

**PSY1020B Experimental Design
Spring semester 2008**

1. Course Description

The general goal of this course is to explore how to conduct sound research and to analyze and interpret data obtained in the research. In addition, this course helps you evaluate the results of psychological research. More specifically, we will cover the basic research procedures used in psychology, basic and advanced experimental designs, quasi-experimentation, ethics in research, and data analysis using SPSS. During the course, you will become familiar with various experimental designs and statistical procedures. You will also develop important skills that will be applicable to both during the rest of your academic career and beyond.

2. Learning Approach:

This class employs an interactive learning approach in which lecture and laboratory will be organized to broaden and deepen your knowledge of the research methods in psychology. Moreover, student-centered activities such as doing experiments in the lab and cooperative group projects will be used in facilitating your learning.

3. Prerequisites:

PSY1010 Introduction to Statistics

4. Contact Information of Teaching Members

Instructor: Jeung-Ryeul Cho, Ph.D.

Office: 705 FYB

Phone: 2609-6211

Email: jrcho@psy.cuhk.edu.hk

Office Hours: Thursday 1:30 – 3:30 pm (or by appointment)

Tutor: Henry Ng

Office: Rm 348, Sino Bldg.

Phone: 31634378

Email: shingshingng@gmail.com

Office Hours: Thursday 10:30 – 12:30

5. Course Content

Topic	Contents/fundamental concepts
Overview of Psychological research	Goals, theory, Hypothesis, pilot study,
Observations and relational research	Naturalistic observations, case study, survey research, correlational research, regression
Basics of experimentation	Independent variables, dependent variables, control variables, external validity
Literature search, Evaluating Research Proposals, and Writing a research report	PsycINFO, Abstract, Introduction, Method, Results, Discussion, References
Validity and reliability	Predictive validity, construct validity, external validity, internal validity, sampling, measurement scales
Between-Subjects Designs	Matching, randomization, control conditions, individual differences, variables, levels, one-way ANOVA (Analysis of variance)
Within-Subjects Designs	Repeated measure, Randomization, counterbalancing, Latin-square design, carryover effect, variables, levels, within-subjects ANOVA
Factorial Designs	2x2 factorial design, 2x2 within factorial design, Interaction effect, multifactor ANOVA
Mixed Designs	Within and between factors in same design, interaction effect,
Quasi-experimentation ANCOVA	Internal validity, natural treatments, interrupted time-series design, subject variable, matching, age as a variable, analysis of Covariance (ANCOVA)
Regression, MANOVA	General linear model, hierarchical and stepwise multiple regression, partial correlation, multivariate analysis of variance(MANOVA)
Research Ethics and Interpretations of the results	Research with human participants, ethics in research with animals, ceiling and floor effects, regression artifacts
Overview of Statistical Methods & Research Design	Between-subjects design, within-subjects design, factorial design, mixed design, ANCOVA, Regression, MANOVA

6. Expected Learning Goals

Learning Goals (LG):	
1.	Students will understand and apply basic research methods in psychology, including research design, data analysis, and interpretation.
2.	Students will demonstrate information competence and the ability to use computers and other technology for many purposes.
3.	Students will respect and use critical and creative thinking, skeptical inquiry, and, when possible, the scientific approach to solve problems related to behavior and mental processes.

7. Expected Learning Outcomes

After taking this class students will be able to:

- (1) plan and design experiments and quasi-experiments (matches with LG1)
- (2) analyze the data obtained in those experiments using appropriate statistical techniques(matches with LG1)
- (3) interpret results accurately and present findings clearly (matches with LG1)
- (4) understand how to use SPSS to analyze behavioral data(matches with LG2)
- (5) critically evaluate empirical and theoretical claims made in the psychological literature (LG3)
- (6) further develop quantitative and analytic thinking skills (LG3)

8. Learning Activities

(you can list other types of learning activities, e.g. Web CT. if you have.)

	Interactive Lecture	Laboratory
Time per week	2 hours in-class Monday 2:30pm-4:15pm,	2 hour in-class Thursday 8:30-10:15
Venue	FYB UG02	ELB 207
No. of sessions in total	13 lectures	9 laboratory
Attendance	Mandatory	Mandatory
Teaching Member(s)	Lecturer	Teaching assistant
Matching with learning goals (LG)	√ LG 1 √ LG 2 √ LG 3	√ LG 1 √ LG 2 √ LG 3
Matching with learning outcomes (LO)	√ LO 1 √ LO 2 √ LG 3 √ LG 5 √ LO 6	√ LO 2 √ LO 3 √ LO 4

9. Assessment Scheme

Both formative and summative assessment will be used in assessing your learning during this course. Your performance will be evaluated by **Homework (20%)**, **Group Project (10%)**, **Midterm Examination (30%)**, and **Final Examination (40%)**.

