

Carthage College
EXSS 2330 Applied Statistics for Health and Human Services
Fall, 2021

Professor: Cheryl L. Petersen, PhD, RN
Assistant Professor
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Class Time/Location: Tuesday 09:00am-12:00pm
Room Location: Lentz 411

Office Hours: Tuesdays, 1:00-3:00 and by appointment

Link to instructor bio: <https://www.carthage.edu/live/profiles/1728-cheryl-petersen>

Course Description:

This course presents a practical approach to utilizing statistics in situations encountered in the Health and Human Services professions. Fundamental statistical theories and concepts are presented to help students understand the rationale and purpose of using statistical computations. Basic parametric statistical analyses, as well as the mathematical logic behind these calculations, will be presented. Students will learn how to perform hypothesis testing with normal distributions and also learn to interpret and critically evaluate research outcomes. This knowledge will allow students to be evidence-based practitioners and critical consumers of peer reviewed research.

Course Objectives:

Upon completion of the course, students will be able to:

1. Explain the rationale for using selected statistical methods to answer research or practice questions.
2. Identify the most appropriate statistical analysis for a research question or experimental hypothesis.
3. Utilize SPSS to analyze and interpret data.
4. Demonstrate the ability to use graphical representations of statistical concepts and results of tests.
5. Report statistical results in APA style.
6. Critique the statistical results from selected peer-reviewed journal articles.
7. Critically examine theoretical principles of selected statistical methods used to analyze research or practice data.
8. Apply knowledge of statistical concepts and analysis to the design of studies in the practice environment.

Texts:**Required:**

Pallant, J. (2016). *SPSS survival manual: A Step-by-step guide to data analysis using IBM SPSS* (6th ed.). Open University Press.

Optional:

Sprinthall, R.C. (2012). *Basic statistical analysis* (9th ed.). Allyn & Bacon.

This text is out of publication, but it can be ordered as a used text online from many vendors.

Tutoring Support

Tutoring is available to assist you with any aspect of the class, including understanding readings, preparing for quizzes, and studying for exams. These resources are for everyone to maximize your potential for academic growth. Please take advantage of them. For information and to book an appointment, visit carthage.edu/tutoring. Our tutor will also set up a weekly tutoring session for anyone who is interested to attend to review the week's material.

We are so fortunate to have Jordyn Bloode as our class tutor this semester!

Technology Requirements:**Computer Requirements:**

- Operating System: Windows 7+ or Mac OS X 10.6+
- Computer Processor: 2+ GHz Dual Core or Intel
- Computer Memory: 512 MB
- Available Disk Space: 500 MB

Software Requirements:

- Microsoft Office
- SPSS Statistics, Version 26 (available from the Carthage Library Help Desk at no cost)

Recommended Browsers:

- Google Chrome
- Mozilla Firefox

Didactic Learning Outcomes	Metric	Program Learning Outcomes	Institutional Learning Outcomes	AACN BSN Essentials
Apply knowledge of the contributions nurses and social workers make through the conduct of research to health promotion and disease prevention for patients and their families.	Research article critique Discussion Board Posts	1,2	1,5	VII
Identify best practices in the care of patients with health alterations, as well as care of their families.	Research Article Critique Discussion Board Posts	5	1, 3	III, VII
Analyze and apply quantitative data to promote quality healthcare across the lifespan.	SPSS Assignments Examination Items	6	3	IV
Discuss ethical dimensions inherent in research involving vulnerable patients and their families.	Examination Items Evaluation of Learning Assignments	7	5	VIII

ACADEMIC GUIDELINES:

Plagiarism:

Plagiarism is the appropriation by any means of another's work or words and the unacknowledged incorporation of that work or words into your own written or oral work offered for credit. Plagiarism is also considered if you turn in someone else's work as your own, copying words or ideas from someone else without giving credit, failing to put a quotation in quotation marks, or giving incorrect information about the source of a quotation. Plagiarism also involves changing words but copying the sentence structure of a source without giving credit or copying so many words or ideas from a source that it makes up the majority of your work, whether you give credit or not. Most cases of plagiarism can be avoided, however, by citing sources.

In addition, all of the following are considered academic dishonesty: cheating on a test, collusion and unauthorized cooperative work, false citation, and multiple submissions. Full academic honesty guidelines may be found at <https://www.carthage.edu/community-code/academic-concerns/academic-honesty-guidelines/>

Grading:

The following grading scale will be used to determine your grades on assignments and exams, as well as to identify your final grade. There will be no grade negotiations.

