



UNIVERSITY OF
CALGARY
Department of Psychology
Psychology 312 (L30)

Experimental Design and Quantitative Research Methods in Psychology
Spring-Summer 2011 – Course Outline

Instructor:	Dr. Melissa Boyce	Lecture Location:	KNB 126
Phone:	403-210-6257	Lecture Days/Time:	Tu/Th 2 – 4:45pm
Email:	mboyce@ucalgary.ca		
Office:	Admin 258		
Office Hours:	TBD		

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.

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 projects 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.

Course Website

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

Notes for each week's classes will be posted at the beginning of the week. In addition, announcements, grades, and information regarding lab assignments and your research paper will be posted on this site. Web-based modules will be found here as well that you may use as an additional resource in this course.

Evaluation

Class components (60% of final grade).

Exams. There will be four exams during this course (2 scheduled during class time and 2 scheduled during the Spring and Summer final exams), each of which will be worth 15% of your mark and will cover lecture material. Exams will feature multiple-choice and short answer 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:

Exam 1: June 7, 2011

Exam 2: TBA (during the final exam period June 28 - 30)

Exam 3: July 28, 2011

Exam 4: TBA (during the final exam period Aug 19 - 20)

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 Thursday, August 11. 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 eleven 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%
Lab Assignment 10: Critiquing Research	3%
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	Topic	Relevant Web Modules	Text Material	Lab Topic	Assignment Due
1	R May 12	Introduction to the Course and The Science of Psychology	-Intro to Research Methods: Psychology and Science	Ch 1 & 2	No lab	
2	M May 16	<i>Last day for registration/change of registration and last day to drop a course with tuition refund.</i>			Writing Research Papers in APA format and Conducting a Literature Search	Literature Search Assignment due at the end of lab
	T May 17	Role of Statistics in Research and Ethics	-Statistics Concepts -Ethics			
	R May 19	Research Ideas and Hypotheses	-Generating and Refining Research Hypotheses			
3	T May 24	Measuring and Manipulating Variables and	- Measurement: Reliability,		No lab (due to Victoria Day)	

		Choosing the Best Measures	Construct Validity -Scaling and Sensitivity			
	R May 26	Non-Experimental Methods I	-Descriptive Methods: Overview -Archival Data, Observation			
4	T May 31	Non-Experimental Methods II and Review			Observational Research and Survey Part 1: Survey Development	
	R June 2	NO CLASS (READING DAY)				
5	T June 7	Exam 1			Putting Together a Poster	Observational Research Assignment due at the beginning of lab
	R June 9	Internal Validity and Plotting Data	-Internal Validity: Regression to the Mean			
6	T June 14	Measures of Central Tendency and Measures of Variability		Ch. 4 & 5	Survey Research Part 2: Data Analysis	
	R June 16	The Normal Distribution and z-Scores	-Intro to Hypothesis Testing: The Normal Distribution -z-Scores	Ch. 6		
7	T June 21	Probability and Hypothesis Testing Part I	-Basic Concepts of Probability -Intro to Hypothesis Testing: Hypothesis Testing, Sample Distributions	Ch. 7	Poster Session	Survey Research Assignment due at the beginning of lab
	R June 23	Hypothesis Testing Part II and Review	-Type I and II Errors -One-Tailed and Two-Tailed Tests	Ch. 8		

	June 28 - 30	Spring Session Exam Week – No Lecture	Exam 2 (date to be set by the Registrar)			
8	T July 5	The One-Sample t-test and Confidence Limits on the Mean	-Simple Experiments and Hypothesis Test of Means: Hypothesis Testing: One Sample -Confidence Limits on the Mean	Ch. 12	Participate in online study and outline of final research paper t-tests	
	R July 7	Experiments with Two Groups: The t-test for Independent Groups	-The Simple Experiment: Comparing Two Groups -Hypothesis Testing: Two Independent Samples	Ch. 14		
9	T July 12	Power and Experiments with More than Two Groups: One-Way ANOVA	-Statistical Power -Multiple Group Experiments and ANOVA: The Multiple Group Experiment -One Way ANOVA	Ch. 15 & 16	One-Way ANOVA: Analyze Experiment and Research Paper Q & A	t-test assignment due at the beginning of lab
	R July 14	Multiple Comparisons and Practice with One-Way ANOVA and Multiple Comparisons				
10	T July 19	Factorial Designs	-Factorial Designs	Ch. 17	Factorial ANOVA	Draft of Research Paper Intro and Methods due at the beginning of lab
	R July 21	Factorial ANOVA and Review	-Factorial ANOVA			
11	T	Reading Day – No			Paired t-tests	

	July 26	Class			and Repeated Measures	
	R July 28	Exam 3				
12	T Aug 2	Within-Subjects Designs: The Paired t-test	-Repeated Measures: Matched-Pair Designs, Within-Subjects Designs -Hypothesis Testing: Related Samples	Ch. 13	No Lab (due to August 1 holiday)	
	R Aug 4	Repeated Measures ANOVA		Ch. 18		
13	T Aug 9	Correlation and Regression I	-Correlation and Regression: Correlation -Regression	Ch. 9 & 10	Critiquing Research	Paired t-tests and Repeated Measures Assignments due at the beginning of lab Critiquing Research Assignment due at the end of lab
	R Aug 11	Regression II and Multiple Regression RESEARCH PAPER DUE AT THE BEGINNING OF CLASS	-Multiple Regression	Ch. 11		
14	T Aug 16	Chi-Square and Review	-Chi-Square	Ch. 19		
	W Aug 17	<i>Last day to withdraw.</i>				
	Aug 19-20	Final Exams	Exam 4 (date to be set by the Registrar)			

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

Students who miss a term test due to a valid and documented official University reason (illness, domestic affliction, or religious conviction) have 48 hours to contact AND schedule a makeup test with the instructor. The onus is on the student to have a makeup test approved and scheduled within 48 hours, or the makeup test option is forfeited. The same process applies to missed makeup tests. At the instructor's discretion, the makeup test may differ significantly in form and/or content from the missed test. However, the makeup test cannot differ in weight (% of final grade) from the missed test. Except in extenuating circumstances (a documented official University medical excuse), a makeup test must be written within 2 weeks of the missed test. Absence from a final exam, and deferral of a final exam, are handled by Enrolment Services (see http://www.ucalgary.ca/registrar/deferred_final). Students absent from a final exam must notify the instructor within 48 hours and must then apply for an official deferred final exam no later than the deadline indicated in the Examinations Schedule.

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 (2) 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 **June 24th, 2011.**

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 [suvpaca@ucalgary.ca](mailto:suypaca@ucalgary.ca)

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

Student Ombudsman's Office

The Office of the Student Ombuds 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.su.ucalgary.ca/services/student-services/student-rights.html>).

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 and **still receive a tuition fee refund** and the last day for registration/change of registration is **May 16, 2011.** The last day to withdraw from this course is **August 17, 2011.**