

Explanation of modifications of PSY 215 to meet GenEd criteria for a course in Statistical Inferential Reasoning

The purpose of this narrative is to outline how the Experimental Psychology course (PSY 215) will contribute to the Applications of Statistics to Psychology course (PSY 216), so together these two courses can meet the goals for a GenEd course in statistical inferential reasoning.

The current version of the PSY 215 course taught by Dr. Andrea Friedrich already emphasizes some basic understanding of statistical reasoning as a way to create critical consumers of research, giving students the ability to understand not only hypothesis testing and the various research designs, but also the ability to critically evaluate results of studies against claims made by researchers. The execution of inferential procedures is not covered in this course. Instead, the course aims to develop the tools that are necessary for students to evaluate research-based information.

In the first section of the course, students will be presented with the challenges that confront informal inferences arising from statistical entities such as measures of central tendency, graphing, tabling and measures of variability and offer evidence that they can construct these inferences in a rational and informed manner (Goal C1 of the course template). This will be accomplished by addressing during lectures some basic statistics concepts. In this section students will also be introduced to hypothesis testing and the types of errors someone may incur in during the decision process (for an example of the material that will be discussed in class, please refer to Appendix A). Therefore, goals B1 and B2 of the course template will also be addressed. Goal B1 states that students must be able to demonstrate a substantive understanding of “statistical significance,” and the sense in which p-values and null hypothesis testing offer a useful and practical articulation of risk assessment, which includes mastery of the basic language of statistical experimental design and null hypothesis testing, and articulate the role that statistical modeling plays in the development and interpretation of “statistical significance“. Goal B2 states that students must be able to articulate the strengths and weaknesses of using classical null hypothesis testing as a decision tool, understanding the sense in which common hypothesis testing, and the associated “significance” addressed in media, is intimately related to a perspective that looks for evidence against a claim, and infers about the truth of that claim based on the weight of that evidence. It is important to note that students will not be required to do the calculations normally executed in statistical procedures, but they will be expected to be able to understand results presented in scientific publications. In lab, students will have the opportunity to summarize data collected by the teaching assistant which will also be used for the APA project (for a detailed description of the project, please refer to Appendix B). Discussions of journal articles, as the one included in Appendix C, will also take place in lab.

In the second session of the course, students will start exploring the experimental method and will learn how to avoid commonly observed extraneous variables so they do not become “confounds“. The importance of hidden variables and confounding will be

addressed at this point (partially addressing goal C2). At the end of this section, students are expected to be able to draw conclusions from collected data and evaluate limitations of studies, which will also help continue to address goal B2 of the course template mentioned above.

In the third session of the course, students will be exposed to observational and survey research as alternatives to experimental designs. Limitations of these designs will be discussed in lectures as well in lab (for an example of the type of assignment used in lab, please refer to Appendix D). These topics will specifically address Goal A2 of the course template, which states that students should be able to demonstrate an understanding that some of the other major sources of uncertainty, such as biased samples and questionnaires that are worded in a biased or misleading fashion are not addressed by margins of errors or confidence intervals. The advantages and limitations of correlational research are also going to be explored in the third section of the course (for an example of the type of material that will be discussed in lectures, please refer to Appendix E). These discussions will further contribute for achieving Goal C2 which states that students should be able to understand the issue of association versus correlation and correlation and causation. It is also worth mentioning that throughout the course, there will be emphasis on the importance of selection of representative samples. However, most of this discussion will take place in the third section of the course.

The course will still include a culminating assignment. Students will be required to write a research proposal, taking into account all methodological and ethical issues discussed in the course (for specific details of this assignment, please refer to Appendix F). The process of designing the proposal will be directly supervised by the teaching assistants. To successfully propose a study, students will be required to read a minimum of eight peer reviewed journal articles which will be critically presented in the Introduction section of their papers. These readings will serve as the basis for the development of a hypothesis, to which students will propose a design to empirically test it. This will constitute a 4 member group project that will be presented also orally to the class before students submit the written proposal. The oral presentation will give students the opportunity to critically evaluate someone else's design and receive feedback on their own projects. This project addresses Goal D of the course template. Goal D states that students should demonstrate information literacy by their measurable ability to independently identify and utilize appropriate information resources from a variety of sources.

