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

Date	Topic/Activity/Readings/Due Date (revise and add columns & rows as necessary)
M Jan 6	Winter term begin.
M Jan 13	Winter Lectures Begin
T Jan 14	Course overview, correlation, and other general issues in statistics
R Jan 16	Lab: Introduction to SPSS, Correlation
T Jan 21	Moderation & Mediation
R Jan 23	Last day to drop a class without financial penalty Lab: Moderation & Mediation
F Jan 24	Last day to add or swap a course
T Jan 28	Logistic Regression & Cluster Analysis
R Jan 30	Lab: Logistic & Cluster Analysis Due: Assignment 1
F Jan 31	Tuition and Fee payment deadline
T Feb 4	MANOVA & Discriminate Function Analysis
R Feb 6	Lab: MANOVA & Discriminate Function Analysis Due: Assignment 2
T Feb 11	MANOVA, DFA, & Midterm Review
R Feb 13	Lab: Exam Review & Drop in Lab Due: Assignment 3
Feb 16-22	Reading Week. No lectures. University open (except Family Day). Alberta Family Day, University closed (except Taylor Family Digital Library, Law, Medical, Gallagher and Business Libraries). No lectures.
M Feb 17	Alberta Family Day, University closed (except Taylor Family Digital Library, Law, Medical, Gallagher and Business Libraries). No lectures.
T Feb 25	Midterm Exam
R Feb 27	Lab: Exam Feedback
T Mar 3	Exploratory Factor Analysis (EFA)
R Mar 5	Lab: EFA
T Mar 10	Confirmatory Factor Analysis (CFA)
R Mar 12	Lab: CFA Due: Assignment 4
T Mar 17	Online Lecture: Structural Equation Modeling
R Mar 19	Online Lab: Structural Equation Modeling Due: Assignment 5
T Mar 24	Online Lecture: Multilevel Modeling: Nested Designs
R Mar 26	Online Lab: Multilevel Modeling: Nested Designs Due: Assignment 6
T Mar 31	Online Lecture: Multilevel Modeling: Longitudinal Designs

R Apr 2	Online Lab: Multilevel Modeling: Longitudinal Designs Due Assignment 7
T Apr 7	Online Lecture: Multilevel Designs & Exam Review
R Apr 9	Cancelled: Lab Exam Review & Drop In Due: Assignment 8
T Apr 14	Take Home Final Exam
W Apr 15	Winter Term Lectures End. Last day to withdraw from full courses and Winter Term half courses.
Apr 18-29	Winter Term Final Examinations.
Apr 10	Good Friday
Apr 30	Winter Term Ends

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

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

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 unauthorised 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.

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.

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 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.

Absence From A Test/Exam

Makeup tests/exams are **NOT** an option without the approval of the instructor. A student may be asked to provide supporting documentation for an exemption/special request for a make-up exam <https://www.ucalgary.ca/pubs/calendar/current/n-1.html>. 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 unless there are extenuating circumstances. 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).

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/>

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

The Psychology Graduate Students' Association (PGSA) is an organization built to provide support for all graduate students in the Department of Psychology. They can be contacted at pgsa@ucalgary.ca

The Graduate Student Association (GSA) Vice-President Academic can be reached at (403) 220-5997 or gsa.vpa@ucalgary.ca; Information about the GSA can be found here: <https://gsa.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
<https://www.ucalgary.ca/student-services/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 **Thursday, January 23, 2020**. Last day add/swap a course is **Friday, January 24, 2020**. The last day to withdraw from this course is **Wednesday, April 15, 2020**.