

Psychological Statistics & Methods I

Psy 3615, Fall 2019

W 5:30p-9:00p

Lindquist Hall 302

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Annex 2, office hours by appointment

NOTE: This course is a Community Engaged Learning (CEL) course. Thus, student projects are based in the community, and all students will be required to volunteer during the course of the semester.

Required Materials:

- Salkind, N. J. (2017). *Statistics for people who (think they) hate statistics* (6th ed.). Thousand Oaks, CA: Sage Publishing, Inc.
- Pyrczak, F. & Bruce, R. R. (2014). *Writing empirical research reports: A basic guide for students of the social and behavioral sciences* (8th ed.). Glendale, CA: Pyrczak Publishing.

Student Study Site:

- <https://edge.sagepub.com/salkind6e>

COURSE OVERVIEW & LEARNING OUTCOMES

KNOWLEDGE – Students will understand psychology as a scientific discipline. Students will obtain core statistical methodological knowledge regarding how psychologists critically evaluate, test and defend psychological claims. Students will understand basic statistical research methodologies and procedures.

1.1 Psychological Statistics & Methods I Content Knowledge

Students will identify the processes involved in data analysis in the social sciences. This includes an introduction to concepts such as measures of central tendency, variability, bias, and analyzing group differences as well as correlational relationships.

1.1A Students will synthesize the work of others to create a logical argument for research that follows the process of the scientific method. (Final Project-Literature Review)

1.1B Students will create an original research work, with an eye toward eliminating bias in their own thinking, using the appropriate methods and controls, and telling a complete story with collected data. (Final Project)

1.1C By the end of the semester, students will be able to identify and describe the critical components of statistical analyses and when to use each. (Assignments & Quizzes)

1.1D By the end of the semester, students will be able to compute and interpret both descriptive and inferential statistics. (Quizzes)

1.2 Psychological Statistics & Methods I Civic Knowledge

Students will apply discipline specific knowledge to civic engagement. Students will apply facts and theories from Psychology to community engagement through their own participation in a community-based project.

1.2A Students will articulate systemic causes for social issues using knowledge from Psychology to civic engagement and from their own participation in a civic project. (Discussion Postings & Final Project)

1.2B Students will create new meaning from their own academic study as it pertains to civic engagement in a community-based project. (Final Project & Reflection)

APPLICATION – Students will be able to critically apply and interpret statistics and research methodologies to assess and evaluate data, questions and claims from a scientific and statistical perspective.

2.1 Psychological Statistics & Methods I Application

Students will apply appropriate methodological standards to a variety of types of data and research articles. Students will adequately interpret results of statistical tests.

2.1A Students will compare and contrast previous research to identify hypotheses, strengths and weaknesses, implications, and means for improvement. (In-class Reviews)

2.1B Students will create an original work that applies the principles of the scientific method to a real-world problem or area of interest (Final Project-Methods & Results)

2.1C Students will critique the findings of others to identify and evaluate empirical evidence. (In-class Reviews)

2.1D By the end of the semester, students will be able to use SPSS to conduct each of the analyses covered in class, and will be able to interpret these analyses. This includes running the test, assessing assumptions, interpreting graphics, and interpreting results. (Assignments & Quizzes)

2.1E By the end of the semester, students will be able to select the appropriate statistical test to use when given a dataset. (Quizzes)

VALUES/ETHICS – Students will share key attitudes and values adopted by psychologists including (but not limited to) skepticism, intellectual curiosity, respect for evidence, tolerance of ambiguity, respect for human diversity and humility regarding the limits of their psychological knowledge and skills. Students will also understand and follow the APA Code of Ethics and recognize the necessity of ethical behavior in the science and practice of psychology.

3.1 Psychological Statistics & Methods I Values

In learning the distinguishing characteristics of statistical methods, students will describe the implications on results of using the wrong method to analyze data, identify data that is biased, and describe the effects of analyzing biased data. Students will identify limitations in their own as well as past research.

3.1A Students will compare and contrast past research and methodologies with current acceptable practices, and will identify limitations of past and current research. (Assignments, Final Project)

3.1B Students will be able to identify and test the assumptions of each statistical method and identify the biases introduced to their analyses when these assumptions are not met. (Assignments, Quizzes, Final Project)

3.2 Psychological Statistics & Methods I Ethics

Students will summarize relevant information into a written or graphical document that is appropriately aligned with the proper referencing guidelines.