The Experimental Psychology course (PSY 215) will not address all goals listed in the course template for statistical inferential reasoning, but will complement the Application of Statistics to Psychology course (PSY 216) in the task of developing students' ability to evaluate the efficacy of claims based on statistical constructs and to understand and articulate important risks that these claims often address, both through the formal science of statistical inference and informal activity of human inference.

PSY 215 – Experimental Psychology

Sections 001 - 010

University of Kentucky, Fall 2010
Lecture: KAS 213, MWF 9:00am – 9:50 am

Instructor: Andrea M. Friedrich

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Date and Time

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Course Description and Learning Outcomes

This course was designed to help you understand and employ processes of intellectual inquiry, demonstrate competent communication skills and understand and employ quantitative methods. It will also provide you with information about how psychological research is conducted. Students will learn about conceptual and methodological issues in psychological research; it is expected that, at the end of the course, students will be able to critically evaluate research-based information.

General Education

This course combines with PSY 216 to satisfy the General Education requirement of a course in statistical inferential reasoning. You must complete both PSY 215 and PSY 216 to satisfy this requirement.

Required Textbooks

Goodwin, C. J. (2008). *Research in Psychology: Methods and Design (5th edition)*. John Wiley & Sons.

Course Outline

This course has both a **lecture** and a **laboratory component**. For the three weekly lectures, students will be responsible for the material discussed in class. Attendance is recommended for lectures and due to the nature of the material it is very unlikely that students will do well without attending lectures regularly.

The weekly labs will provide additional lecture material and will also give students practice in writing APA-style research papers. Students will be expected to complete a series of assignments and to submit a fully written research paper and a research proposal at the end of the course. Details about laboratory assignments, grading policies and due dates will be provided by the laboratory instructor.

Lecture Component

The lecture component of the course is presented in 3 sections. Students are required to take a multiple-choice exam at the end of each section.

Section #1: In this first section, we will explore some basic ideas in research. We will be looking at different ways of acquiring knowledge, focusing on the scientific method and its assumptions. We will also examine the goals of research in psychology, and most importantly, you will learn to differentiate psychological science from pseudosciences that also attempt to explain and predict behavior (e.g. phrenology, graphology, numerology, etc.). Next, we will learn about the importance of weighing and balancing designs

ethical issues when conducting human and animal research. Ethical responsibilities when writing up research will also be explored. At this point, we will start looking at sources of empirical questions as well as how to polish these questions so they can be answered through the scientific method. In this section, you will still learn how to "measure behavior" and how to assess the reliability and validity of measuring tools. Some basic concepts of statistics will be addressed so you can gain some knowledge of hypothesis testing and the types of errors someone may incur in during the decision process. Even though you will not be required to do the calculations normally executed in statistical procedures, you will be expected to be able to understand results presented in scientific publications.

Date	Topic	Readings
Lecture 1	Introduction	
Lecture 2 Lecture 3 Lecture 4	Scientific Thinking	Chapter 1
Lecture 5 Lecture 6 Lecture 7	Ethics	Chapter 2
Lecture 8 Lecture 9 Lecture 10	Developing research ideas	Chapter 3
Lecture 11 Lecture 12 Lecture 13	Introduction to APA style	Appendix A
Lecture 14 Lecture 15 Lecture 16	Measurement and data analyses	Chapter 4
Date	Exam # 1	

Section #2: After covering the basic concepts of research, we will start exploring the experimental method, which is normally used when we want to investigate cause-and-effect relationships between variables. You will learn how we can manipulate single and multiple variables in a study to test hypotheses. We will focus on how to avoid commonly observed extraneous variables so they do not become "confounds" (e.g. random assignment, complete counterbalancing, Latin squares, etc.). At the end of this section, students are expected to be able to draw conclusions from collected data and evaluate limitations of studies.

