Quantitative Methods in the Health Sciences I (CHSC 6305)

Course Syllabus   Fall Semester 2021

Course Description: This applied statistics course was designed to meet the needs of beginning doctoral-level research professionals in the health sciences. The course teaches the analysis of health sciences data using a widely used statistical software package, while developing students' abilities to identify, conduct, organize, and compare appropriate approaches for the analysis and interpretation of health sciences data. This course will focus on the planning and interpretation of health science measurement methods, descriptive statistics, confidence intervals and hypothesis testing, and univariate and bivariate statistics and analyses including t-tests, analysis of variance, multiple comparisons, correlation, and their equivalent non-parametric tests. Oral and written presentation of the testing and interpretation of hypotheses and analyzed data, and synthesis of findings, are required course activities.

Prerequisite: Completed one prior statistics course with grade of B or better that included instruction on descriptive statistics and measures of central tendency, and instructor approval.

Meeting Time: Thursdays 5p-750p   **Class Instructor**: Dr. Loza
Class Location: ONLINE via BlackBoard   **Office Location**: HSN 405
                     Collaborate Ultra   **Email:** oloza@utep.edu
Credit Hours: 3 hours

Office Hours: Tuesdays (1130a - 1p) and Thursdays (1130a - 1p) via Zoom

Required Textbook:
Essentials of Biostatistics for Public Health, Second Edition
Authors: Lisa M. Sullivan
Publisher: Jones & Bartlett Learning
Print: (ISBN-10: 1449623948) (ISBN-13: 978-1449623944)

Recommended Textbook (not required):
Discovering Statistics Using IBM SPSS Statistics, Fourth Edition
Print: (ISBN-10: 1446249182) (ISBN-13: 978-1446249185)
Authors: Andy Field
Publisher: SAGE Publications Ltd

Required Software:
1. Microsoft Office (Word, Excel, and PowerPoint)
2. IBM® SPSS® Statistics (any version number): data management and statistical analysis software
   - download is available for free to UTEP students (see instructions)
   - virtual access is available for free to UTEP students under MY.APPS.UTEP.EDU
   - student license (Standard GradPack) purchase available online at OnTheHub or Student Discounts
3. Zoom
4. Google Chrome

Additional Resources:
- Technology Support Center (TSC)
  - https://www.utep.edu/technologysupport/TSCenter/TechnologySupportCenter.html

- o   Report issues to: https://servicedesk.utep.edu or Frank Poblano fpoblano@utep.edu
- Statistical Consulting Laboratory
    - o   UTEP Bell Hall 131 (may offer tutoring)
    - o   https://www.utep.edu/science/statlab/resources.html

Homework Assignments: Lecture notes, course material, assignments, graded assignments (with feedback), grades, and other selected materials will be available in class or on BlackBoard (BB). Late work will receive point reduction: 50% within two days of deadline; no credit if submitted after that.

Analysis Project: Students will develop and test research questions health sciences and produce a report and oral presentation of their findings. This activity will involve:
1. identifying and gaining access to a dataset in their disciple or research areas of interest within health sciences
2. generating hypotheses
3. selecting the appropriate statistical analysis methods to test hypothesis
4. generating the appropriate Univariate and Bivariate Plots, Tables, and Tests using IBM® SPSS® Statistics
5. summary of findings and interpretation of result

Teaching/Learning Methods: Course combines lectures and homework exercises. Some assignments are assigned for groups and others are to be completed on an individual basis.

Course Objectives: Upon completion of this course the student will learn the appropriate use of statistical methods for the analysis of data, with continuous and categorical variables, using statistical analysis software IBM® SPSS® Statistics. These objectives should contribute to student's ability to critically review the public health and epidemiologic literature, and to carry out statistical analyses independently for later professional application. Students will be able to:
1. identify sources of health sciences related data and statistics.
2. demonstrate and practice technical skills needed to view, summarize, and analyze, data using IBM® SPSS® Statistics.
3. apply appropriate statistical methods, tests, and terminology for multivariate analyses focusing on linear and logistic regression analyses and diagnostics.
    a. generate and organize appropriate tables and graphs to summarize results.
    b. state assumptions for tests performed
    c. create and present written and oral presentations of their findings.
4. discuss use of statistical tools commonly used in health sciences literature and compare the strengths and limitations of methods used.

