

# EPY 721 Descriptive and Inferential Statistics: An Introduction

UNIVERSITY OF NEVADA LAS VEGAS

Educational Psychology and Higher Education

Fall 2021

Section:	1001 (Online)
Meeting Times:	Asynchronous
Meeting Location:	ONLINE
Instructor:	XXX
Office Location:	XXX
Phone:	XXX
Email:	XXX
Office Hours:	XXX

## Course Overview

From the Catalogue:

"Descriptive indices of central location and dispersion, correlation and regression, hypothesis testing and basic inferential techniques. Emphasis on intuitive understanding and applications in educational/behavioral measurement and research."

## Global Course Objectives

In sum, this course is designed to introduce students to statistical analyses that can be used to understand data and to test hypotheses. The first part of the course focuses on descriptive statistics, which can be used to understand the nature, structure, and distribution of data, as well as the relationships between variables. The second part focuses on inferential statistics, which can be used to make inferences about a population based on a subset (sample) of its members. This typically involves the testing of hypotheses.

## Specific Course Objectives

This course is designed to address the following knowledge and skills:

### Knowledge

By the end of this course, students will be able to:

1. Compare and contrast descriptive and inferential statistics.
2. Compare and contrast measures of central tendency and variation.
3. Describe the properties of the normal and standard normal distributions and explain why these properties are important.
4. Interpret the correlation coefficient and  $R^2$ .
5. Explain the results of a linear regression analysis.
6. Explain the importance of the sampling distribution of the means.
7. Explain the importance of the standard error of measure.
8. Describe the rationale and process of hypothesis testing.
9. Describe the rationale for the t-test.
10. Explain Type I and Type II errors.
11. Explain "effect size."
12. Explain "power" and how to increase it.

## Skills

By the end of this course, students will demonstrate the ability to:

13. Read frequency tables and distributions.
14. Compute measures of central tendency.
15. Compute measures of variability.
16. Compute standard scores.
17. Compute correlations.
18. Compute the slope and y-intercept for simple linear regression.
19. Compute predicted values based on simple linear regression.
20. Conduct an independent t-test.
21. Conduct a dependent t-test.
22. Use SPSS software to complete a variety of the analyses studied in class.

## Required Materials

Text: Hinkle, D.E., Wiersma, W., & Jurs, S.G. (2003). *Applied statistics for the behavioral sciences*, Fifth edition. Boston: Houghton Mifflin.

Calculator: Any with a square root function will do for the course. Your computer's calculator will suffice.

This primary text is the one used in all other sections of EPY 721. It is available in the bookstore and from online vendors. Previous editions of the book exist and are similar in content, as do many texts online. Students have the option of purchasing previous editions of the Hinkle text or any other they find useful. In order to provide contemporary and interactive content, I may be using offerings from more recent texts as online supplements over the course of the semester. As the statistical methods and knowledge covered in this course is reasonably stable, students are encouraged to choose a text that suits them. However, *all students are responsible for content covered by the 5<sup>th</sup> edition*.

## Optional Recommended Supplemental Text

For those who are new to SPSS and/or will be using SPSS in the future, you may also want to consider investing in a copy of the *SPSS Survival Manual* written by Julie Pallant. There are multiple editions, the most current being the 7<sup>th</sup> edition, though an older edition would be just fine. I find it to be a very helpful book to have around, not just for this course, but if you think you will be using SPSS in the future.

Pallant, J. (2020). *SPSS Survival Manual: A step by step guide to data analysis using IBM SPSS*, 7<sup>th</sup> edition. Open University Press.

## Additional Library and Information Resources & Materials

In order to fully participate in class and complete assignments. All students will need (1) access to the internet, (2) a word processing program capable of producing documents in .docx format, and (3) access to SPSS software.