3.2A Students will summarize relevant information from a number of sources into a written document that is appropriately aligned with the proper referencing guidelines.

3.2B Students will be able to apply appropriate APA formatting to statistical results. (Assignment, Quizzes, Final Project)

3.2C Students will be able to identify appropriate uses of data and will be able to discuss the ethical obligation of researchers to accurately analyze and report results. ((Assignment, Quizzes, Final Project)

COMMUNICATION/INTERPERSONAL RELATIONSHIPS – *Students will exhibit skills to professionally communicate their understanding of terms, concepts, theories, research design and findings of the discipline to others via written and oral formats. Students will also demonstrate interpersonal skill necessary to effectively collaborate with others.*

4.1 Psychological Statistics & Methods I Written Communication – Logic

Students will explicitly outline logical flow of information from broad to most fine-grained and will present all statistical results in logical form moving from least specific to most specific analyses; this logic will follow the form of “if A then B then C” and all evidence within the document will relate back to this logic.

4.1A Students will write a full APA report, including all relevant sections in the proper order: Problem Statement, Literature Review, Methods, Results, Discussion. (Assignments, Final Project)

4.1B Students will be able to write a full APA results write-up that flows from assumptions of each test to results and finally to graphic representation. (Quizzes, Final Project)

4.2 Psychological Statistics & Methods I Written Communication – Clarity

Students will write in a clear and concise manner; appropriate professional language and tone will be used.

4.2A Students will be able to write about each of the sections of a research report, including all appropriate information, as well as strengths and weaknesses of each (Assignments, Final Project)

4.2B Students will be able to write a full APA results write-up for each of the methods discussed in class. (Quizzes, Final Project)

4.3 Psychological Statistics & Methods I Interpersonal Communication

Students will effectively work with their peers to conduct a research project of their choosing.

4.3A Students will work together in small groups to design, execute, and analyze a research project. (Final Project-Peer Critique)

4.3B Students will orally present key research ideas. (Final Project-Oral Presentation)

UNIVERSITY & COURSE POLICIES

Academic Integrity and Honesty Policy:

Any academic dishonesty will not be tolerated. If a student is caught engaged in academic dishonesty in this course, he or she risks failing the course and being subject to academic discipline including the imposition of university sanctions. For more information, please see the university policy on cheating, which can be found in the WSU Student Code, Section IV, Part D, Paragraph 2.

For the purposes of this course, students are encouraged to work together. Discussing the assignment together will not be considered cheating. However, all submitted work should be original, unless specified as a group project. Any student caught submitting identical or closely related work will at the minimum receive zero (0) credit for the assignment and at a maximum a failing grade in the course and be turned in to the appropriate university personnel. The types of activities that would be considered academic dishonesty are as follows: actively copying answers or otherwise using the work of another student on an exam; using the answers of another student on an individual assignment without having done the work yourself; soliciting other students or agencies to complete and submit work for you.

Students with Disabilities/Requests for Accommodations:

Any student requiring accommodations or services due to a disability must contact Services for Students with Disabilities (SSD) in Room 181 of the Student Services Center (or Room 221 at the Davis Campus). SSD can also arrange to provide course materials in alternative formats upon request. To contact SSD by phone: (801) 626-6413 – Ogden; or, (801) 395-3524 – Davis.

<http://www.weber.edu/ssd>

Inclusivity Statement:

Pivotal to Weber State University's mission is the need to embrace and value the diversity of its members. Acknowledging the uniqueness of each individual, we seek to cultivate an environment that encourages freedom of expression. Because the University is a community where inquiry is nurtured and theories are tested, every individual has the right to feel safe to express ideas that differ from those held by other members of the community. However, all persons who aspire to be part of our campus community must accept the responsibility to demonstrate civility and respect for the dignity of others. Recognizing that the proper balance between freedom of expression and respect for others is not always apparent or easy to achieve, we must continually challenge ourselves and each other in an atmosphere of mutual concern, good will and respect. Therefore, expressions or actions that disparage an individual's or group's ethnicity, gender, religion, sexual orientation, marital status, age or disability are contrary to the mission of Weber State University and will be not acceptable in classroom discussion.

