



**Department of Psychology**

**Psychology 312 (L01) – Experimental Design and Quantitative Methods for Psychology  
Fall/Winter 2008/2009**

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**Instructor:** Dr. Melissa Boyce      **Lecture Location:** EDC 179  
**Phone:** 403-210-6257      **Lecture Days/Time:** Tues/Thurs 2:00 – 3:15 pm  
**Email:** mboyce@ucalgary.ca  
**Office:** Admin 258  
**Office Hours:** TBA

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Contact your instructor regarding general course issues, questions about lecture material & web modules, grading of exams.

**Labs**

Section	Day	Time	Location	Lab Instructor	Email
B01	Tues	9:00 – 10:50 am	SS 018	Jennifer Vuong	<a href="mailto:jvuon@ucalgary.ca">jvuon@ucalgary.ca</a>
B02	Tues	11:00 – 12:50 pm	SS 018	Jennifer Vuong	<a href="mailto:jvuon@ucalgary.ca">jvuon@ucalgary.ca</a>
B03	Tues	5:00 – 6:50 pm	SS 018	Brenda Nguyen	<a href="mailto:brenda.nguyen@ucalgary.ca">brenda.nguyen@ucalgary.ca</a>
B04	Wed	9:00 – 10:50 am	SS 018	Victoria Smith	<a href="mailto:smithvm@ucalgary.ca">smithvm@ucalgary.ca</a>
B05	Wed	11:00 – 12:50 pm	SS 018	Victoria Smith	<a href="mailto:smithvm@ucalgary.ca">smithvm@ucalgary.ca</a>
B06	Wed	1:00 – 2:50 pm	SS 018	Lee-Ann McKay	<a href="mailto:lamckay@ucalgary.ca">lamckay@ucalgary.ca</a>
B07	Thurs	9:00 – 10:50 am	SS 018	Lee-Ann McKay	<a href="mailto:lamckay@ucalgary.ca">lamckay@ucalgary.ca</a>
B08	Thurs	11:00 – 12:50 pm	SS 018	Brenda Nguyen	<a href="mailto:brenda.nguyen@ucalgary.ca">brenda.nguyen@ucalgary.ca</a>
B09	Thurs	5:00 – 6:50 pm	SS 018	Megan Kendall	<a href="mailto:makendal@ucalgary.ca">makendal@ucalgary.ca</a>
B10	Fri	2:00 – 3:50 pm	SS 018	Megan Kendall	<a href="mailto:makendal@ucalgary.ca">makendal@ucalgary.ca</a>

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

**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.

## Required Text

The two primary learning resources for this course are web-based modules (which can be accessed through the class website on blackboard) and lectures. **There are no required textbooks for this course.**

## Supplementary Texts

If you are planning on continuing on in psychology at the honours or graduate level, then you are encouraged to purchase this text, which will be available in the University Bookstore mid Fall:

Howell, D. C. (2008). *Fundamental Statistics for the Behavioral Sciences (6<sup>th</sup> Ed.)*. Belmont, CA: Thomson Wadsworth.

The following text is available in the University Bookstore for people who would like additional support (particularly if you are anxious about statistics):

Salkind, N. J. (2008). *Statistics for People Who (Think They) Hate Statistics (3rd Ed.)*. Thousand Oaks, CA: Sage Publications.

It is strongly recommended that you obtain a copy of the *Publication Manual of the American Psychological Association (5<sup>th</sup> 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. The web-based modules will be found here as well.