Course materials will be posted on the course's Canvas site (i.e., WebCampus). All students are responsible for checking the page frequently and accessing these resources. Use of materials may be monitored. Students who are unfamiliar with **Canvas**, or with the processes required to download, view, manipulate, or print **Microsoft Office** (.docx, .pptx, .xlsx), **SPSS** (or any version using .sav, .spv, .sps), or **Adobe Acrobat** (.pdf) files should visit the Office of Instructional Technology to obtain the necessary resources.

Students must submit their assignments in **.docx** format so that feedback can be provided electronically.

## Accessing SPSS

You have options, a couple of which (as listed with the Office of Information Technology) are listed below.

- Students may purchase a subscription license of SPSS at a significant discount through Kivuto. To purchase this product, please go to the [UNLV Kivuto Website](#) and register for an account using your Rebelmail address.
- Another option is to use a computer at UNLV for free. There are a number of locations with SPSS including the computer labs in CEB and the library.
- Please note that SPSS also has a free trial offer, but the time frame is short, and you do not get all of the programs.

## Course Requirements & Expectations

### Attendance

Students are expected to attend to materials on a weekly basis. Missing a week's worth of materials will not directly result in a grade deduction, however, time-sensitive work is common and **cannot be made up after the due date**. Those whose incompletions are unexcused will receive a grade of 0 on work assigned during weeks they fail to log-in. If you know you will miss a period of the class, alert the instructor **prior** to the weekly release so arrangements can be made. If you miss an extended period of coursework, you must address this prior to exam week to avoid receiving a failing grade for the course.

### Grading

Students will complete opening quizzes, workshop assignments, homework assignments, and a final exam. The following table breaks down the total points and percent of the grade for each of these course activities. There is no extra credit in this course.

Points	Item	% of Grade
45	Opening Quizzes: Complete on Webcampus (after reading) prior to other materials)	15
55	Workshop Activities (Embedded in weekly lessons)	18
80	Homeworks 1-6	27
20	Homework 7 (summative homework)	7
100	FINAL – Cumulative, Constructed Response	33
300 points Total		100%

Scale to determine one's letter grade. Decimals will be rounded to the nearest whole number.

A	94 – 100
A-	90 – 93
B+	87 – 89
B	83 – 86
B-	80 – 82
C+	77 – 79
C	73 – 76
C-	70 – 72
D+	65 – 69
D	60 – 64
F	00 – 59, and for any violation of Academic Honesty Policy

# Evaluation Techniques

## Opening Quizzes

An opening quiz is to be completed (after completing the reading for the week) prior to accessing the week's new online course content. These quizzes should be completed at the beginning of the week. They are designed as a formative assessment tool that provides you with feedback about your level of mastery of course material after your reading and before engaging with the online materials. Quizzes typically include 5-10 items that test your grasp of the concepts and the skills covered in the assigned reading for the week. You'll earn points for **completion** of these quizzes. If it is evident that your quiz is technically complete but also that you have not made an honest effort at reading the material (i.e., your responses are unintelligible), you will receive no credit.

*You are encouraged to complete these quizzes as many times as you like to monitor and rehearse your knowledge. Ongoing self-assessment versions are housed under "Self-Assessment Versions of Quizzes for Additional Practice."*

## Workshops

For most weeks, we will conduct an activity embedded into our weekly course materials to illustrate a key concept covered in the chapter. These can include skill workshops where we calculate statistics by hand as well as other activities where students produce written work. You will be graded on your performance, in addition to mere participation. Accordingly, you must submit the work by the end of the weekly session to receive credit. However, you are encouraged to complete these by the middle of the week so you don't run out of time to also complete the homework by the end of the week. Students are expected to review and complete all posted material during each session.

*Students are encouraged to re-access and practice using these workshop exercises after sessions as they wish.*

## Homework Assignments

Homework assignments are designed to help students develop statistical and analytic skills, and to become comfortable using statistical software. Assignments will include statistical analyses to be conducted using SPSS software, as well as interpretation of the results that are produced (using APA format and conventions). Assignments are due by Sunday at 11:59 p.m. Assignments submitted late will be evaluated and feedback will be given, but no points will be awarded. Homework cannot be redone for additional credit. Please do not wait until the due date to start your homework, as homework assignments can take time and you may also need time to seek clarification on occasion.