Use of Technology:

The use of cell phones, smart phones, or other mobile communication devices is disruptive, and is therefore prohibited during class. Students are permitted to use devices during class for note-taking and other class-related work only. If you have need to use your device during class, please be respectful to others and take your calls outside of the classroom.

Emergency Closure Statement:

Due to the applied nature of this course, if for any reason the university is forced to close for an extended period of time, class will be cancelled and assignments will be adjusted accordingly. This may include dropping an assignment altogether or rearranging delivery of course topics to cover more in any one class. Look for announcements from the university on Weber e-mail or the website and from the instructor on the course Canvas page. Code Purple is a good way to be alerted to campus closures, and you are encouraged to sign up for it.

Contacting the Instructor:

If at any point any student has questions or problems during the course of the semester, please feel free to contact the instructor. Use of the Canvas email system as the initial contact point for the instructor is recommended. Please allow 24-48 hours for a response.

ASSIGNMENTS & GRADING

Course Requirements:

Canvas: All correspondence with students outside of class time will be through use of Canvas, which can be found using the following link: canvas.weber.edu

Qualtrics: Students will be expected to track hours worked on the community project, as well as volunteer hours, using a Qualtrics tracking survey. This is currently in development. More information will be provided throughout the semester.

APA Note: *Please note that all assignments are expected to be double-spaced, and follow correct APA format.*

Attendance (10pts x 13):

Due to the applied nature of this course, attendance is required. Students are allowed **one (1)** unexcused absence during the semester without penalty. Students absent **three (3)** or more days in the semester will be required to meet with the instructor, at which point it will be suggested that the student drop/withdraw from the class.

Community Partner Research Project, Semester 1 (390 pts):

The bulk of the semester will center around a research project designed to meet the needs of a community partner, the Granite Education Foundation. Students will break up into groups of **two (2)** and will work with both the professor and the community partner to meet one of a number of needs for the institution. For more information on the organization, please go to <https://granitekids.org/>.

During the *full year of the course*, students will be required to design an experiment, gather data, analyze data, and discuss results. This will be done initially via a series of smaller assignments. After receiving feedback from the instructor regarding the content and appropriateness of these smaller assignments, students will then be required to make any necessary corrections and turn all pieces in at the end of the semester in one complete final project. Any group not turning in any portion of the research project will get no better than a “C” grade overall for the project. Groups missing **two (2)** or more pieces of the final project will receive no more than half credit for the project.

During the first semester, the focus will be on the design of the study to be conducted. Students are expected to produce a research proposal by the end of the semester, so that data collection and analysis can begin in the second semester. The expected pieces of information to be turned in and the due dates are below. More information for each piece is listed below and will be given throughout the semester.

	<u>Length:</u>	<u>Due Date:</u>	<u>Pts:</u>
Ethical Behavior Online Courses	N/A	Sept 7	50
Research Questions Interest	As needed	Sept 7	10
List of Variables	As needed	Sept 14	15
Data Collection Ideas	1-2 pp	Sept 21	15
Preliminary Ideas Document	As needed	Sept 28	50
Problem Statement	1-1.5 pp	Oct 12	25
Instrument Draft	As needed	Oct 19	25
Literature Review Draft	7-10 pp	Nov 16	25
Methods Extended Outline	3-5 pp	Nov 23	25
Proposal Draft for Peer Review	15-20 pp	Nov 30	50
IRB Revised Draft	15-20 pp	Dec 14	50
Reflection	As needed	Dec 14	50

Ethical Behavior Online Courses (50 pts)

Date Due: Sept 9

Students will be required to take and pass two online courses regarding ethical behavior in research. Not providing proof of completion of these trainings will be grounds for failing the class.

CITI Human Subjects Research – Social-Behavioral-Educational Basic Course (25 pts)

<https://about.citiprogram.org/en/course/human-subjects-research-2/>

Any researcher, student or volunteer who will have direct contact with human subjects, collect, or analyze identifiable data must complete CITI program training, the training certificate is valid for three (3) years. A copy of the training course certificate of completion for all involved parties must be included with IRB application. This course will help familiarize you as an investigator with the ethical principles and guidelines of using human subjects in research. The course will take approximately 1-1.5 hours to complete. A [Step by Step Guide](#) is available.

