

PSY 2801H (Lecture Section 001 – Lab Section 002)
Honors Introduction to Psychological Measurement and Data Analysis

Fall 2009, 3 credits

Lecture (Section 001): M W, 10:10 a.m. – 11:00 a.m., Elliott Hall Room N391

Lab (Section 002): W, 11:15 a.m. – 12:15 p.m., Elliott Hall Room S121

Instructor: David Klieger (“David”)
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Elliott Hall Room N406 (lab)
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612-625-3529 (office) (NOT the best way to reach David)

Instructor’s Office Hours: By appointment

Section Leader (SL): Christopher Hulme-Lowe (“Chris”)
Elliott Hall Room N663 (office)
hulme005@umn.edu (the best way to reach Chris)

Section Leader’s Office Hours: M, 1:00 p.m. – 2:00 p.m.

Prerequisites

PSY 1001 (or equivalent) and high school algebra (or equivalent) are prerequisites for the course. Generally, you must also be officially registered as an honors student.

Course Description

Psy 2801H is an honors-level introduction to the basic concepts and procedures related to the measurement and analysis of psychological variables. The main goal of this course is for students to understand the data of psychology and the appropriate selection and use of statistical tools to describe and evaluate results of psychological research. This course is a combination lecture/laboratory course. As such, students are expected to listen and participate in both the lecture and laboratory activities. To fulfill the University’s mathematical thinking requirement, this course will emphasize the application of statistics to psychological data. Students will learn not only how to compute the statistics necessary for basic psychological data analysis, but will gain a conceptual understanding of the foundations of psychological measurement and the concepts behind statistics, such as sampling distributions and the logic of testing statistical hypotheses.

Course Objectives

By the end of the course, students should be able to do the following:

1. Know and understand how to differentiate among various types of psychological data and the appropriate methods for the analysis of each type.
2. Know, understand, and apply basic measurement concepts.
3. Know, understand, and apply correct uses of graphical data presentation.
4. Know, understand, and apply basic statistical terms and symbols.
5. Know, understand, analyze, apply, and interpret descriptive statistics.
6. Know, understand, analyze, apply, and interpret basic inferential statistics, including the proper use of hypothesis testing, when statistical tests are appropriate, and, if appropriate, which statistical test and effect size measure to use.
7. Know and understand how to use statistical software to analyze data.
8. Know, understand, and apply the appropriate statistical procedure for a research question.

Required Materials (all are available at the Coffman Union Bookstore)

1. Howell, D.C. (2008). *Fundamental statistics for the behavioral sciences* (6th ed.). Belmont, CA: Thomson Wadsworth.
2. A reliable calculator that at least adds, subtracts, multiplies, divides, and computes square roots. Cell phone calculators, PDAs (personal digital assistants), and similar communication and text display and text storage devices are NOT allowed during in-class exams.
3. Reliable access to the Internet on a computer capable of accessing WebVista (formerly WebCT).

SPSS Software (possibly being renamed PASW Software):

You are NOT required, expected, encouraged or discouraged to purchase or own a personal copy of or personal license to use SPSS statistical software, which is demonstrated and utilized in lab (or lecture) and used for assignments and the SPSS Lab Final Exam. In addition to Elliott Hall Room S121, SPSS should be available in Coffman Memorial Union Room B060 and Walter Library Room 103. For more information, you may visit <http://oit.umn.edu/computerlabs>. However, if you are interested in obtaining a personal copy of or personal license for SPSS, more information is available at <http://www.techmart.umn.edu>. Please note that there are Student, Grad Pack, and regular commercial editions of SPSS software available, and each of these is updated periodically by SPSS, Inc. as a new version. The instructor is familiar with only the Grad Pack and regular commercial editions of SPSS whose versions have come out over the last several years. Please feel free to talk to the section leader or instructor if you have any questions about SPSS. In any case, PLEASE BE AWARE THAT A FILE CREATED IN A NEWER VERSION OF SPSS MIGHT NOT BE COMPATIBLE WITH AN OLDER VERSION OF SPSS. ALSO, A FILE CREATED WITH AN APPLE VERSION OF SPSS MIGHT NOT BE COMPATIBLE WITH A PC VERSION OF THE SOFTWARE, AND VICE-VERSA.

