



Psychology 312-01 Experimental Design and Quantitative Research Methods in Psychology

Instructor:	Dr. Melissa Boyce	Lecture Location:	CHC 119
Phone:	403-210-6257	Lecture Days/Time:	TR 2:00 – 3:15pm
Email:	mboyce@ucalgary.ca		
Office:	A258		
Office Hours:	TBA		

Contact your instructor regarding general course issues, questions about lecture material and course content, and grading of exams.

Course Description and Goals

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.

A final grade of at least an A- is required in this course or in an advanced research methods and statistics course (PSYC 407, PSYC 411, PSYC 417) in order to be admitted to the honours program in psychology.

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, and hence the lab assignments are integrated with the lecture schedule.

Prerequisites

Math 30 or 31 or Mathematics II and Psyc 205 – Principles of Psychology

Required Text

Howell, D. C. (2011). *Fundamental Statistics for the Behavioral Sciences (7th Ed.)*. Belmont, CA: Thomson Wadsworth. (located in the bookstore)

It is also STRONGLY recommended that you obtain a copy of the *Publication Manual of the American Psychological Association (6th Ed.)* as you will be expected to conform to APA format in all assignments you submit.

NOTE: We will be using Turning Point[®] clickers in this class. They have been bundled with the textbook to save you money; however, if you have purchased a used textbook, extra clickers are available for purchase in the bookstore.

Lab Instructors - Fall

Section	Day	Time	Location	Lab Instructor	Email
B01	Mon	9:00 – 10:50 am	SS 018	Ryan Jeffers	rtjeffer@ucalgary.ca
B02	Mon	11:00 – 12:50 pm	SS 018	Anna Singleton	asinglet@ucalgary.ca
B03	Tues	11:00 – 12:50 pm	SS 018	Alex Taikh	ataikh@ucalgary.ca
B04	Mon	3:00 - 4:50 pm	SS 018	Sam Chow	samchow@ucalgary.ca
B05	Mon	5:00 – 6:50 pm	SS 018	Efrem Violato	emviolat@ucalgary.ca
B06	Wed	9:00 – 10:50 am	SS 018	Justin Rodych	jtgrody@ucalgary.ca
B07	Wed	11:00 – 12:50 pm	SS 018	Anna Singleton	asinglet@ucalgary.ca
B08	Wed	1:00 – 2:50 pm	SS 018	Julie Choi	julchoi@ucalgary.ca
B09	Wed	3:00 – 4:50 pm	SS 018	Alex Taikh	ataikh@ucalgary.ca
B10	Thurs	9:00 – 10:50 am	SS 018	Stephanie Law	sjlaw@ucalgary.ca
B11	Fri	11:00 – 12:50 pm	SS 018	Justin Rodych	jtgrody@ucalgary.ca
B12	Fri	2:00 – 3:50 pm	SS 018	Ryan Jeffers	rtjeffer@ucalgary.ca
B16	Tues	9:00 – 11:00 am	SS 018	Julie Choi	julchoi@ucalgary.ca
B17	Thurs	11:00 – 1:00 pm	SS 018	Stephanie Law	sjlaw@ucalgary.ca

Lab Instructors - Winter

Section	Day	Time	Location	Lab Instructor	Email
B01	Mon	9:00 – 10:50 am	SS 018	Ryan Jeffers	rtjeffer@ucalgary.ca
B02	Mon	11:00 – 12:50 pm	SS 018	Anna Singleton	asinglet@ucalgary.ca
B03	Tues	11:00 – 12:50 pm	SS 018	Michelle Glasmann	mglasmann@yahoo.com
B04	Mon	3:00 - 4:50 pm	SS 018	Sam Chow	samchow@ucalgary.ca
B05	Mon	5:00 – 6:50 pm	SS 018	Efrem Violato	emviolat@ucalgary.ca
B06	Wed	9:00 – 10:50 am	SS 018	Justin Rodych	jtgrody@ucalgary.ca
B07	Wed	11:00 – 12:50 pm	SS 018	Anna Singleton	asinglet@ucalgary.ca
B08	Wed	1:00 – 2:50 pm	SS 018	Julie Choi	julchoi@ucalgary.ca
B09	Wed	3:00 – 4:50 pm	SS 018	Sam Chow	samchow@ucalgary.ca
B10	Thurs	9:00 – 10:50 am	SS 018	Ted Slone	etgslone@ucalgary.ca
B11	Fri	11:00 – 12:50 pm	SS 018	Ted Slone	etgslone@ucalgary.ca
B12	Fri	2:00 – 3:50 pm	SS 018	Efrem Violato	emviolat@ucalgary.ca
B16	Tues	9:00 – 11:00 am	SS 018	Julie Choi	julchoi@ucalgary.ca
B17	Thurs	11:00 – 1:00 pm	SS 018	Michelle Glasmann	mglasmann@yahoo.com

Contact your lab instructor regarding material presented in lab, lab assignments, & questions about lab assignment grading.