Lab			200 points
TOTAL			500 points

Section #3: Due to the nature of some empirical questions, it is not always possible to manipulate the variables of interest or control for extraneous variables. Therefore, in this section, we will explore alternative ways of collecting data to the experiment. We will discuss the advantages and limitations of correlational research, observational studies, archival and survey research, interrupted time series designs among other non-experimental designs.

Letter grades for the course will be based on the number of points earned as follows:

- A = 450 - 500
- B = 400 - 449
- C = 350 - 399
- D = 300 - 349
- E < 300

Lecture 29 Lecture 30 Lecture 31	Correlational research	Chapter 9
Lecture 32 Lecture 33 Lecture 34	Quasi-experimental designs	Chapter 10
Lecture 35 Lecture 36 Lecture 37	Observational & survey research	Chapter 12
Lecture 38 Lecture 39	Small N designs	Chapter 11
Lecture 40	Make-up exams (excused absences only)	
Finals Week	EXAM # 3	

Other Policies

- ✓ Students will not be allowed to answer or use cell phones or any other electronic devices during exams
- ✓ Make up exams and assignments will only be offered to students who had an excused absence on the day of the exam, quiz or exercise. If possible, students should inform the instructor before her/his absence, but no later than 1 week after it. You will need to provide proper documentation (e.g. written documentation from a physician stating that you were unable to take an exam, written documentation of your participation in a University sponsored trip) of your absence for it to be excused. As defined by the University of Kentucky Bulletin, excused absences include: 1) illness of student or of a member of immediate family; 2) death of a member of immediate family; 3) trips sponsored by the University; 4) major religious holidays (please notify in writing as soon as classes start). **All exams make-ups are scheduled for Date.**
- ✓ If a student is late for an exam, he/she will only be allowed to take the exam if no other student has already left the classroom

Laboratory Component

Through a series of small assignments, you will be encouraged to exercise your data reading, analytical and writing skills. You will also have the opportunity to gain further understanding of the methodological matters covered during lectures. In addition to these topic specific assignments, you will also be required to complete two major lab assignments. In the first assignment you will be expected to write a APA-style paper based on data collected in class. Students will serve as the participants in this first project. To successfully complete this requirement, you will also have to identify the pertinent literature and critically evaluate it. The second assignment will involve writing a research proposal, which will only be due at the end of the semester. This is a group project where students will be required to design a study, taking into consideration all methodological and ethical issues discussed in the course, and present it orally to the class as well as submit a written proposal in APA style.

Academic Dishonesty

Cheating will not be tolerated. According to the Student Handbook, the minimum penalty for cheating is final grade E in the course. Cheating includes, but it is not limited to, using unauthorized notes or devices (e.g. cell phones, calculators) or looking at a neighbor's paper during exams.

Assessment of Student Performance

In the lecture component of the course, multiple choice exams will help the instructor in the process of assessing your ability to 1) recognize basic research concepts; 2) differentiate between several types of research design; 3) and identify common research pitfalls. Through the laboratory component of the course, two APA style papers will help the instructor in the process of assessing your ability to 1) produce texts which demonstrate sound writing skills; 2) create a research proposal which evidences the student's ability to incorporate the class material into a research project.

Special Needs

Students with special needs should make these needs known to the instructor in the beginning of the semester so appropriate accommodations can be made.

Other Policies

- ✓ Please turn off your cell phone and any other electronic device before class
- ✓ E-mail: please provide your teaching assistant with an e-mail address. Students may receive important information, handouts, outlines, study guides via-email. Check your e-mail on a daily basis while classes are in session
- ✓ Note: Course content, calendar and grading policies may be changed at the discretion of the instructor to accommodate class needs and/or special circumstances. Any changes will be announced in class and each student is responsible for recording these changes when they occur.