Assessment and Evaluation

A. Exams

There will be three (3) in-class comprehensive exams and a take-home practical (lab) exam. The first exam will cover material through (and including) 10/12; the second, though (and including) 11/16; the third, all material presented in class. Although the exams are comprehensive, you will not generally be asked explicit questions regarding earlier material. The nature of the statistics is such that understanding of early topics is required to understand later ones. Thus, to answer any question late in the course you must not only understand that material but all material supporting it from earlier in the semester. The specific focus areas for each exam will be specified before each. You may not receive any help for an exam from a fellow student while the exam is in progress. A missed exam (without being made up) results in a grade of zero (0) for that exam. If you are to take the make-up exam, you may not discuss the regularly-scheduled exam with any student who has taken it. You also may not discuss an exam that you have taken with a student who is going to take a make-up of it.

Except for the final exam, the in-class exams will begin approximately when lecture begins (10:10 am) and end approximately 5 minutes before lab ends (12:10 pm). The final exam is scheduled by the university for 12/22 from 8:00 am to 10:00 am. Exams will take place in the usual lecture location (Elliott Hall Room N391).

B. Quizzes

Quizzes will be given throughout the course of the semester. These quizzes may cover the material covered during class since the last quiz and/or the reading for that week, often focusing on computational components. These quizzes will typically be 15-20 minutes long and administered immediately after lab has begun. If you are late to lab, you will be unable to complete the quiz. A missed quiz (without being made up) results in a grade of zero (0) for that quiz.

C. Critical Thinking Exercises

One of the most important skills a psychologist (or perhaps anyone!) can possess is critical thinking. While most of your work in this course will involve critical thinking in some way, during the semester you will be submitting three (3) entries assessing how statistics regarding psychology are portrayed in the popular media. You will be provided an article or graph for each assignment from published popular media sources (e.g., the Internet, newspapers, or a magazine) that incorporates a topic we have covered in class. After reading the article, you will write a short report (between 3/4 and 2 pages). You must work on the critical thinking exercises without any help from your fellow students. A missed critical thinking exercise (without being made up) results in a grade of zero (0) for that critical thinking exercise. More detail will be available on these assignments further into the semester.

D. Assignments and Lab Participation Points

As with any course with a mathematics component, one of the most effective learning tools is working problems. This class is no exception. There will be problems assigned for you to complete. To enhance your learning experience, you will be given assignments to complete. Except for Assignment 14, each of these will be due at the beginning of lab one (1) week after it is assigned. (If an exam is scheduled on a due date, then the assignment due should be submitted at the exam location and before the exam begins.) Assignments might consist of computational problems done by hand (with help of a calculator), data analysis with SPSS software, or a combination of the two. However, not all problems will involve statistical computation. Some problems will relate to the concepts underlying measurement and statistics, while others will pertain to interpretation of statistical results. In order to receive full credit for computation problems, you must show your work or provide rationale for your response.

You are encouraged to work in groups to complete an assignment, but you must turn in your own copy of the assignment with the names of those with whom you worked. The assignments will help prepare you for the critical thinking exercises, exams and quizzes. Since you will have to work alone on the critical thinking exercises, exams and quizzes, it is advisable for you to contribute and understand the assignment responses rather than just letting others do all of the work.

A missed assignment (without being made up) results in a grade of zero (0) for that assignment. After the last assignment is graded, your lowest assignment grade will be dropped, and your final grade will be calculated as if that assignment had never been assigned in the first place.

Generally, you will learn the procedures for doing an assignment (especially one that involves SPSS) in lab the week before it is due. Since exams will take place during lab time, some of the procedures for doing an assignment might be taught during lecture instead.