Evaluation and Course Grade: Student performance will be evaluated on the basis of:
- Assignments (35%)
- Bivariate Analysis Project (BAP) (35%)
- Exams (30%)

Grading Scheme: A (≥ 90%), B (80-89%), C (70-79%), D (60-69%), and F (< 60%)

Attendance Policy: It is UTEP policy that **ALL** students attend all scheduled classes. Attendance will be taken at each class. When a student registers for a course, it is assumed that she/he has made arrangements to avoid such conflicts. Students are responsible for any information or activities presented in class discussions, lectures, assignments, and/or readings. If you are unable to attend class, it is your responsibility to inform the instructor before the respective class session. Students may be administratively withdrawn for excessive unexcused absences *(3 classes).* Compliance to due dates, in class presentations, homework, exams and other activities is mandatory. All emergency-related absences must be verified.

Attendance Reporting on Bb Collaborate Ultra: Late after 10 minutes. Absent after 30 minutes. Must be present for at least 90% of the session running time or they're marked as absent.

Excused Absences for University-Recognized Activities: Students who will be absent while representing the University in officially recognized University activities (sports, band, professional conferences, etc.) must notify the Dean of Students no less than ten days prior to the absence. The Dean of Students will provide the student with a letter of excuse for the professors.

Accommodations: If you have or suspect a disability and need accommodations, please contact The Center for Accommodations and Support Services (CASS) at 915.747.5148, cass@utep.edu, or visit their office located in UTEP Union East, Room 106. For additional information, visit https://www.utep.edu/student-affairs/cass/. CASS' Staff are the only individuals who can validate and if need be, authorize accommodations for students with disabilities.

Policy on Electronic Devices in Class: Use of electronic devices (i.e., laptops (except for online course), mobile phones, tablets, MP3 players) is not permitted during this course or lectures. Use of these devices is distracting to your classmates and instructor. If you bring these to class, please turn them off before coming to class. Otherwise, you will be asked to leave the class by the instructor. The instructor will discuss any exceptions regarding personal laptops.

Academic Integrity: Students who engage in scholastic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and dismissal from the university. "Scholastic dishonesty includes but is not limited to cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another student, any act designed to give unfair advantage to a student or the attempt to commit such acts." University policies on scholastic dishonesty will be strictly enforced. For more information, see the Handbook of Operating Procedures (HOP) available at https://www.utep.edu/hoop/.

Cheating includes:

1. Copying from the homework, in-class work or exam paper of another student, engaging in written, oral, or any other means of communication with another student during an exam or homework assignment, or giving aid to or seeking aid from another student during a test;

2. Possession and/or use during an exam or home test of materials which are not authorized by the person giving the test, such as class notes, books, or specifically designed "crib notes";

3. Using, obtaining, or attempting to obtain by any means the whole or any part of non-administered test, test key, homework solution, or computer program; using a test that has been administered in prior classes or semesters but which will be used again either in whole or in part without permission of the instructor; or accessing a test bank without instructor permission;

4. Collaborating with or seeking aid from another student for an assignment without authority;

5. Substituting for another person, or permitting another person to substitute for one's self, to take a test; 6. Falsifying research data, laboratory reports, and/or other records or academic work offered for credit.

Plagiarism means the appropriation, buying, receiving as a gift, or obtaining by any means another's work and the unacknowledged submission or incorporation of it in one's own academic work offered for credit, or using work in a paper or assignment for which the student had received credit in another course without direct permission of all involved instructors. NOTE: This includes cutting-and-pasting and photocopying from on-line and other material.