You may conduct your analyses with a classmate, but each student must compose their own written assignment and submit it. The final homework (#7) will serve as a summative assessment of students' analytical skills. Students will answer a set of research questions by producing descriptive statistics and testing hypotheses in SPSS.

*All homework should be submitted by Sunday at 11:59 p.m. Scores will be posted during this subsequent week.*

## Final Exam

The final exam will be a comprehensive assessment of all the learning objectives indicated on the first page of this syllabus. It will contain a set of constructed response items and you will have two hours to complete it. Details about the timing of the exam will be provided later in the semester. This is an exam and you are expected to complete this exam individually (on your own).

## Course Policies

### Communication

Email is the preferred means of contact. Do not hesitate to send an email -- the sooner students communicate with me, the more time we have to work together to address your issue. I will attempt to respond to all emails within 24 hours during the week (48 hours on weekends). Please email me from your UNLV account (e.g., so I don't need to figure out who Rebelman94@gmail.com is).

*In terms of communication with the me, emailing me at [nathan.slife@unlv.edu](mailto:nathan.slife@unlv.edu) or through WebCampus will generally yield the quickest response.*

### References to Academic work

When referencing the work of others. All work should be appropriately cited using APA style (7<sup>th</sup> edition). Failure to properly use APA style may result in grade deductions. Failure to properly cite referenced materials may also constitute a breach of the academic honesty policy below. Any violation of the policy will result in a 0 on the assignment. Other consequences may follow. For assistance with APA style students should visit websites which coach the usage of APA style and see the APA guide posted in WebCampus. When referencing the textbook, it is perfectly acceptable to simply state "according to the Hinkle text", or similar. This will be common usage, and we'll know what you mean.

## UNLV Policies

Visit the [UNLV Policy Website](#) for additional information.

### Public Health Directives

**Face coverings are mandatory for all faculty and students in the classroom.** Students must follow all active UNLV public health directives while enrolled in this class. UNLV public health directives are found at [Health Requirements for Returning to Campus](https://www.unlv.edu/coronavirus/health-requirements), <https://www.unlv.edu/coronavirus/health-requirements>. Students who do not comply with these directives may be asked to leave the classroom. Refusal to follow the guidelines may result in further disciplinary action according to the [UNLV Student Conduct Code](https://www.unlv.edu/sites/default/files/page_files/27/StudentConduct-Code.pdf), [https://www.unlv.edu/sites/default/files/page\\_files/27/StudentConduct-Code.pdf](https://www.unlv.edu/sites/default/files/page_files/27/StudentConduct-Code.pdf), including being administratively withdrawn from the course.

### Academic Misconduct

Academic integrity is a legitimate concern for every member of the University community. We all share in upholding the fundamental values of honesty, trust, respect, fairness, responsibility, and professionalism. By choosing to join the UNLV community, students accept the expectations of the Student Academic Misconduct Policy, and are encouraged to always take the ethical path whenever faced with choices. Students enrolling at UNLV assume the obligation to conduct themselves in a manner compatible with UNLV's educational mission. An example of academic misconduct is plagiarism. Plagiarism is using the words or ideas of another person, from the Internet or any other source without proper citation of the source(s). See the [Student Conduct Code](https://www.unlv.edu/studentconduct/student-conduct), <https://www.unlv.edu/studentconduct/student-conduct>.

### Auditing a Course

Auditing a course allows a student to continue attending the lectures and/or laboratories and discussion sessions associated with the course, but the student will not earn a grade for any component of the course. Students who audit a course receive the same educational experience as students taking the course for a grade, but will be excused from exams, assessments, and other evaluative measures that serve the primary purpose of assigning a grade.