Students may earn points through lab participation. The section leader will use his reasonable discretion on the assignment of these points. This assignment of points may be based at least in part on attendance at lab sessions, and attendance may be taken on random lab session days. Please do not hesitate to participate simply because you might show that you do not know something. The section leader respects everybody who tries. Remember, you're here to learn. And you're not doing yourself any favors by not checking to see whether you understand something on which your final grade depends.

E. Extra Credit

By participating in at least 4 REP points worth of studies during the fall (equivalent to at least 2 hours of time spent in studies), you will receive 1 additional point in this course for each REP point that you are awarded. (The point system for this course is described below.) The upper limit on additional points for this course is 10. Be aware that the last day to participate in REP is approximately a week before class ends. In the past, Kate Briggs (khbriggs@umn.edu) has been the coordinator of the awarding of REP points and at the end of the semester has provided me with a list of who has participated in REP point studies and for how many REP points. You may be required to show proof of the REP points that you earned. You may wish to notify me at the end of the semester about the number of REP points you have earned just in case the official list varies from your count. For more details about participating, see <http://www.psych.umn.edu/research/rep/default.htm>

F. Semester Grade: Your grade in this course will be based on:

	Points	% of grade
Assignments (13 out of 14 assignments; worth 10 pts each)	130	22.2%
Quizzes	90	15.4%
Exam 1	50	8.5%
Exam 2	50	8.5%
Exam 3 (Final Exam)	75	12.8%
SPSS Lab Final Exam	80	13.7%
Critical Thinking Exercises (3; worth 15 points each)	45	7.7%
Lecture Participation Points	50	8.5%
Lab Participation Points	15	2.6%
Total	585	100.00%

Final grades will be based on the following percentages:

Points Earned	Percent	Letter Grade
546.4 - 585	93.4% – 100%	A
526.5 - 546.4	90.0% - 93.3%	A-
507.2 - 526.5	86.7% - 89.9%	B+
487.9 - 507.2	83.4% - 86.6%	B
468 - 487.9	80.0% - 83.3%	B-
448.7 - 468	76.7% - 79.9%	C+
429.4 – 448.7	73.4% - 76.6%	C
409.5 - 429.4	70.0% - 73.3%	C-
390.2 - 409.5	66.7% - 69.9%	D+
351 – 390.2	60.0% - 66.6%	D
0 - 351	0% – 59.5%	F

However, the instructor has the right to adjust final letter grades upward based on the instructor's assessment of the performance by the class as a whole.

G. Course Policies

The following policies are required by the University of Minnesota to be part of the course syllabus. The policies were written to ensure fair, reasonable, and equitable guidelines in the classroom. These policies are inflexible and non-negotiable.

1. *Accommodation for persons with special needs:* In compliance with the Americans with Disabilities Act (1990) and the University of Minnesota policy, students with any documented disabilities are eligible for reasonable and appropriate accommodations in this class. A number of accommodations can be made in class if this applies to you. Please contact David as soon as possible if you need special accommodation for this course.
2. *Accommodation for persons for whom English is not their first language:* Lecture, lab, exams, quizzes, critical thinking exercises and assignments will be in English. If English is not your first language and you believe that this fact will significantly impair your performance in this course, please contact the instructor as soon as possible. If any accommodation is to be made, then it will be made on a case-by-case basis at the sole discretion of the instructor.