Homework: There will be five homework assignments. The weight and due date of the completed homework will be announced when the assignment is handed out. Please note that you **MUST** do the entire homework by yourself. You **MUST NOT** work with anyone else. Any answers that show evidence of having been done with others will score zero; stronger action may also be taken (see below). **Late homework answers will NOT be graded, and will score zero.**

Group Project (Due: April 24, 2008): The group research project will require you to work in a group of five students. The group will analyze a dataset from a quasi-experiment conducted during a laboratory session (or the group may conduct an experiment as suggested in the textbook "Research methods in psychology"), and write up a brief report (maximum of 2000 words). The report must include the following: Abstract, Introduction, Methods, Results, Discussion, and References. Whether you include Tables and/or Figures should be governed by the specific details of your report. We will use a very high standard in grading the reports because each group will submit a single joint report rather than individual reports. The report should be submitted to the course mailbox at the lobby of 3/F Sino building on or before 5:00pm on April 24, 2008.

Free Rider Policy: Equal distribution of work is always a concern with group projects. To ensure that everyone is motivated to contribute an appropriate amount to the group project, you will be required to rate each of your group peers on their contribution to the project. If the group member in question contributed the appropriate amount to the project, he or she receives a score of 1 from you. If the person contributed less than the appropriate amount, then the number you assign should reflect the proportion of the appropriate amount you feel the person actually contributed. The scores given to an individual by his or her fellow group members will be averaged to yield a "contribution score." An individual's final grade on the group project will be calculated by multiplying the grade assigned to project by that individual's contribution score. Each student shall submit his/her project group peer evaluation to the TA via email (shingshingng@gmail.com) on or before April 24, 2008. Those who failed to submit their peer evaluation before the due date will forfeit their right to do so.

Examinations: The purpose of the examinations is to assess your understanding of the course materials presented in lectures, tutorials and readings. The focus is on the appropriate application of experimentation methods and procedures, statistical analyses, interpretation and presentation of results and findings. The mid-term examination will cover materials (both in class and on the text books) presented up to that point whereas the final examination will be cumulative that all materials presented in the entire course will potentially be included. **No make-up exams allowed.**

Mobile Phones: Mobile phones must be switched off in class at all times. Students found talking on mobile phones during class will be asked to leave the classroom for the remainder of the lecture.

10. Learning Resources

Required Textbooks: There are three required textbooks for this course (two of which were used in Psy1010). You are strongly encouraged to purchase or borrow copies of the textbooks. If you do not want to purchase the textbooks, please ensure that you have ready access to the material in them.

Elmes, D. G., Kantowitz, B. H., & Roediger, H. L. (2006). *Research methods in psychology* (8th ed.). Pacific Grove, California: Brooks/Cole.

Aron, A., Aron, E. N., & Coups, E. J. (2006). *Statistics for psychology* (4th ed.). Upper Saddle River, NJ: Pearson Prentice Hall.

Green, S. B., & Salkind, N. J. (2005). *Using SPSS for Windows and Macintosh* (4th ed.). Upper Saddle River, NJ: Pearson Prentice Hall.

Additional References: Additional material not listed here may be placed on reserve in the Architecture Library or in the course reading rack next to SB349. If this occurs, an announcement will be made in class and the references will be provided on CU forum.

11. Course Updates

Class Web page:

<http://cuforum.cuhk.edu.hk>

12. Feedback for Evaluation

Students are welcome to give comments and feedback at any time during the class. Stop by to talk to the instructor or teaching assistants. You can also send us emails or post your comments on Moodle.

Around Week 6 of the course, we will ask you to give us comments and feedback through an open-ended questionnaire. Some questions will be like “things that you like and do not like about this course”, “suggestions on enhancing the course”, and etc.