## Classroom Conduct

Students have a responsibility to conduct themselves in class and in the libraries in ways that do not interfere with the rights of other students to learn, or of instructors to teach. Use of devices such as cellular phones and pagers, or other potentially disruptive activities are only permitted with the prior explicit consent of the instructor. Students are specifically prohibited to record classes without instructor authorization, including online/remote classes (either audio only, or video and audio). The instructor may rescind permission at any time during the class. If a student does not comply with established requirements or obstructs the functioning of the class, the instructor may initiate an administrative withdrawal of the student from the course.

Since the COVID-19 pandemic forced some instruction to be delivered remotely starting in Spring 2020, numerous students have asked instructors to record their synchronous classes, so that they can access them at their convenience. Instructors who agree to record their classes (audio only, or video and audio) should inform students in advance. Recorded lectures may not be broadly released to anyone, but made available exclusively to those students enrolled in the class during the particular academic term. Recorded lectures must be stored securely, and are subject to the Nevada System of Higher Education's Records Retention Policy, meaning that the recordings can only be deleted 120 days after the end of class (i.e., after grades are posted). Once this requirement is met, the recordings should be deleted. Class recordings are protected from disclosure, as they are deemed part of an educational record under the Family Educational Rights and Privacy Act (FERPA).

## Copyright

The University requires all members of the University Community to familiarize themselves with, and to follow copyright and fair use requirements. You are individually and solely responsible for violations of copyright and fair use laws. The University will neither protect nor defend you, nor assume any responsibility for student or employee violations of fair use laws. Violations of copyright laws could subject you to federal and state civil penalties and criminal liability, as well as disciplinary action under University policies. Additional [copyright policy information](https://www.unlv.edu/provost/copyright) is available at <https://www.unlv.edu/provost/copyright>.

## Disability Resource Center (DRC)

The [UNLV Disability Resource Center](https://www.unlv.edu/drc) (Student Services Complex, SSC-A, Room 143, <https://www.unlv.edu/drc>, telephone 702-895-0866) provides resources for students with disabilities. Students who believe that they may need academic accommodations due to a permanent disability, temporary or permanent medical need, or academic support due to pregnancy are encouraged to contact the DRC as early as possible in the academic term. A Disabilities Specialist will discuss what options may be available to you. Students who are already registered with the DRC should request their accommodations online each semester, and make an appointment to discuss their accommodations with their instructors.

## Final Examinations

The University requires that final exams given at the end of a course occur on the date and at the time specified in the Final Exam schedule. The Final Exam schedule is typically available at the start of the semester, and the classroom locations are available approximately one month before the end of the semester. See the [Final Exam Schedule](https://www.unlv.edu/registrar/calendars), <https://www.unlv.edu/registrar/calendars>.

## Identity Verification in Online Courses

All UNLV students must use their Campus-issued ACE ID and password to log in to WebCampus-Canvas. UNLV students enrolled in online or hybrid courses are expected to read and adhere to the [Student Academic Misconduct Policy](https://www.unlv.edu/studentconduct/misconduct/policy), <https://www.unlv.edu/studentconduct/misconduct/policy>, which states that "acting or attempting to act as a substitute for another, or using or attempting to use a substitute, in any academic evaluation or assignment" is a form of academic misconduct. Intentionally sharing ACE login credentials with another person may be considered an attempt to use a substitute, and could result in investigation and sanctions, as outlined in the Student Academic Misconduct Policy.

UNLV students enrolled in online courses are also expected to read and adhere to the [Acceptable Use of Computing and Information Technology Resources Policy](https://www.it.unlv.edu/policies/acceptable-use-computing-and-information-technology-resources-policy), <https://www.it.unlv.edu/policies/acceptable-use-computing-and-information-technology-resources-policy>, which prohibits sharing university accounts with other persons without authorization.

To the greatest extent possible, all graded assignments and assessments in UNLV online courses should be hosted in WebCampus-Canvas or another UNLV-managed platform that requires ACE login credentials for access.