Exam #1	date	Chapters 1, 2, 3, 4, and Appendix A	100 points
Exam #2	date	Chapters 5, 6, 7 and 8	100 points
Exam #3	date	Chapters 9, 10, 11 and 12	100 points

APPENDIX B - 1

APA-STYLE PROJECT

Total Possible: 110 points

- Drafts
- Final paper

Part I: Drafts

After participating in a data collection during Lab 3, you will be required to write drafts of the different sections of an APA-style manuscript. The due dates, as well as the total number of possible points for each section, can be found below:

Introduction	Due in Lab 6	15 points
References	Due in Lab 6	5 points
Method	Due in Lab 7	10 points
Results	Due in Lab 7	5 points
Figures/ Tables	Due in Lab 7	5 points
Discussion	Due in Lab 8	10 points
Abstract	Due in Lab 8	5 points
Title Page	Due in Lab 8	5 points

DO NOT FORGET!

- Everything should be in APA-style
- Good writing is expected! Even though these are drafts of your final paper, your ideas should be presented in a clear and organized way, using good grammar (and also avoiding typos)
- When writing your Introduction, guide the reader from one thought to another, Link your ideas instead of just presenting them.
- You have to have, at least, **5 references**. One of the references will be suggested by your lab instructor and its summary is mandatory in your Introduction. Keep in mind that you may need to use more references to present your ideas/ arguments
- Do not make **any** factual statement without mentioning the source of information
- Include the instructions that were provided to the participants in the procedure
- Choose a descriptive title for your paper
- The Discussion is a VERY important part of your paper. Do not underestimate its importance!!
- Do not use colors anywhere in your paper
- At least one table/figure is expected
- BE CAREFUL WITH PLAGIARISM

Part I: Final Paper

After you submit your drafts, the teaching assistant will grade them and comment them. They may suggest additional references, rewriting of some sections or just small adjustments. You should carefully review the graded drafts and meet with your TA for additional clarifications and/or suggestions. You will then be required to make the necessary modifications and turn in a final version of your manuscript, containing all sections outlined above. The due date for the final paper will be defined by your lab instructor.

DO NOT FORGET

- When grading your final paper, TAs will expect a good final product since you were given feedback on your drafts. Make sure that you have a good final product
- Consult with your TA during office hours as many times as needed
- REVISE, REVISE AND REVISE YOUR PAPER!!!!

DRAFTS - GRADING

INTRODUCTION (DUE: LAB 5)	
OPENING PARAGRAPH (INTRODUCTION OF PROBLEM UNDER STUDY)	____/0.5
ADEQUATE DESCRIPTION OF EACH OF THE STUDIES REVIEWED (MINIMUM 5 STUDIES)	____/10
RATIONALE	____/0.5
HYPOTHESIS + PREDICTIONS	____/1
HOW THE HYPOTHESIS WAS TESTED (GENERAL ASPECTS OF PROCEDURE)	____/0.5
APA	____/1
FLOW/COMPREHENSIBILITY	____/1.5
REFERENCES (DUE: LAB 5)	
APA (1POINT PER REFERENCE)	____/5
METHOD (DUE: LAB 7)	
PARTICIPANTS	
NUMBER	____/0.5
DEMOGRAPHIC INFORMATION	____/0.5
COMPENSATION	____/0.5
HOW THEY WERE RECRUITED	____/0.5
APA	____/1
MATERIAL	
DESCRIPTION	____/2.5
APA	____/0.5
PROCEDURE	
INSTRUCTIONS	____/1
ASSIGNMENT TO DIFFERENT CONDITIONS	____/0.5
DESCRIPTION	____/1.5
APA	____/1
RESULTS (DUE: LAB 7)	
CONTENT	____/3
APA	____/2
FIGURES AND TABLES (DUE: LAB 7)	
FIGURE CAPTIONS PAGE	____/0.5
FIGURE/TABLE	____/2.5
APA	____/2
ABSTRACT (DUE: LAB 8)	
PURPOSE	____/1
HYPOTHESIS(ES)	____/0.5
PARTICIPANTS	____/0.5
PROCEDURE (GENERAL DESCRIPTION)	____/0.5
RESULTS	____/0.5
CONCLUSIONS	____/0.5
APA (INCLUDING NUMBER OF WORDS)	____/1.5
TITLE PAGE (DUE: LAB 8)	
DESCRIPTIVE TITLE	____/1
PAGE HEADER	____/0.5
RUNNING HEAD	____/1
NAME	____/0.5
INSTITUTION	____/0.5
APA	____/1.5
DISCUSSION (DUE: LAB 9)	
SUMMARY OF FINDINGS	____/1.5
EXPLANATION OF RESULTS	____/1
DISCUSSION OF FINDINGS IN RELATION TO PREVIOUS LITERATURE	____/2
LIMITATIONS/ PROBLEMS	____/1
IMPLICATIONS / APPLICATIONS	____/1
SUGGESTIONS FOR FUTURE RESEARCH	____/1
APA	____/1