NCES Forum Guide to Data Ethics Online Course (25 pts)

http://nces.ed.gov/forum/dataethics_course.asp

This course is designed by the National Center for Education Statistics and covers appropriate use of data and appropriate release of individual subject information. Upon completion, a Certificate of Completion can be emailed to you. Submit a paper copy of this certificate for credit. Completion of the course will take approximately 1-1.5 hours.

3-5 Research Questions (10 pts)

Date Due: Sept 9

After meeting with the Community Partner and learning of their needs, each group will decide on a project to meet one of those needs. In order to facilitate this conversation and to ensure that the partner needs are being met, each group will be asked to bring 3 to 5 appropriate research

questions to class for discussion. Among other things, these questions should be testable, practical and meet the appropriate needs.

List of Variables (15 pts)

Date Due: Sept 14

Once a research project topic has been chosen, groups will develop a list of variables, both independent and dependent, that they anticipate they will need to gather data on in order to address the topic. The list of variables should explicitly outline which research questions they will be used to address.

Data Collection Ideas (15 pts)

Date Due: Sept 21

Along with which variables will be used, groups need to determine the best method to use in order to answer the chosen research questions. The discussion of data collection method should outline as explicitly as possible how the method of choice will address the research question, as well as any other pieces of information that might help the instructor and community partner assure the choice is sound.

Preliminary Ideas Document (50 pts)

Date Due: Sept 28

Before any actual work is done on the project, the community partner must be made aware of the plan and must sign off on the proposed method of study. This outline needs to contain information from the previous three assignments in enough detail that the community partner understands what will be done. If the community partner does not like the proposed plan, groups will need to revise and resubmit. *No project will progress without sign-off by the community partners.*

Problem Statement (25 pts)

Date Due: Oct 12

A problem statement is a one to 1.5 page document that outlines the logic of the proposed research project. A problem statement should funnel from a broad topic to the narrow topic to be addressed with your research. This helps to ensure your research is seated in the pre-existing knowledge base.

Instrument Draft (25 pts)

Date Due: Oct 19

A draft of the research instrument each group plans to use will need to be created and shared for feedback. This can be a survey, a set of focus groups questions, or a number of other items.

Literature Review (25 pts)

Date Due: Nov 16

Each group will submit a 7 to 10-page literature review providing the background information necessary to support your research project. This literature review should follow the same logic as your problem statement, moving from the broad general topic to the narrow specific topic you wish to address in your research.

Methods Extended Outline (25 pts)

Date Due: Nov 23

Groups will submit an outline of the methods they intend to use, including brief descriptions of each of the key components of a Methods section: Participants, Instrumentation, Procedure, Analysis.

Proposal Draft for Peer Review (50 pts)

Date Due: Nov 30

After feedback is provided on all previous pieces, groups will need to incorporate this feedback into a draft of their full proposal. This must be submitted on the due date in order to give time for peer review.

IRB Revised Draft (50 pts)

Date Due: Dec 14

The final product to be submitted for the Fall semester is a completed IRB draft. We will work on this draft throughout the semester, and students will be expected to edit the document throughout. The IRB document is a contract between the students, the instructor, the University, and the community partner. Thus, it will need to be very close to perfect before it is submitted for approval. Students should expect to submit 3 to 4 IRB drafts before the final is submitted. Those that have not continued to edit their IRB document throughout the course of the semester to make it as clean as possible for this draft will lose points.

Reflection (50 pts)

Date Due: Dec 14

Students will be asked to provide at least a one-page reflection on the work they have done up to this point. This reflection should include lessons learned, areas they need help in, identified gaps in knowledge, etc.

Project Updates (15pts x 3):

Throughout the semester, students will be asked to create discussion postings in Canvas to update the instructor on how things are going with the project. These are meant to be small check-ins, and can contain requests for information, identification of problem areas, lessons learned, etc.

Statistics Assignments (50pts x 4):

There will be 4 statistics assignments. Each assignment will require running a statistical analysis, graphically displaying results, and describing these results in a written description formatted to meet APA guidelines. There will be a conceptual and application component to each assignment. Assignments are due on the Saturday one week after being assigned. It is to your benefit to have as much of your assignment completed by the class prior to the due date, as the last 15 minutes of class will be dedicated to answering assignment related questions.