A	95% or above
A-	93 – 94
B+	90 – 92
B	87 – 89
B-	84 – 86
C+	81 – 83
C	78-- 80
C-	74-- 77
D+	71-- 73
D	68 -- 70
D-	65 -- 67
F	< 65

COURSE EXPECTATIONS:**Class Preparation:**

Students are expected to complete the course readings and share their understanding of the readings and their perspectives in the discussion board.

Online Etiquette:

Students should follow etiquette appropriate for use in a professional work environment for all postings and class comments, as well as all discussion in face-to-face class meetings.

Special Needs:

Carthage College strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers due to your disability (including mental health, learning disorders and chronic medical conditions), please let me know immediately so that we can privately discuss options. Students with special learning needs are encouraged to contact me during the first week of class to discuss appropriate accommodations and support. To establish reasonable accommodations, you also need to register with Diane Schowalter in Learning Accessibility Services (dschowalter1@carthage.edu). This information will be kept confidential.

Assignments:

Assignments are expected to be turned in on time. Five points per day missed will be subtracted from the total points earned for each assignment that is late. If you have a conflict, discuss it with me as soon as possible. Remember, the better your time management, the greater your chances for success in this and all your classes.

Class Preparation:

Reading the assignments, reflecting on what you have read, and participating fully in class discussion will help you to get the most out of this course. It is expected that you will have completed all the readings for each class and come with questions, opinions, and ideas to be discussed.

Student Evaluation of Teaching:

Course evaluation results are extremely important and are used to help me improve this course and the learning experience of future students. Course evaluation results are not made available to instructors until after grades are posted.

Discussion Board Participation:

Students are expected to participate in all graded discussions. You will need to participate in our discussions on at least two different days each week, with your first post due no later than Wednesday evening by 5:00pm, and your second and third posts responding to other students' comments due by Friday by 5:00pm.

Guidelines for a Productive Course:

Students are expected to conduct themselves in the course (including in the classroom, on discussion boards and in email) in compliance with the university's regulations regarding civility.

Civility is an essential ingredient for academic discourse. All communications for this course should be conducted constructively, civilly, and respectfully. Differences in beliefs, opinions, and approaches are to be expected. In all you say and do for this course, be professional. Please bring any communications you believe to be in violation of this class policy to the attention of your instructor.

Active interaction with peers and your instructor is essential to success in this course, paying particular attention to the following:

- Unless indicated otherwise, please review the readings and other instructional materials for each week before class and before participating in the discussion board.
- Read your posts carefully before submitting them.
- Be respectful of others and their opinions, valuing diversity in backgrounds, abilities, and experiences.
- Challenging the ideas held by others is an integral aspect of critical thinking and the academic process. Please word your responses carefully and respectfully, and recognize that others are expected to challenge your ideas. A positive atmosphere of healthy debate is encouraged.

Schoology:

This course will use the Schoology online portal where assignments will be posted and uploaded and where you will interact with your classmates and with your instructor. In the course Schoology site, you will access learning materials such as the syllabus, class discussions, assignments, projects, and quizzes.

Communication:

Please post course-related questions in the General Q&A Discussion forum when possible so that the whole class may benefit from our conversation. Please email me for other questions and matters of a personal nature. I will reply to course-related questions and email within 24-48 hours.

Carthage College Mask Policy:

Due to the ongoing pandemic, Carthage College has adopted a policy requiring masks to be worn by all individuals in all buildings. Masks must be worn at all times in the classroom, laboratory, studio spaces, hallways, bathrooms, and during in-person meetings. The face covering must conform to CDC guidelines and must cover both the nose and mouth at all times. Note that bandanas, neck gaiters, and masks with exhalation or external valves are not acceptable and are not sufficient for protection of others or yourself. Acceptable masks tie behind the head or loop behind the ears, fit snugly over the nose and chin, and can include cloth masks, medical/surgical masks, and N95s or KN95s. Eating and/or drinking are prohibited while in the classroom (because those activities interfere with consistent mask wearing).

Any student who refuses to wear a mask or consistently forgets one will be dismissed from the class and not be given an opportunity to make up missed work. The student will also be referred to the Dean of Students, as outlined by the process on Carthage's Stay Safe website.

