
Psychology 300 LEC02 Research Methods and Data Analysis in Psychology I Fall 2021

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| Instructor: | Dr. Alexandra Twyman | Lecture Location: | D2L: Online, asynchronous D2L: Online, asynchronous |
| Email: | Alexandra.twyman@ucalgary.ca | Teaching Assistants: | Multiple; See D2L for your TA |

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 <https://live-arts.ucalgary.ca/psychology/about#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, 6,8 | I |

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|---|--|---------------------|---|
| 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, 8 | 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 in a diverse world, 7 = apply psychological knowledge and skills, 8 = Demonstrate multicultural competence and awareness of issues related to equity, diversity,* and inclusion. Level of PLO achievement facilitated by this course: I = introductory, C = competency, A = advanced.

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.

Student Support and Resources

[UCalgary Student Wellness Services | University of Calgary](https://www.ucalgary.ca/registrarservices/ucalgary-student-wellness-services) 403.210.9355.
<https://www.ucalgary.ca/registrarservices/registration/course-outlines>

Our mental health is just as important as our physical health, and yet we often will neglect our mental wellbeing, which in turn often influences our physical well being. There are really wonderful and qualified people who can help you out! If you are going through a tough time, there is no need to go it alone. The hardest step to take is often that first phone call, but once you have taken that step, you will be amazed at how well taken care of you will be, and much mental health can improve with help and support. These resources are free to use for University of Calgary students. So if you are in need, please give them a call!

Course Format

Class materials will be posted to the course D2L page as per the course schedule below.

Prerequisites

PSYC 200 – Principles of Psychology I AND one of Psychology 201 *or* Neuroscience 201 AND one of: Mathematics 30-1, Mathematics 30-2, 31, *or* Mathematics 2 (offered by Continuing Education).
 Equivalentents will be accepted for students from outside Alberta.

Antirequisites

Credit for Psychology 300 and 312 will not be allowed.

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)

This textbook is listed for students who learn best from books, or would like a supplemental book to aid in their learning. The textbook is NOT required for the class. All of the exam material comes from lecture content.

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 for this, and all future psychology courses (including psychology 301). There are also numerous web resources (free) 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).

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

All of the unit tests are multiple choice. The first two unit tests are worth 24 % each and the last unit test is worth 12%. Each test covers the material in that unit (see class schedule for exact topics in each unit test). They are posted on D2L. The tests will be available for 24 hours on the exam writing day (midnight to midnight) so that you can pick your ideal start to write the test.

Tests in this course are closed book. The use of non-approved resources, including class notes, the textbook, online resources, or programable calculators is prohibited during the tests in this course. Students may not communicate with others about course material or the exam either in person or electronically during tests.

You ARE allowed to use a non-programable calculator, blank paper, writing utensils, and where given, the class formula pages (the ONLY permissible formula pages will be clean copies (no notes allowed) of the formula sheet posted on our D2L page for the unit tests. These will be especially helpful for the calculation units.

| Unit Test | DATE | CONTENT |
|-----------|----------------------|--|
| 1 | Oct 21 st | Science of psychology, research ideas and hypotheses, ethics, Nonexperimental design, correlation, role of stats in research, variability and control, choosing the best measure |
| 2 | Nov 25 th | Plotting data, central tendency, and variability, Normal distributions (the empirical rule), standard normal distribution, and z-scores |
| 3 | Dec 9 th | Probability theory, hypothesis testing I and II |

“Without instructor approval, test extensions will not be granted. Any missed tests will be required to be completed within ONE week of the missed test, and only with the explicit permission of your instructor”

Lab components (40% of final grade).

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

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, and further details will be posted on D2L:

| Lab Topic | Assignment DUE Date |
|-------------------------------------|------------------------|
| APA Format & Avoiding Plagiarism | Use in all assignments |
| 1. Literature Search | Sept 16 th |
| 2. Operationally Defined Variables | Oct 1 st |
| 3. Research Ethics | Oct 14 th |
| 4. Survey Research Question (intro) | Oct 28 th |
| 5. Survey Research (write-up) | Nov 18 th |
| 6. Poster | Dec 2 nd |

ALL LABS ARE DUE AT 11:59 p.m.

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. *The lab materials will be posted a week in advance of the lab due date to allow for sufficient completion of the lab.*

Without instructor approval, 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.

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>.