## Incomplete Grades

The grade of "I" (Incomplete) may be granted when a student has satisfactorily completed three-fourths of course work for that semester/session, but cannot complete the last part of the course for reason(s) beyond the student's control and acceptable to the instructor, and the instructor believes that the student can finish the course without repeating it. For undergraduate courses, the incomplete work must be made up before the end of the following regular semester. Graduate students receiving "I" grades in 500-, 600-, or 700-level courses have up to one calendar year to complete the work, at the discretion of the instructor. If course requirements are not completed within the period indicated, a grade of "F" will be recorded, and the student's GPA will be adjusted accordingly. Students who are fulfilling an Incomplete grade do not register for the course, but make individual arrangements with the instructor who assigned the "I" grade.

## Library Resources

Librarians are available to consult with students on research needs, including developing research topics, finding information, and evaluating sources. To make an appointment with a subject expert for this class, please visit the [Libraries' Research Consultation](https://guides.library.unlv.edu/appointments/librarian) website, <https://guides.library.unlv.edu/appointments/librarian>. You can also [ask the library staff](https://ask.library.unlv.edu/) questions via chat and text message at <https://ask.library.unlv.edu/>.

## Missed Classwork

Any student missing class, quizzes, examinations, or any other class or laboratory work because of observance of religious holidays will be given an opportunity during that semester to make up the missed work. The make-up opportunity will apply to the religious holiday absence only. It is the responsibility of the student to notify the instructor within the first 14 calendar days of the course for Fall and Spring courses (except for modular courses), or within the first 7 calendar days of the course for Summer and modular courses, of their intention to participate in religious holidays which do not fall on state holidays or periods of class recess. For additional information, please visit the Missed Classwork policy, under Registration Policies, on the [Academic Policies](https://catalog.unlv.edu/content.php?catoid=32&navoid=8271&hl=) webpage, <https://catalog.unlv.edu/content.php?catoid=32&navoid=8271&hl=>.

In accordance with the policy approved by the Faculty Senate regarding missed class time and assignments, students who represent UNLV in any official extracurricular activity will also have the opportunity to make up assignments, provided that the student submits official written notification to the instructor no less than one week prior to the missed class(es).

The spirit and intent of the policy for missed classwork is to offer fair and equitable assessment opportunities to all students, including those representing the University in extracurricular activities. Instructors should consider, for example, that in courses which offer a "Drop one" option for the lowest assignment, quiz, or exam, assigning the student a grade of zero for an excused absence for extracurricular activity is both contrary to the intent of the Faculty Senate's policy, and an infringement on the student's right to complete all work for the course.

This policy will not apply in the event that completing the assignment or administering the examination at an alternate time would impose an undue hardship on the instructor or the University that could be reasonably avoided. There should be a good faith effort by both the instructor and the student to agree to a reasonable resolution. When disagreements regarding this policy arise, decisions can be appealed to the Department Chair/School Director, College/School Dean, and/or the Faculty Senate Academic Standards Committee.

For purposes of definition, extracurricular activities may include, but are not limited to academic recruitment activities, competitive intercollegiate athletics, fine arts activities, liberal arts competitions, science and engineering competitions, and any other event or activity sanctioned by a College/School Dean, and/or by the Executive Vice President and Provost.

## Rebelmail

Rebelmail is UNLV's official email system for students and by University policy, instructors and staff should only send emails to students' Rebelmail accounts. Rebelmail is one of the primary ways in which students receive official University communications, information about deadlines, major Campus events, and announcements. All UNLV students receive a Rebelmail account after they have been admitted to the University. Sending emails within WebCampus-Canvas is also acceptable.

## Tutoring and Coaching

The Academic Success Center (ASC), at the Claude I. Howard Building, provides tutoring, academic success coaching, and other academic assistance for all UNLV undergraduate students. For information regarding tutoring subjects, tutoring times, and other ASC programs and services, please visit the [ASC website](https://www.unlv.edu/asc), <https://www.unlv.edu/asc>, or call 702-895-3177. The ASC is located across from the Student Services Complex (SSC). Academic success coaching is located on the second floor of SSC A, Room 254. Drop-in tutoring is located on the second floor of the Lied Library, and on the second floor of the College of Engineering building (TBE A 207).