Course Website

The course website is located on blackboard: <https://blackboard.ucalgary.ca/webapps/login/>

Evaluation

Class components (60% of final grade).

Exams. There will be six in-class exams during this course, each of which will be worth 10% of your mark and will cover lectures and the web modules. Exams will feature multiple-choice questions and are non-cumulative insofar as they will be limited to material covered since the previous test. However, many of the concepts in this course are inherently cumulative in that they assume knowledge and understanding of material introduced earlier.

Exam dates are as follows:

Fall Term

Exam 1: October 2, 2012

Exam 2: November 8, 2012

Exam 3: December 6, 2012

Winter Term

Exam 4: February 7, 2013

Exam 5: March 14, 2013

Exam 6: April 11, 2013

Lab components (40% of final grade).

Report. A typed, double-spaced, scientific report based on a study to be conducted during lab. The final version, worth 10% of your mark, is due at the beginning of class on Tuesday, April 2. Instructions for completing your report will be posted on blackboard and provided in lab.

Labs. Each student must be registered in a lab section associated with this lecture section. There will be ten lab assignments, which in total will comprise 30% of your grade. Lab assignments will be due in hard copy at the beginning of lab (due dates indicated on lab schedule). Late assignments will not be accepted without a medical note. The grades allocated for each assignment are as follows:

Lab Assignment 1: Literature Search	3%
Lab Assignment 2: Observational Research	3%
Lab Assignment 3: Survey Research Parts 1 & 2	3%
Lab Assignment 4: Poster	3%
Lab Assignment 5: <i>t</i> -Tests	3%
Lab Assignment 6: Factorial ANOVA	3%
Lab Assignment 7: Draft of Intro & Methods	3%
Lab Assignment 8: Paired <i>t</i> -Tests	3%
Lab Assignment 9: Repeated Measures ANOVA	3%
<u>Lab Assignment 10: Regression</u>	<u>3%</u>
Total 30%	

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.

It is expected that you will complete all components of the course. If you miss an exam without medical documentation, you will receive a score of 0 for that exam. Late 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.

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

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.

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

Week	Date	Lecture Topic	Relevant Web Modules	Relevant Text Material	Lab Topic	Lab Assignment Due
1	T Sep 11	Introduction to the course		Course Outline	No Lab	
	R Sep 13	The Science of Psychology	<i>Intro to Research Methods – Psychology and Science</i>	Ch. 1		
2	T Sep 18	The Role of Statistics in Research	Statistics Concepts	Ch. 2	Literature Search	
	R Sep 20	Ethics VIDEO: Stanley Milgram’s <i>Obedience</i>	Ethics			

	F Sep 21	<i>Last day to drop a course with no W grade and tuition refund.</i>				
3	M Sep 24	<i>Last day to add or swap courses.</i>			Writing Research Papers (in APA format)	Literature Search Assignment due beginning of lab
	T Sep 25	Research Ideas and Hypotheses	Generating and Refining Research Hypotheses			
	R Sep 27	Measuring and Manipulating Variables	<i>Measurement</i> – Reliability, Construct Validity			
4	T Oct 2	Exam 1	All material to date		No Lab	
	R Oct 4	Choosing the Best Measures	Scaling and Sensitivity			
5	T Oct 9	Non-Experimental Methods I	<i>Descriptive Methods</i> – Overview		No Lab (Due to Thanksgiving)	
	R Oct 11	Non-Experimental Methods II	Archival Data, Observation			
6	T Oct 16	Non-Experimental Methods III			Observational Research	
	R Oct 18	Internal Validity	<i>Internal Validity</i> – Internal Validity: Regression to the Mean			

7	T Oct 23	Alternative Research Designs			Survey Research Part 1: Survey Development **MUST COMPLETE ONLINE SURVEY BY SUN, OCT 28 AT NOON	Observational Research Assignment due beginning of lab
	R Oct 25	Plotting Data		Ch. 3		
8	T Oct 30	Measures of Central Tendency		Ch. 4	Survey Research Part 2: Data Analysis	
	R Nov 1	Measures of Variability		Ch. 5		
9	T Nov 6	Review			No Lab (Due to Reading Day)	
	R Nov 8	Exam 2	All material since Exam 1			
10	T Nov 13	Reading Day. No lecture.			No Lab (Due to Remembrance and Reading Days)	
	R Nov 15	The Normal Distribution	<i>Intro to Hypothesis Testing –</i> The Normal Distribution	Ch. 6		
11	T Nov 20	Z-Scores	Z-Scores		Putting together a Poster	Survey Research Assignment due beginning of
	R Nov	Probability Theory	Basic Concepts of	Ch. 7		