3. *Attendance*: Lecture and lab attendance is not explicitly required, but is needed to gain the maximum possible grade. Participation points cannot be earned if you are not present. Much information that is not covered by the text will be presented solely in class. Any changes to the syllabus, schedule, or grading will be announced in class.
4. *Policies and penalties for late, e-mailed or unattached work*: For exams, quizzes, critical thinking exercises and assignments, you will NOT receive an opportunity to make up late work or any credit for late work unless you have a legitimate excuse (e.g., religious observance, intercollegiate athletics, ROTC, National Guard service, subpoenas, University band, University student government, a death in the family, jury duty, or a confirmed medical illness) and either your instructor's express approval for missed exams, quizzes and critical thinking exercises or your section leader's express approval for missed assignments. To obtain any approval, you must notify your instructor or section leader at least 24 hours in advance of the start of the class/lab in which the exercise/assignment is due or the exam/quiz is given. If it is not possible to provide this advance notification, then a make-up or extension will be granted only after you must provide to the instructor or section leader (as appropriate) official, legible, and verifiable documentation indicating your name, the relevant dates, the reason for your absence/lateness, and the name and contact information for the party that provided you with the documentation. If your instructor or section leader (as appropriate) has not heard from you within 48 hours after the end of the class/lab in which the exercise/assignment is due or the exam/quiz is given, you forfeit any right to a make-up or extension for any reason. Make-ups and extensions will only be granted for legitimate excuses. Note that Saturday, Sunday and a day that falls on a holiday each count as one day for the time frames mentioned. Depending on what you missed, you might have to come in to make up the work or obtain data needed to complete an assignment. Furthermore, except to the extent explicitly permitted by the instructor or lab section leader, all work for this course must be submitted in hardcopy. E-mailed work or work submitted in another electronic format generally will not be accepted. An exception to the requirement that all work be submitted in hardcopy rarely will be made. In addition, all pages to work submitted in hardcopy must be firmly attached together (by staple, paper clip or the like). We will not give credit for work done on pages that are lost due to the fact that pages were not firmly attached to each other.
5. *Disputing a grade*: Although we strive to be as fair and accurate as possible, occasional grading mistakes are made. We do try to avoid taking points off for a wrong answer that uses the correct procedures but which is based on a previous wrong answer for which points already were deducted. If you feel that a grading mistake was made, you have the right to submit your work for re-grading. When doing so, please submit the original work, as well as a written request stated which points you feel were mistakenly deducted. This submission must be received **no later than one (1) week** after the graded assignment, exercise, quiz or exam was returned to you.
6. *Incompletes*: Incompletes will only be granted in the case of medical or personal emergencies. Incompletes can only be given if you are receiving a grade of "C-" or higher on work already completed. Contact David or your section leader as soon as you suspect you might need to take an incomplete in the course.

7. *Classroom conduct*: All persons have the right to a civil, productive, and stimulating learning environment. As such, in this classroom and lab, we have the responsibility of respecting the rights, opinions, and environment of others. Anyone whose behavior is disruptive to others will be asked to leave. In addition, a student whose behavior suggests the need for counseling or other assistance might be referred to the University's Counseling Services. Any student who violates the University's Student Conduct Code might be referred to the Director of the University Counseling Office. One last thing, to minimize classroom interruptions, please turn off all cell phones and pagers before class. If you have a legitimate reason for needing one of these devices during class or lab, please see David or your section leader (as appropriate).
8. *Academic Integrity*: Neither plagiarism nor cheating of any kind will be tolerated in this course. Even though you will be allowed to work with classmates on assignments and lab activities, you are responsible for doing all the written work independently, without unauthorized collaboration, inadequate citation, or plagiarizing. (Plagiarizing includes duplicating another student's written work.) Any incidents of plagiarism or cheating will be dealt with severely, including loss of credit for the assignment or course and a report to the college of your major and the Office for Student Academic Integrity. If you have any questions about this policy please see the College of Liberal Arts Student Handbook or the Office for Student Academic Integrity website (<http://www.osai.umn.edu/>).
9. *Definition of grades and academic workload policy*: According to the University Senate policy, the course syllabus must include a definition of grades. The University of Minnesota has adopted the following definition for letter grades:

A	Achievement that is outstanding relative to the level necessary to meet course requirements.
B	Achievement that is significantly above the level necessary to meet course requirements.
C	Achievement that meets the course requirements in every respect.
D	Achievement that is worthy of credit even though it fails to meet fully the course requirements.
S	Achievement that is satisfactory and is equivalent to a C- or better.
F or N	Represents failure (or no credit) and signifies that the work was either (1) completed but at a level of achievement that is not worthy of credit or (2) was not completed and there was no agreement between the instructor and the student that the student would be awarded an I.
I	Assigned at the discretion of the instructor when, due to extraordinary circumstances (e.g., hospitalization) a student is prevented from completing the work of the course on time. Requires a written agreement between instructor and student.

