

Psychology 300: Research Methods and Data Analysis in Psychology I
Spring 2020

Instructor:	Dr. Alexandra Twyman	Lectures:	Online, asynchronous
		Labs:	Online, asynchronous
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Course Description

This course aims to help you to develop the skills required to (a) conduct and analyze scientific research in psychology, (b) communicate your research to others, and (c) evaluate research by other psychologists. These skills are central to success as a psychology major (not to mention as a research psychologist). At a more general level, this course is designed to help you develop methodological, analytical, and communication skills that are invaluable in a wide range of everyday applications and in numerous lines of work.

Note: This course focuses on quantitative approaches. Students interested in qualitative psychological research should consider Psyc 415 - Qualitative Inquiry in Psychology upon completion of this course.

The laboratory component of the course is designed to facilitate experiential learning (learning by doing) of the 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 psyc.ucalgary.ca/undergraduate/program-learning-outcomes), and the expected level of achievement.

Course Learning Outcomes	Assessment Methods	PLO(s)	Level(s)
Contrast research methodologies for strengths and weaknesses.	Multiple choice exams	2, 7	C
Identify ethical issues in research	Multiple choice exams	2, 6	I

Design research using appropriate methodology to test a research question	Lab assignments	1, 2, 3, 4, 5, 6, 7	C
Apply principles of null hypothesis testing	Multiple choice exams	3, 7	I
Conduct and interpret numerical and graphical methods of summarizing data	Multiple choice exams, lab assignments	2, 3, 4	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

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 200 – Principles of Psychology I and one of: Mathematics 30-1, Mathematics 30-2, Pure Mathematics 30, Applied Mathematics 30, Mathematics 31. Mathematics II (offered by Continuing Education), or 50 per cent or higher on the Mathematics Diagnostic Test. Equivalents will be accepted for students from outside Alberta.

Optional Textbooks

Smith, R. A. & Davis, S. F. (2013). *The Psychologist as Detective: An introduction to conducting research in Psychology* (6th Ed.). Pearson Education Canada. (Available from the bookstore in digital format: \$50.99)

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. 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 (\$38.00) from the bookstore.

Assessment Methods

Class components (60% of final grade).

Each unit test is equally weighted (worth 10% each). **STUDENTS MUST ACHIEVE A PASSING GRADE ON THE UNIT TEST BEFORE BEING ALLOWED TO TAKE THE NEXT UNIT TEST.** No resources are allowed to be used during the unit quizzes, other than a non-programable calculator, blank paper, writing utensils, and where given, the class formula pages. Without documentation and instructor's permission, late quizzes will not be accepted.

Unit Test	Due DATE	CONTENT
1	May 13 th	Science of psychology, research ideas and hypotheses, ethics
2	May 20 th	Role of stats in research, variability and control, choosing the best measure
3	May 27 th	Non-experimental designs, threats to internal validity, alternative research designs
4	June 3 rd	Plotting data, central tendency, and variability
5	June 10 th	Normal distribution, standard normal distribution, and z-scores
6	June 17 th	Discrete probability theory, hypothesis testing I and II

Calculators & Formula Sheets For tests requiring computations, a non-graphics based calculator may be used. For some tests, formula information will be provided at the time of the test. You may use writing utensils and blank sheets of paper when needed to assist you in your calculations. No other resources are allowed during tests.

Lab components (40% of final grade).

Lab Assignments. There will be six lab assignments, equally weighted, which in total will comprise 40% of your grade. Lab assignments will be submitted in a dropbox folder on D2L. The lab topics are as follows:

Lab Assignment 1: Literature Search

Lab Assignment 2: Operationally Defining Variables

Lab Assignment 3: Survey Research Question (intro)

Lab Assignment 4: Ethics

Lab Assignment 5: Survey Research Write-up

Lab Assignment 6: Poster

NOTE: There will be components of the labs that you are expected to complete in your own time. It is extremely important that you do this work prior to the allotted deadlines, as future labs will be based on the work that you do outside of the lab.

Without documentation, late lab assignments will be deducted 5% 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.

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

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-).

Extra Information about Course Credits for Research Participation (max 2% of final grade):

Finally, to help students learn about research, you are encouraged to take part in research that is being conducted right here at the U of C. One great way to learn about psychological research is to take part in it! In doing so, you will be helping researchers from the department gather new information about human behavior. And, you will also get the chance to learn about the research process from the "inside." Finally, after you have participated in any study, you will be given a "debriefing" form that will explain the study's purposes and goals.

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.**

Note: 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. **The last day to participate in research and allocate credits is June 17, 2020.**

Tentative Lecture Schedule

Please note that this schedule is tentative, and may be adjusted for several factors, including the pacing of student learning or instructor illness.

Lecture Schedule

Module	Lecture Topic	Unit Topic	Unit Test DUE
1	The Science of Psychology (ch 1)	1	
2	Research Ideas & Hypotheses (ch 2)	1	
3	Ethics	1	
4	Correlation	1	May 13 th
5	<i>Role of Statistics in Research (ch 9)</i>	2	
6	<i>Choosing the Best Measure (ch 6)</i>	2	
7	<i>Variables & Control (ch 5)</i>	2	May 20 th
8	Non-Experimental Methods (ch 3,4)	3	
9	Threats to Internal Validity (ch 8)	3	
10	Alternative Research Designs	3	May 27 th
11	<i>Plotting Data</i>	4	
12	<i>Central tendency</i>	4	
13	<i>Variability</i>	4	June 3 rd
14	Normal Distribution	5	
15	The Empirical Rule	5	
16	Z-scores	5	
17	Practice with Z-scores	5	June 10 th
18	<i>Discrete Probability</i>	6	
19	<i>Hypothesis Testing I</i>	6	
20	<i>Hypothesis Testing II</i>	6	June 17 th

Lab Topic	Posted Date	Assignment DUE Date
APA Format & Avoiding Plagiarism	May 6 th	Use in all assignments
Literature Search	May 6 th	May 11 th
Operationally Defined Variables	May 13 th	May 19 th
Survey Research Question (intro)	May 20 th	May 25 th
Research Ethics	May 27 th	June 1 st
Survey Research (write-up)	June 3 rd	June 8 th
Poster	June 10 th	June 15 th

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>

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.

Important Dates

The last day to drop this course with no "W" notation and **still receive a tuition fee refund is Tuesday, May 12, 2020**. Last day for registration/change of registration is **Tuesday, May 12, 2020**. The last day to withdraw from this course is **Wednesday, June 17, 2020**.

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/>).

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>)