	22		Probability			lab
12	T Nov 27	Hypothesis Testing I	<i>Intro to Hypothesis Testing – Hypothesis Testing, Sample Distributions and Hypothesis Testing</i>	Ch. 8	Poster Session	Poster due beginning of lab
	R Nov 29	Hypothesis Testing II	Type I and II Errors, One-Tailed and Two-Tailed Tests	Ch. 8		
13	T Dec 4	Review			No Lab	
	R Dec 6	Exam 3	All material since Exam 2			
14	T Jan 8	The One Sample <i>t</i> -test	<i>Simple Experiments and Hypothesis Test of Means – Hypothesis Testing: One Sample</i>	Ch. 12	No Lab	
	R Jan 10	Confidence Limits on the Mean	Confidence Limits on the Mean			
15	T Jan	Experiments with Two	The Simple Experiment:	Ch. 14	Participate in online study &	

	15	Groups	Comparing Two Groups		outline of research paper	
	R Jan 17	The <i>t</i> -test for Independent Groups	Hypothesis Testing: Two Independent Samples			
16	T Jan 22	Statistical Power	<i>Statistical Power</i>	Ch. 15	Independent Groups <i>t</i> -tests	
	R Jan 24	Experiments with More Than Two Groups	<i>Multiple Group Experiments and ANOVA – The Multiple Group Experiment</i>	Ch. 16		
17	T Jan 29	One-Way ANOVA	One-Way ANOVA		One-Way ANOVA: Analyze Experiment and Research Paper Q&A	Independent Groups <i>t</i> -test Assignment due beginning of lab
	R Jan 31	Multiple-Comparison Procedures				
18	T Feb 5	Review			No Lab	
	R Feb 7	Exam 4	All material since Exam 3			
19	T Feb 12	Factorial Designs I	Factorial Designs	Ch. 17	Factorial ANOVA	Draft of Introduction and Methods due beginning of lab
	R Feb 14	Factorial Designs II				
20	T Feb 19	Reading Week – No Lecture			No Lab	
	R Feb	Reading Week – No				

	21	Lecture				
21	T Feb 26	Factorial ANOVA I	Factorial ANOVA	Ch. 17	Paired <i>t</i> -tests	Factorial ANOVA Assignment due beginning of lab
	R Feb 28	Factorial ANOVA II				
22	T Mar 5	Within-Subjects Designs	<i>Repeated Measures – Matched-Pair Designs, Within-Subject Designs</i>	Ch. 13	Repeated Measures ANOVA	Paired <i>t</i> -test Assignment due beginning of lab
	R Mar 7	The Paired <i>t</i> -test	Hypothesis Testing: Related Samples			
23	T Mar 12	Review			No Lab	
	R Mar 14	Exam 5	All material since Exam 4			
24	T Mar 19	Repeated Measures ANOVA	Repeated Measures ANOVA	Ch. 18	Regression Lab	Repeated Measures ANOVA Assignment due beginning of lab
	R Mar 21	Correlation	<i>Correlation and Regression – Correlation</i>	Ch. 9		
25	T Mar 26	Regression I	Regression	Ch. 10		No lab (due to Good Friday)

	R Mar 28	Practice with Correlation and Regression				
26	T Apr 2	Multiple Regression	Multiple Regression	Ch. 11	Critiquing Research Lab	Research Paper due at beginning of class on Tues, April 2 ----- Regression Assignment due beginning of lab
	R Apr 4	Chi-Square	<i>Introduction to Research Methods –</i> Reading and Evaluating Research	Ch. 19		
27	T Apr 9	Review	All material since Exam 5		No Lab	
	R Apr 11	Exam 6				
28	T Apr 16	<i>Last day to participate in research and allocate research credits. Last day to withdraw.</i>				

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. 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 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.

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 via the Department Office (Admin 275), 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.

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 an individual's final grade. **To get 2%** added to the final grade in a full-year course, like this one, you have to acquire **a total of 4 bonus credits** towards the course. These credits

may be acquired in the Fall and/or the Winter Session. 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 **Dec 7th, 2012**.

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 170 and may be contacted at 403-220-5567.

Student Union VP Academic: Phone: 403-220-3911 suypaca@ucalgary.ca

Student Union Faculty Rep.: Phone: 403-220-3913 socialscirep@su.ucalgary.ca

Important Dates

The last day to drop this course with no "W" notation and **still receive a tuition fee refund** is **Sep 21st, 2012**. Last day for registration/change of registration is **Sep 24th, 2012**. The last day to withdraw from this course is **Apr 16th, 2012**.