In addition, the University Senate requires the following description of workload expectations for courses in which an undergraduate can enroll:

“For undergraduate courses, one credit is defined as equivalent to an average of three hours of learning effort per week (over a full semester) necessary for an average student to achieve an average grade in the course. For example, a student taking a three credit course that meets for three hours a week should expect to spend an additional six hours a week on coursework outside of the classroom.”

Therefore, because this is a 3-credit course, you should expect to spend an average of an additional six hours a week (outside of lectures and labs) on class material in order to earn a C (i.e., average grade) in this course.

10. *Sexual harassment*: Sexual harassment is defined as ANY unwelcome sexual advance, request, or verbal or physical conduct of a sexual nature. University policy prohibits sexual harassment in any form. Concerns or complaints about sexual harassment should be directed to the University's Office of Equal Opportunity and Affirmative Action, 419 Morrill Hall (624-9547). Students may also direct their concerns or complaints to staff at Boynton Mental Health, the Boynton Crisis Line, or University Counseling Services.

H. Course Website

Reliable access to the Internet on a computer capable of accessing WebVista (formerly WebCT) is required for this course. If you do not have this at home, you may access WebVista at one of the university's computer facilities. You should be mindful of their schedules, which you can view at <http://1help.umn.edu/computerfac>. You will need your own access to WebVista in order to download materials, check your grades, and read course announcements (although these sometimes may be sent by e-mail). To access WebVista, open <http://myu.umn.edu> in your web browser, and sign in using the Sign In link at the top of the page using your UMN Internet ID (X.500) and password. On the next screen, choose MY COURSES. Click on WebVista Course Link under PSY 2801H 002 INTRO PSYCH DATA ANALYSIS to open the course website. To ensure compliance with the Family Educational Rights and Privacy Act (FERPA), also consider the following statement supplied by WebVista administrators:

“In this class, our use of technology will sometimes make students' names and U of M Internet IDs visible within the course website, but only to other students in the same class. Because we are using a secure, password-protected course website, this will not increase the risk of identity theft or spamming for anyone in the class. If you have concerns about the visibility of your Internet ID, please contact the instructor for further information.”

I. Course Calendar

Reading assignments are expected to be completed **before** the lectures for which they are assigned. Try your best to keep up with the readings. If you find yourself having trouble adhering to the schedule, please see either David or your section leader as soon as possible. **THIS SCHEDULE IS TENTATIVE AND SUBJECT TO CHANGE.** Any changes will be announced in class. **Note: In the schedule, “L” refers to any lecture notes (usually posted in advance to WebVista). “H” refers to the Howell text.**

<u>Week</u>	<u>Date</u>	<u>Topic</u>	<u>Readings</u>	<u>Due</u>
1	W 9/9	Introduction to Course Basic Statistical Concepts	<ul style="list-style-type: none"> Syllabus L & H: Chapters 1 & 2 	
	Lab 1	Introduction to Lab Introduction to SPSS Basic Statistical Concepts		<ul style="list-style-type: none"> Quiz 1 (Diagnostic Only – All Takers Receive Full Credit) PSY 3001 Pre-Test (Not Graded)
2	M 9/14	Basic Statistical Concepts & Constructs, Operational Definitions, and Scales of Measurement	<ul style="list-style-type: none"> L & H: Chapters 1 & 2 	
	W 9/16	Constructs, Operational Definitions, and Scales of Measurement	<ul style="list-style-type: none"> L & H: Chapter 2 	
	Lab 2	Introduction to Graphing & Data Display in SPSS		<ul style="list-style-type: none"> Assignment 1
3	M 9/21	Graphing & Data Display	<ul style="list-style-type: none"> L & H: Chapter 3 	
	W 9/23	Descriptive Statistics: Central Tendency & Variability	<ul style="list-style-type: none"> L & H: Chapter 4 	
	Lab 3	Central Tendency and Variability on Paper		<ul style="list-style-type: none"> Assignment 2
4	M 9/28	Descriptive Statistics: Variability	<ul style="list-style-type: none"> L & H: Chapter 5 	
	W 9/30	Distributions of Data and Probability	<ul style="list-style-type: none"> L & H: Chapters 6 & 7 	
	Lab 4	Central Tendency, Variability and z-scores in SPSS		<ul style="list-style-type: none"> Assignment 3
5	M 10/5	z-scores	<ul style="list-style-type: none"> L & H: Chapter 6 	
	W 10/7	Correlation & Regression	<ul style="list-style-type: none"> L & H: Chapters 9 & 10 	
	Lab 5	Correlation and Regression on Paper & in SPSS		<ul style="list-style-type: none"> Assignment 4 Quiz 2 Critical Thinking Exercise 1