13. Course Schedule

Lecture/laboratory schedule

Wk	Class	Date	Topic	Reading Assignment		
				RMiP	SfP	SPSS
1	Lecture	Jan. 7	Overview of Psychological research	Ch. 1 & 2		
	Tutorial	Jan 10	No Tutorial			
2	Lecture	Jan 14	Observations and relational research	Ch. 4 & 5		
	Tutorial	Jan 17	Orientation and Class experiment 1			
3	Lecture	Jan. 21	Basics of experimentation	Ch. 6		
	Tutorial	Jan. 25	Literature search, and Writing a research report	Ch. 3 & 14		
4	Lecture	Jan. 28	Validity and reliability	Ch. 7		
	Tutorial	Jan. 31	Class experiment 2 (Prepare stimuli beforehand) [Homework 1 on Hypothesis]			
5	Lecture	Feb. 4	Between-Subjects Designs	Ch. 8	Ch. 9	L. 24 pp. 176-184
	Tutorial	Feb. 7	Lunar New Year (Feb 6-12)			
6	Lecture	Feb. 11	Lunar New Year			
	Tutorial	Feb. 14	One-way between-subjects ANOVA tutorial			
7	Lecture	Feb. 18	Within-Subjects Designs	Ch. 8	Ch. 10	L. 28 pp. 228-237
	Tutorial	Feb. 21	One-way within-subjects ANOVA tutorial [Homework 2 on ANOVA]			
8	Lecture	Feb. 25	Midterm Examination			
	Tutorial	Feb. 28	Feedback on Midterm Examination			
9	Lecture	Mar. 3	Factorial Designs	Ch. 9	Ch. 10	L. 25 pp. 185-206
	Tutorial	Mar. 6	Factorial designs Tutorial [Homework 3 on ANOVA]			
10	Lecture	Mar. 10	Mixed Designs (Within and between factors in same design)	Ch.9		
	Tutorial	Mar. 13	Mixed Designs Tutorial [Homework 4 on Mixed Designs]			
11	Lecture	Mar. 17	Quasi-experimentation ANCOVA	Ch.11		L.26 pp. 207-217
	Tutorial	Mar. 20	No tutorial			
12	Lecture	Mar. 24	Public holiday			
	Tutorial	Mar. 27	No tutorial			
13	Lecture	Mar. 31	Regression, MANOVA	Ch. 10	Ch. 15	L. 27 (218-

Wk	Class	Date	Topic	Reading Assignment		
				RMiP	SfP	SPSS
			Small-n experimentation			227), L33 (283-297)
	Tutorial	Apr. 3	Regression, ANCOVA, MANOVA tutorial [Homework 5 on Regression, ANCOVA, MANOVA]			
14	Lecture	Apr. 7	Research Ethics and Interpretations of the results	Ch. 12 & 13		
	Tutorial	Apr. 10	No tutorial			
	Lecture	Apr. 14	Overview of Statistical Methods & Research Design		Ch. 15	
15	Tutorial	Apr. 17	No tutorial			

RMiP = Research methods in psychology, SfP = Statistics for psychology, SPSS = Using SPSS for Windows and Macintosh.

14 Academic honesty and plagiarism

Attention is drawn to University policy and regulations on honesty in academic work, and to the disciplinary guidelines and procedures applicable to breaches of such policy and regulations. Details may be found at <http://www.cuhk.edu.hk/policy/academichonesty/> . Students are required to submit a statement acknowledging that they are aware of these policies, regulations, guidelines and procedures and pledging to be honest in their academic work (see the last page of this syllabus).

Any assignment (i.e., project, essay, or paper) that shows evidence of plagiarism will be marked down severely. In simple terms, plagiarism is copying passages and/or ideas from other sources without referencing those sources. Moreover, when you report someone else's ideas/findings you must put it in your own words and not merely copy full sentences or parts of sentences from the source article. It is your responsibility as a scholar-in-training to cite the ideas and work of others correctly. Please visit the following additional websites for discussions of how to recognize and avoid plagiarism.

<http://www.indiana.edu/~wts/wts/plagiarism.html>

<http://www.hamilton.edu/academic/Resource/WC/AvoidingPlagiarism.html>

Declaration of Academic Honesty

2007-2008
Psychology 1020
Experimental Design

I promise that all assignments submitted to this course across the entire semester will be original except for source material explicitly acknowledged, and that the same or related material has not been previously submitted for another course. I also acknowledge that I am aware of University policy and regulations on honesty in academic work, and of the disciplinary guidelines and procedures applicable to breaches of such policy and regulations as contained in the website <http://www.cuhk.edu.hk/policy/academichonesty/>.

Signature

Date

Name

Student ID

Psychology 1020
Course Code

Experimental Design
Course Title