## UNLV Writing Center

One-on-one or small group assistance with writing is available free of charge to UNLV students at the [Writing Center](https://writingcenter.unlv.edu/), <https://writingcenter.unlv.edu/>, located in the Central Desert Complex, Building 3, Room 301 (CDC 3–301). Walk-in consultations are sometimes available, but students with appointments receive priority assistance. Students may make appointments in person or by calling the Center, telephone 702-895-3908. Students are requested to bring to their appointments their Rebel ID Card, a copy of the instructions for their assignment, and two copies of any writing they have completed on their assignment.

## Diversity Statement

As an institution of higher learning, UNLV represents a rich diversity of human beings among its faculty, staff, and students, and is committed to aspiring to maintain a Campus environment that values that diversity. Accordingly, the University supports understanding and appreciation of all members of its community, regardless of race, sex, age, color, national origin, ethnicity, creed, religion, disability, sexual orientation, gender, gender identity, marital status, pregnancy, genetic information, veteran status, or political affiliation. Please see [University Statements and Compliance](https://www.unlv.edu/about/statements-compliance), <https://www.unlv.edu/about/statements-compliance>.

A successful learning experience requires mutual respect and trust between the students and the instructor. Accordingly, the instructor asks that students be willing to listen to one another's points of view, acknowledging that there may be disagreements, keep discussion and comments on topic, and use first person, positive language when expressing their perspectives.

## Course Calendar

Based on the [UNLV academic calendar](#). Key Items in the "Topic" column will be the main focus of the session. You should have completed the corresponding "Readings to be completed" prior to the class on the topic (in addition to the opening quiz which should be submitted at the beginning of the week). Homework Assignments are to be submitted prior to midnight on Sunday.

Week	Date	Topic	Readings to be completed	Assignment
1	8/23	Introductions Syllabus Review Conceptual Basics: Scales of measurement Qualitative vs. Quantitative Population vs. Sample Descriptive vs. Inferential Statistics Data generation (complete a few surveys)	None	
2	8/30	<b>Part I: Descriptive Statistics</b> Coding Data & Organization Strategies Frequency Distributions Graphing Percentile & Rank	Chapters 1 & 2	Homework 1 (Due by Sun, Sept 6)
3	9/7	Central Tendency Variation (SD, box plots) Standard Scores	2 & 3	Homework 2 (Due by Sun, Sept 12)



Week	Date	Topic	Readings to be completed	Assignment
4	9/13	The Normal Distribution Standard Normal Distribution Other Distributions	4	
5	9/20	Correlation & Association Correlation vs. Causality	5	Homework 3 (Due by Sun, Sept 26)
6	9/27	Regression & Prediction Prediction vs. Causality	6	Homework 4 (Due by Sun, Oct 3)
7	10/4	<b>Part II: Inferential Statistics</b> Sampling, Probability and Distributions Reasoning with Inferential Statistics Sampling Distribution of the mean Standard Error	7	
8	10/11	Hypothesis Testing – Conceptual Overview Type 1 and Type 2 Errors	8	
9	10/18	Hypothesis Testing Continued	8 & Online Readings	
10	10/25	Hypothesis Testing - Independent samples t-test	11	Homework 5 (Due by Sun, Oct 31)
11	11/1	Hypothesis Testing- Dependent samples t-test	11	Homework 6 (Due by Sun, Nov 7)
12	11/8	Power & Effect Size (& Bonus Material on ANOVA-not on exam)	Online Readings	
13	11/15	Skills Review-HW 7	All	Homework 7 (Due by Sun, Nov 28)
14	11/22	Work on Homework 7	All	
15	11/29	Study Week - Prepare for Final Exam	All	
16	12/6	<b>Final Exam.</b> 1 attempt. Open for 2 hours once you begin. <b>Due by Friday (12/10) at 11:59 p.m.</b> Online, Cumulative, Constructed Response	All	