FINAL PAPER - GRADING

TITLE PAGE		
DESCRIPTIVE TITLE		____/.5
PAGE HEADER		____/.25
RUNNING HEAD		____/.25
NAME		____/.25
INSTITUTION		____/.25
APA		____/.5
ABSTRACT		
PURPOSE		____/.5
HYPOTHESIS(ES)		____/.5
PARTICIPANTS		____/.25
PROCEDURE (GENERAL DESCRIPTION)		____/.25
RESULTS		____/.5
CONCLUSIONS		____/.5
APA (INCLUDING NUMBER OF WORDS)		____/.5
INTRODUCTION		
OPENING PARAGRAPH (INTRODUCTION OF PROBLEM UNDER STUDY)		____/1
ADEQUATE DESCRIPTION OF EACH OF THE STUDIES REVIEWED (MINIMUM 5 STUDIES)		____/5
RATIONALE		____/1
HYPOTHESIS + PREDICTIONS		____/1
HOW THE HYPOTHESIS WAS TESTED (GENERAL ASPECTS OF PROCEDURE)		____/1
APA		____/3
FLOW/COMPREHENSIBILITY		____/3
METHOD		
PARTICIPANTS		
NUMBER		____/.5
DEMOGRAPHIC INFORMATION		____/.5
COMPENSATION		____/.25
HOW THEY WERE RECRUITED		____/.25
APA		____/.5
MATERIAL		
DESCRIPTION		____/1
APA		____/1
PROCEDURE		
INSTRUCTIONS		____/1
ASSIGNMENT TO DIFFERENT CONDITIONS		____/1
DESCRIPTION		____/1
APA		____/1
RESULTS		
CONTENT		____/4
APA		____/1
DISCUSSION		
SUMMARY OF FINDINGS		____/2
EXPLANATION OF RESULTS		____/1
DISCUSSION OF FINDINGS IN RELATION TO PREVIOUS LITERATURE		____/2
LIMITATIONS/ PROBLEMS		____/.5
IMPLICATIONS / APPLICATIONS		____/.5
SUGGESTIONS FOR FUTURE RESEARCH		____/.5
APA		____/1.5
FLOW/COMPREHENSIBILITY		____/2
REFERENCES		
APA (1POINT PER REFERENCE)		____/5
FIGURES AND TABLES		
FIGURE CAPTIONS PAGE		____/.5
FIGURE/TABLE		____/1

NAME

PSY 215 – ACTIVITY (CHAPTER 3)

Carefully read the article provided by your instructor. Based on the information provided by the authors, answer the following questions.

- 1) What is the empirical question that the authors are trying to answer? (1 point)

- 2) Is there any indication in the article of where this empirical question came from? Where? (0.5 point)

- 3) Would you classify their research as basic or applied research? Why? (0.5 point)

- 4) Would you classify their research as laboratory or field research? Why? (0.5 point)

- 5) Would you classify their research as qualitative or quantitative research? Why? (0.5 point)

- 6) What is the hypothesis? (0.5 point)

- 7) How is rational imitation operationally defined in this study? (0.5 point)

- 8) Based on the results, would you say that there was confirming or disconfirming evidence? Was the hypothesis supported? (1 point)

NAMES:

CHAPTER 12 – ACTIVITY

1) Write a ten-item questionnaire (using Likert-type items) that measures attitude toward “online dating”. Be sure to use both positive and negative statements and state all of the items simply enough so that they can be easily answered. Also, be sure to include a set of instructions.