Department of Psychology Criteria for Letter Grades

Psychology course instructors 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

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|----|---------|----|--------|----|--------|----|--------|
| 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% |

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 (with lab due dates and important university dates)

As this is an online course, I’ve prerecorded my lectures and they will be posted in a set of one unit of material at a time. Each unit has one test associated with that learning unit. In the lecture schedule, I’ve recommended a study schedule. But as long as you meet the lab and test deadlines, you can decide how you would like to pace through the material. I’ve also noted key dates on the schedule.

| Module | Topic (book chapter) | Unit | Recommended Study Week |
|---|--|------|--|
| 1 | <i>The Science of Psychology (ch 1)</i> | 1 | Sept 7 th |
| 2 | <i>Research Ideas & Hypotheses (ch 2)</i> | 1 | Sept 9 th |
| 3 | <i>Ethics (Historical and Modern)</i> | 1 | Sept 14 & 16 th |
| Lab #1 Due (Literature Search) Due Thursday Sept 16th | | | |
| Thursday Sept 16 th : Last day to drop a class without a penalty | | | |
| Friday Sept 17 th : Last day to add or swap a course | | | |
| 4 | <i>Non Experimental Methods (Correlation) (ch 3,4)</i> | 1 | Sept 21 st & 23 rd |

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| Friday Sept 24 th : Fee payment deadline for Fall Term full and half courses. | | | |
| 5 | <i>Role of Statistics in Research (ch 9)</i> | 1 | Sept 28 th |
| Thursday Sept 30 th : National Truth and Reconciliation Day, No lectures. | | | |
| Lab # 2 Due on Friday, Oct 1 st (Operational Definition of Variables) | | | |
| 5 | <i>Role of Statistics in Research_Variables</i> | 1 | Oct 5 th |
| 6 | <i>Choosing the Best Measure (ch 6)</i> | 1 | Oct 7 th |
| Mon Oct 11 th : Thanksgiving Day, University closed (except Taylor Family Digital Library, Law, Medical, Gallagher and Business Libraries). No lectures. | | | |
| 7 | <i>Variables & Control (ch 5)</i> | 1 | Oct 12 th & 14 th |
| Lab # 3 Due on Thursday Oct 14 th (Research Ethics) | | | |
| 8 & 9 | **Introduction to Normal Distributions & Graphs** (unit 2 material) | 2 | Oct 19 th |
| ***UNIT 1 TEST: OCT 21 st (24 % of course grade)*** | | | |
| 9 | Plotting Data & Frequency Histograms | 2 | Oct 26 th |
| 10 | Central tendency | 2 | Oct 28 th |
| Lab # 4 Due on Thursday, Oct 28 th (Survey Research Question: Intro) | | | |
| 11 | IQR, Boxplots, Variability and Standard Deviation | 2 | Nov 2 nd & 4 th |
| Nov 7-13: Term Break No Classes Remembrance Day (Observed). University Closed (except Taylor Family Digital Library, Law, Medical, Gallagher and Business Libraries). No lectures. | | | |
| 12 | The Empirical Rule | 2 | Nov 16 th |
| 13 | Standard Normal | 2 | Nov 18 th |
| Lab #5 Due on Thursday, Nov 18 th : Survey Research Write-up | | | |
| 14 | Z-scores | 2 | Nov 23 rd |
| ***UNIT 2 TEST: Nov 25 th (24% of course grade)*** | | | |

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| 15 | <i>Probability Theory</i> | 3 | Nov 30 th |
| 16 | <i>Hypothesis Testing I</i> | 3 | Dec 2 nd |
| Lab # 6 Due on Tuesday, Dec 2nd: Poster Presentation | | | |
| 17 | <i>Hypothesis Testing II</i> | 3 | Dec 7 th |
| ***UNIT 3 TEST: Dec 9th (12% of course grade)*** | | | |
| Thursday Dec 9 th : Last day to withdraw with permission from Fall Term half courses. | | | |

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 reassign earned credits to courses is **Thursday, December 9, 2021**.

Supporting Documentation

Students may be asked to provide supporting documentation for an exemption/special request. This may include, but is not limited to, a prolonged absence from a course where participation is required, a missed course assessment, a deferred examination, or an appeal. Students are encouraged to submit documentation that will support their situation. Supporting documentation may be dependent on the reason noted in their personal statement/explanation provided to explain their situation. This could be medical certificate/documentation, references, police reports, invitation letter, or a statutory declaration, etc. The decision to provide supporting documentation that best suits the situation is at the discretion of the student. Students cannot be required to provide specific supporting documentation, such as a medical note.

Students can make a Statutory Declaration as their supporting documentation (available at ucalgary.ca/registrar). This requires students to make a declaration in the presence of a Commissioner for Oaths. It demonstrates the importance of honest and accurate information provided and is a legally binding declaration. Several registered Commissioners for Oaths are available to students at no charge, on campus, please see ucalgary.ca/registrar.

Falsification of any supporting documentation will be taken very seriously and may result in disciplinary action through the Academic Discipline regulations or the Student Non-Academic Misconduct policy.

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 <https://www.ucalgary.ca/legal-services/university-policies-procedures/accommodation-students-disabilities-procedure>.

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

Important Dates

The last day to drop this course with no "W" notation and **still receive a tuition fee refund is Thursday, September 16, 2021.** Last day add/swap a course is **Friday, September 17, 2021.** The last day to withdraw from this course is **Thursday, December 9, 2021.**

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

Student Support and Resources

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