## 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, 2008

Exam 2: November 4, 2008

Exam 3: December 4, 2008

Winter Term

Exam 4: February 12, 2009

Exam 5: March 19, 2009

Exam 6: April 16, 2009

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 5% of your mark, is due at the beginning of class on April 9, one week

before the final exam. 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 35% 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: Chi-Square	3%
Lab Assignment 5: Poster	3%
Lab Assignment 6: <i>t</i> -Tests	3%
Lab Assignment 7: Factorial ANOVA	3%
Lab Assignment 8: Repeated Measures ANOVA	3%
Lab Assignment 9: Draft of Intro & Methods	5%
Lab Assignment 10: Correlation	3%
Lab Assignment 11: Regression	3%
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Total	35%

**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-).

### **Attendance**

As there is no required textbook in this course, it is particularly important that you attend class in order to gain a better understanding of the course material, as you will be responsible for this

material on exams and lab assignments. If you miss a lecture, the onus is on you to obtain a copy of the notes. *To that effect, I highly recommend exchanging email addresses with a person in the class so that you can contact him/her to get a copy of the notes should you miss a class.*

**Lab attendance is essential. Should you miss a lab, contact your lab instructor immediately in order to determine what you missed and to find out what will be required of you before the next lab.**

## Lecture Schedule

### Fall Term

WEEK	DATE	TOPIC	WEB MODULES/ MATERIAL COVERED	LAB TOPIC	ASSIGNMENT DUE
1	Tues, Sept 9	Introduction to Research Methods		No Lab	
	Thurs, Sept 11	The Science of Psychology	<i>Introduction to Research Methods – Psychology and Science</i>		
2	Tues, Sept 16	The Role of Statistics in Research	Statistics Concepts	Literature Search	Literature Search Assignment due end of lab
	Thurs, Sept 18	Ethics VIDEO: Stanley Milgram's "Obedience"	Ethics		
3	Tues, Sept 23	Research Ideas and Hypotheses	Generating and Refining Research Hypotheses	Writing Research Papers (in APA format)	
	Thurs, Sept 25	Measuring and Manipulating Variables	<i>Measurement – Reliability, Construct Validity</i>		
4	Tues, Sept 30	Choosing the Best Measures	Scaling and Sensitivity	No Lab	
	Thurs, Oct 2	<b>Exam 1</b>	Material to date		
5	Tues, Oct 7	Non-Experimental Methods I	<i>Descriptive Methods – Overview</i>	Observational Research	
	Thurs, Oct 9	Non-Experimental Methods II	Archival Data, Observation		
6	Tues, Oct 14	Non-Experimental Methods III		Survey Research Pt 1: Survey Development <b>**MUST COMPLETE ONLINE SURVEY BY SUN, OCT 19</b>	Observational Research Assignment due beginning of lab
	Thurs, Oct 16	Internal Validity and Alternative Research Designs	<i>Internal Validity – Internal Validity: Regression to the Mean</i>		
7	Tues, Oct 21	Plotting Data		Survey Research Pt 2: Data Analysis	
	Thurs,	Measures of Central			

	Oct 23	Tendency			
8	Tues, Oct 28	Measures of Variability		Putting Together a Poster	Survey Research Assignment due beginning of lab
	Thurs, Oct 30	Review			
9	Tues, Nov 4	<b>Exam 2</b>	Material since Exam 1	No Lab	
	Thurs, Nov 6	The Normal Distribution	<i>Introduction to Hypothesis Testing – The Normal Distribution</i>		
10	Tues, Nov 11	Remembrance Day – University Closed		No Lab	
	Thurs, Nov 13	Z-Scores	Z-Scores		
11	Tues, Nov 18	Probability Theory	Basic Concepts of Probability	Chi-Square	Chi-Square Assignment due end of lab
	Thurs, Nov 20	Chi-Square	<i>Chi-Square</i>		
12	Tues, Nov 25	Hypothesis Testing I	<i>Introduction to Hypothesis Testing – Hypothesis Testing, Sample Distributions and Hypothesis Testing</i>	Poster Session	Poster due beginning of lab
	Thurs, Nov 27	Hypothesis Testing II	Type I and II Errors, One-Tailed and Two-Tailed Tests		
13	Tues, Dec 2	Review		No Lab	
	Thurs, Dec 4	<b>Exam 3</b>	Material since Exam 2		