6	M 10/12	Correlation & Regression Exam Review	<ul style="list-style-type: none"> L & H: Chapters 9 & 10 	
	W 10/14	Exam 1		<ul style="list-style-type: none"> Assignment 5
	Lab 6	Exam 1, continued		
7	M 10/19	Sampling Error, Inferential Statistics & Hypothesis Testing	<ul style="list-style-type: none"> L & H: Chapter 8 	
	W 10/21	Error & Power	<ul style="list-style-type: none"> L & H: Chapters 8 & 15 	
	Lab 7	Hypothesis Testing & Error		<ul style="list-style-type: none"> Assignment 6 Self-Assessment (Not Graded)
8	M 10/26	z-tests / One-sample t-tests	<ul style="list-style-type: none"> L & H: Chapters 8 & 12 	
	W 10/28	Confidence Intervals	<ul style="list-style-type: none"> L & H: Chapter 12 	
	Lab 8	z-tests and one-sample t-tests on Paper		<ul style="list-style-type: none"> Assignment 7
9	M 11/2	Paired-samples t-tests on Paper		<ul style="list-style-type: none"> Quiz 3
	W 11/4	Paired-samples t-tests	<ul style="list-style-type: none"> L & H: Chapter 13 	
	Lab 9	Independent-samples t-tests on Paper		<ul style="list-style-type: none"> Assignment 8
10	M 11/9	Effect Sizes & Power	<ul style="list-style-type: none"> H: Sec. 12.6, Sec. 13.5 & L & H: Chapter 15 	
	W 11/11	Independent-samples t-tests	<ul style="list-style-type: none"> L & H: Chapter 14 	<ul style="list-style-type: none"> Critical Thinking Exercise 2
	Lab 10	t-tests in SPSS		<ul style="list-style-type: none"> Quiz 4 Assignment 9
11	M 11/16	Exam Review		
	W 11/18	Exam 2		
	Lab 11	Exam 2, continued		<ul style="list-style-type: none"> Assignment 10

12	M 11/23	One-Way ANOVA: Omnibus Tests	• L & H: Chapter 16	
	W 11/25	One-Way ANOVA: Omnibus & Post-Hoc Tests	• L & H: Chapter 16	
	Lab 12	One-Way ANOVA on Paper		<ul style="list-style-type: none"> • Quiz 5 • Assignment 11
13	M 11/30	Catch-Up		
	W 12/2	One-Way ANOVA: Post-Hoc Tests	• L & H: Chapter 16	
	Lab 13	One-Way ANOVA in SPSS		• Assignment 12
14	M 12/7	Factorial (n-way) ANOVA	• L & H: Chapter 17	
	W 12/9	Chi-Square Tests	• L & H: Chapter 19	• Critical Thinking Exercise 3
	Lab 14	Factorial ANOVA on Paper & in SPSS		• Assignment 13
15	M 12/14	Chi-Square Tests continued	• L & H: Chapter 19	
	W 12/16	Catch-Up; Wrap-Up & Course Evaluations		<ul style="list-style-type: none"> • SPSS Take-Home Exam is Due • Quiz 6
	Lab 15	Chi-Square Tests on Paper & in SPSS		• Assignment 14
	Tues. 12/22	In-Class Final Exam from 8:00 a.m. to 10:00 a.m. in Elliott Hall Room N391		• Final Exam