Stay Safe Guidelines: <https://www.carthage.edu/carthage-covid-19/stay-safe-carthage/>
Frequently Asked Questions: <https://www.carthage.edu/carthage-covid-19/faqs/>

EVALUATION CRITERIA

Evaluation of student performance in this class is based on the following components:

- **Homework Assignments: 20% of final grade**
- **Exam #1: 15% of final grade**
- **Exam #2: 15% of final grade**
- **Cumulative Final Exam: 20% of final grade**
- **Research Article Critique: 15% of final grade**
- **Evaluations of Learning Quizzes: 15% of final grade**

Homework Assignments (20%)

The student will conduct statistical analyses using SPSS and write a report of the process and findings. There will be six homework assignments. All assignments should be submitted through E-learning.

- Assignment 1: Due on Friday, 09/21/21, at 05:00pm
- Assignment 2: Due on Friday, 09/28/21, at 05:00pm
- Assignment 3: Due on Friday, 10/12/21, at 05:00pm
- Assignment 4: Due on Friday, 10/26/21, at 05:00pm
- Assignment 5: Due on Friday, 11/02/21, at 05:00pm
- Assignment 6: Due on Friday, 11/09/21, at 05:00pm

Research Article Critique (15%)

The students, in small groups, will conduct a literature search on a research topic of interest and identify a research article that employs one of the statistical methods covered in this course. You will present your research critique findings in a short presentation in class.

The student will answer the following questions:

- 1) What are the research questions, purpose, and/or specific aims of the study? **(10 points)**
 - 2) What are the independent and dependent variables in this study? Why do you think the authors choose these variables to study? **(10 points)**
 - 3) What statistical analysis was employed? Why was this parametric or nonparametric analysis chosen? **(10 points)**
 - 4) What are the assumptions for the statistical analysis? Were these assumptions met? **(10 points)**
 - 5) Complete a write up of the findings of the study. **(10 points)**
 - 6) What are the identified limitations of the study? **(10 points)**
 - 7) What gap in the literature does this study address? **(10 points)**
 - 8) Did the researchers choose the most appropriate statistical analysis to address the research question, purpose, or specific aims? **(10 points)**
 - 9) How much trust would you place in these study findings and the study team? **(10 points)**
 - 10) Use APA style. The critique should be 3-4 double-spaced pages. **(10 points)**
- (Total score of 100 points.)**

- **Research Critique: Topics and due dates to be assigned the first week of class.**
- **Topics include correlation, paired-samples t-test, independent samples t-test, one-way ANOVA, two-way ANOVA, regression, and nonparametric techniques.**

Exams (50% total for all exams. Exam #1=15% of your grade; Exam #2=15% of your grade; Final Exam=20% of your grade)

- Exam #1 on 10/05/21 (15% of final grade)
- Exam #2 on 11/16/21 (15% of final grade)
- Final Exam due 12/13/21 by 05:00pm (20% of final grade)

Evaluation of Learning Quizzes (15%)

- #1 Due on 09/14/21 by 5:00pm
- #2 Due on 09/28/21 by 5:00pm
- #3 Due on 10/12/21 by 5:00pm
- #4 Due on 10/26/21 by 5:00pm
- #5 Due on 11/09/21 by 5:00pm

Course Schedule:

****Please have readings completed before class on the day assigned.*

*This will help you to be comfortable and efficient when we work with the SPSS Statistics package.****

Date	Topics	Readings and Assignments
Week 1 9/07/21	Introduction to Statistics Percentages, Graphs, and Measures of Central Tendency	Pallant, Chapters 1-3 Review <i>SPSS Notes 1 SPSS Tips</i> **Get SPSS Statistics package installed on laptop**
Week 2 9/14/21	Preparing the Data File Data Cleaning and Missing Data	Pallant, Chapters 4 (only pp. 27-38) and Chapter 5 Sprinthall Chapter 3 (optional) Review <i>SPSS Notes 2 Data Cleaning</i> <i>Evaluation of Learning #1 due 09/14/21</i>
Week 3 9/21/21	Descriptive Statistics Ethics in the Conduct of Research The Normal Curve and Z Scores	Pallant, Chapter 6 pp. 51-66 Sprinthall, Chapter 4-5 (optional) Read <i>Rosenblum</i> article on Schoology Review <i>SPSS Notes 3 Descriptive Statistics</i> <i>Assignment #1: Pallant Additional Exercises: Health (skip the business exercises) on pp. 65- 66 #1-2 Due 09/21/21 at 5:00pm</i>