### Winter Term

WEEK	DATE	TOPIC	WEB MODULES/ MATERIAL COVERED	LAB TOPIC	ASSIGNMENT DUE
14	Tues, Jan 13	The One Sample <i>t</i> -test	<i>Simple Experiments and Hypothesis Test of Means – Hypothesis Testing: One Sample</i>	No Lab	
	Thurs, Jan 15	Confidence Limits on the Mean	Confidence Limits on the Mean		
15	Tues, Jan 20	Experiments with Two Groups	The Simple Experiment: Comparing Two Groups	Participate in online study & outline of research paper	
	Thurs, Jan 22	The <i>t</i> -test for Independent Groups	Hypothesis Testing: Two Independent Samples		
16	Tues, Jan 27	Statistical Power	<i>Statistical Power</i>	<i>t</i> -tests	<i>t</i> -test

	Thurs, Jan 29	Experiments with More Than Two Groups	<i>Multiple Group Experiments and ANOVA – The Multiple Group Experiment</i>		Assignment due end of lab
17	Tues, Feb 3	One-Way ANOVA	One-Way ANOVA	One-Way ANOVA: Analyze Experiment	
	Thurs, Feb 5	Multiple- Comparison Procedures			
18	Tues, Feb 10	Review		No Lab	
	Thurs, Feb 12	<b>Exam 4</b>	Material since Exam 3		
19	Tues, Feb 17 & Thurs, Feb 19	Reading Week – No Classes		No Lab	
20	Tues, Feb 24	Factorial Designs I	Factorial Designs	Research Paper Q & A	
	Thurs, Feb 26	Factorial Designs II			
21	Tues, Mar 3	Factorial ANOVA I	Factorial ANOVA	Factorial ANOVA	Factorial ANOVA Assignment due end of lab
	Thurs, Mar 5	Factorial ANOVA II			
22	Tues, Mar 10	Within-Subjects Designs	<i>Repeated Measures – Matched-Pair Designs, Within-Subject Designs</i>	Options for Psychology Majors & Applying to Graduate School	Draft of Introduction and Methods due beginning of lab
	Thurs, Mar 12	The Paired t-test	Hypothesis Testing: Related Samples		
23	Tues, Mar 17	Review		No Lab	
	Thurs, Mar 19	<b>Exam 5</b>	Material since Exam 4		
24	Tues, Mar 24	Repeated Measures ANOVA	Repeated Measures ANOVA	Repeated Measures ANOVA	Repeated Measures ANOVA Assignment due end of lab
	Thurs, Mar 26	Correlation	<i>Correlation and Regression – Correlation</i>		
25	Tues, Mar 31	Regression I	Regression	Correlation	Correlation Assignment due end of lab
	Thurs, Apr 2	Regression II			
26	Tues, Apr 7	Multiple Regression	Multiple Regression	Regression	<b>Research Paper due at beginning of class Apr 9</b> Regression Assignment due at end of lab
	Thurs, Apr 9	Critiquing Research	<i>Introduction to Research Methods – Reading and Evaluating Research</i>		

27	Tues, Apr 14	Review		No Lab	
	Thurs, Apr 16	<b>Exam 6</b>	Material since Exam 5		

### 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 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

Make-up exams are NOT an option without an official University medical excuse (see the University Calendar). You must contact the instructor before the scheduled examination or you will have forfeited any right to make up the exam. At the instructor's discretion, a make-up exam may differ significantly (in form and/or content) from a regularly scheduled exam. Except in extenuating circumstances (documented by an official University medical excuse), a makeup exam is written within two (2) weeks of the missed exam. A completed Physician/Counselor Statement will be required to confirm absence from a test for health reasons. The student will be required to pay any cost associated with the Physician Counselor Statement.

### Course Credits for Research Participation

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 **April 16<sup>th</sup>, 2009**.

### **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 220-5567.

**Student Union VP Academic:** Phone: 220-3911 [suypaca@ucalgary.ca](mailto:suypaca@ucalgary.ca)  
**Student Union Faculty Rep.:** Phone: 220-3913 [socialscirep@su.ucalgary.ca](mailto:socialscirep@su.ucalgary.ca)

### **Important Dates**

The last day to drop this course and still receive a fee refund is **September 19, 2008**. The last day to withdraw from this course is **December 5, 2008**.