Statistics Quiz (100pts):

One statistics quiz will be given at the end of the first semester. This quiz will assess conceptual understanding of the concepts covered in the first semester. Quizzes are not intended to be comprehensive, although many of the concepts in statistics build upon one another, or are

otherwise related. Quizzes are worth 100 points and consist of both an online multiple choice/short-answer format (30pts) and a take home portion (70pts). No late work will be accepted for quizzes.

Volunteer Hours (5 Hours, 50pts):

In order to become more aware of the problems affecting their own communities and to develop better rapport with the community partner, each student will be asked to volunteer 5 hours with an agency that helps those in need. This can be done at Granite Education Foundation, or a number of other local places.

OPTIONAL Extra Credit – NCUR Proposal Submission (up to 50 points):

Date Due: Dec 6

<http://www.cur.org/what/events/students/ncur/2020/>

The National Conference on Undergraduate Research for 2020 will be held in Bozeman, MT on March 25th to 28th. Students are STRONGLY ENCOURAGED to submit a proposal to present findings from their community partner projects. This is a great opportunity for you to present your professional work and add to your resume. Grants are available through a variety of places on campus.

Late Work Policy:

Late assignments are accepted with a penalty. Assignments turned in prior to the next class period will receive a 10% penalty. Those turned in within two class periods of the due date will receive a 20% penalty. Late work will not be accepted beyond this range. No late exams will be accepted.

Grading Scale:

A	93-100%	C	73-75%
A-	89-92%	C-	69-72%
B+	86-88%	D+	66-68%
B	83-85%	D	62-65%
B-	79-82%	F	Below 62%
C+	76-78%		

Changes in Course Assignments and Schedule:

The instructor reserves the right to adjust course readings, assignments, and test dates to best attain the objectives of the course. Any changes will be announced in class and via Canvas. Canvas should be considered the source for the most up-to-date information.

Date	Topic	Lab	Chapters	Assignment (Due Date)
28-Aug	Introduction, Research Projects		Pyrczak Appendix A	Partners (8/28)
4-Sep	Community Partner Fieldtrip	On-Site Visit	APA Code of Conduct	Ethics, CITI/NCES Training, Research Question Interest (9/7)
11-Sep	Ethics, Introduction to Evaluation	Evaluation Articles	Pyrczak Ch1-Ch5	List of Variables (9/14)
18-Sep	Evaluation, Intro to Data & Variables	Finalize Research Question, Variable Selection	Pyrczak Ch7, Ch14, AppendixB	Data Collection Ideas (9/21)
25-Sep		NO CLASS	Salkind Ch2, Ch3	Preliminary Ideas Document (9/28)
2-Oct	Descriptives	IRB, Problem Statement	Salkind Ch3, Ch4	
9-Oct	Hypothesis Testing	IRB, Methods, Survey Tool	Salkind Ch7	Problem Statement (10/12)
16-Oct	Probability	IRB, Intro to SPSS	Pyrczak Ch8, Ch9, Ch15, Salkind Ch8	Instrument Draft (10/19)
23-Oct	Significance Testing	Descriptives in SPSS		SPSS1 (10/26)
30-Oct	Significance Testing	Graphing in SPSS	Pyrczak Appendix C, Salkind Ch9	SPSS2 (11/2)
6-Nov	Significance Testing	z-scores in SPSS	Salkind Ch9, Ch10	SPSS3 (11/9)
13-Nov		NO CLASS	Salkind Ch10	Literature Review Draft (11/16)
20-Nov	t-Tests, Check in with CP	t-Tests	Salkind Ch11, Ch12	Methods Extended Outline (11/23)
27-Nov	t-Tests	t-Tests, Peer Review	Salkind Ch11, Ch12	SPSS4, Proposal Draft (11/30)
4-Dec	Peer Review Proposals			
14-Dec				Stats Quiz1, IRB Revised Draft (12/14)

Note: The instructor reserves the right to change the syllabus at any time. Changes to any due dates will be made in Canvas, thus Canvas should always be considered the most “correct” view of activities for the class.