<p>Week 4 09/28/21</p>	<p>Graphs and Measures of Central Tendency</p>	<p>Pallant, Chapter 7 Sprinthall, Chapter 6-7 (optional)</p> <p>Review <i>SPSS Notes 4 Graphs</i></p> <p><i>Assignment #2:</i> <i>Pallant Additional Exercises: Health pp. 84 #1-5</i> <i>Due 09/28/21 at 05:00pm</i></p> <p><i>Evaluation of Learning #2 due 09/28/21</i> <i>Exam Review in class</i></p>
<p>Week 5 10/05/21</p>	<p>Manipulating the Data Parameter Estimates and Hypothesis Testing</p>	<p>Pallant, Chapter 8 Sprinthall, Chapter 8 (optional) Review <i>SPSS Notes 5 Transforming Data</i></p> <p><i>Exam #1: 10/05/21</i></p>
<p>Week 6 10/12/21</p>	<p>Reliability and Validity Fundamentals of Research Methodology</p>	<p>Pallant, Chapter 9 Sprinthall, Chapter 9 (optional) Sprinthall, Chapter 17 (optional) (only pp. 505-508, 518-530) Review <i>SPSS Notes 6 Reliability</i></p> <p><i>Assignment #3:</i> <i>Pallant Additional Exercises: Health pp. 105 #1 and written report</i> <i>Due 10/12/21 at 05:00pm</i></p> <p><i>Evaluation of Learning #3 due 10/12/21</i></p>
<p>Week 7 10/19/21</p>	<p>Effect Size, Power, Error Choosing the Correct Statistical Analysis</p>	<p>Pallant, Chapter 10 Sprinthall, Chapter 19 (optional) Review <i>SPSS Notes 7 Power, Error, Effect Size</i></p>
<p>Week 8 10/26/21</p>	<p>The Hypothesis of Association: Correlation</p>	<p>Pallant, pp. 125-131 and Chapter 11 Sprinthall, Chapter 11 (optional) Review <i>SPSS Notes 8 Correlation</i></p> <p><i>Assignment #4:</i> <i>Pallant Additional Exercises: Health pp. 144 #1-2 and written report</i> <i>Due 10/26/21 at 05:00pm</i></p>

		<i>Evaluation of Learning #4 due 10/26/21</i>
Week 9 11/02/21	The Hypothesis of Difference: <i>t</i> -test	Pallant, pp. 205-213, Chapter 17 Sprinthal, Chapter 10 (optional) Sprinthal, Chapter 15 (optional) (only pp. 447-458) Review <i>SPSS Notes 9 t-test</i> <i>Assignment #5:</i> <i>Pallant Additional Exercises: Health p. 254 #1 and written report Due 11/02/21 at 5:00pm</i>
Week 10 11/09/21	Analysis of Variance (ANOVA) <i>Exam Review</i>	Pallant, Chapter 18 Sprinthal, Chapter 12 (optional) (only pp. 330-347 and 357-358) Sprinthal, Chapter 15 (optional) (only pp. 463-471) Review <i>SPSS Notes 10 ANOVA</i> <i>Assignment #6:</i> <i>Pallant Additional Exercises: Health p. 270 #1 and written report Due 11/09/21 at 5:00pm</i> <i>Evaluation of Learning #5 due 11/09/21</i>
Week 11 11/16/21	Two-way ANOVA	Pallant, Chapter 19 Sprinthal, Chapter 12 (optional) (only pp. 352-356) Review <i>SPSS Notes 11 Two-Way ANOVA</i> <i>Exam #2: 11/16/21</i>
Week 12 11/23/21	Regression Analysis	Sprinthal, Chapter 14 (optional) (only pp. 404-430) Review <i>SPSS Notes 12 Regression</i>
Week 13 11/30/21	Nonparametric Statistics <i>Final Exam Review</i>	Pallant, Chapter 16 Sprinthal, Chapter 16 (optional) Review <i>SPSS Notes 13 Nonparametric Techniques</i>

Week 14 12/07/21	Unfolding Case Studies: Using Statistics to Provide Evidence- based Patient Care <i>Merry Christmas to you and your families!!</i>	<i>Final Exam (Take Home Exam) due Monday, 12/13/21, by 5:00pm</i>
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