Collusion means the unauthorized collaboration with another person in preparing academic assignments offered for credit or collaboration with another person to commit a violation of any provision of the rules on scholastic dishonesty.

COVID-19 PRECAUTION STATEMENT
Please stay home if you have been diagnosed with COVID-19 or are experiencing COVID-19 symptoms. If you are feeling unwell, please let me know as soon as possible, so that we can work on appropriate accommodations. If you have tested positive for COVID-19, you are encouraged to report your results to covidaction@utep.edu, so that the Dean of Students Office can provide you with support and help with communication with your professors. The Student Health Center is equipped to provide COVID-19 testing.

The Center for Disease Control and Prevention (CDC) recommends that people in areas of substantial or high COVID-19 transmission wear face masks when indoors in groups of people. The best way that Miners can take care of Miners is to get the vaccine. If you still need the vaccine, it is widely available in the El Paso area, and will be available at no charge on campus during the first week of classes. For more information about the current rates, testing, and vaccinations, please visit epstrong.org.

COURSE SCHEDULE *

Dates Thursdays	MATERIAL: Chapter Lectures (READ CHAPTER BEFORE CLASS), SPSS Modules, and Bivariate Analysis Project (BAP)	Assignments DUE SPSS + BAP
WEEK 1 Aug 26	Chapter 1. Introduction to Biostatistics SPSS 1. Introduction to SPSS and Importing data Special Topics: Sources of Data	
WEEK 2 Sept 2	Chapter 2. Study Designs SPSS 2. Entering Data and Defining Variables Special Topics: Paso del Norte Healthy Communities Network	SPSS 1 BAP 1: DATASET DRAFT
WEEK 3 Sept 9	Chapter 4. Summarizing Data (Categorical) SPSS 3. Data Manipulation SPSS 4. Introduction to Graphing	SPSS 2 BAP 1: DATASET
WEEK 4 Sept 16	Chapter 4. Summarizing Data (Continuous) SPSS 5. Univariate Descriptive Statistics and Plots	SPSS 3 SPSS 4 (No HW) BAP 2: VARIABLES
WEEK 5 Sept 23	Chapter 5. The Role of Probability (Categorical) SPSS 6. One-Sample Binomial Test	SPSS 5 BAP 3: UNIVARIATE - draft
WEEK 6 Sept 30	Chapter 5. The Role of Probability (Continuous) SPSS 7. One-Sample t-Test	SPSS 6 BAP 3: UNIVARIATE
WEEK 7 Oct 7	Chapter 5. The Role of Probability (con't) Midterm Exam Practice Questions from Textbook	SPSS 7 Practice Questions
WEEK 8 Oct 14	MIDTERM CHAPTERS: 2, 4, 5 and SPSS: 1-7	
WEEK 9 Oct 21	SPSS 8. Bivariate Descriptive Statistics and Plots BAP Guidelines and Hypotheses	
WEEK 10 Oct 28	Chapter 7. Hypothesis Testing Procedures (One Sample Tests) SPSS 9. Two-Sample t-Tests and Paired t-Test SPSS 12. Correlation	SPSS 8 BAP 4: HYPOTHESES
WEEK 11 Nov 4	Chapter 7. Hypothesis Testing Procedures (Chi-Square Tests) SPSS 11. Chi-square Analysis and Odds Ratios	SPSS 9 SPSS 12
WEEK 12 Nov 11	Chapter 7. Hypothesis Testing Procedures (t-tests and ANOVA) SPSS 10. One-Way ANOVA and Multiple Comparisons SPSS 13. Nonparametric tests	SPSS 11 BAP 5: BIVARIATE DRAFT
WEEK 13 Nov 18	Special Topics: Reports and Summary Tables BAP Work session	SPSS 10 SPSS 13 BAP 5: BIVARIATE
WEEK 14 Nov 25	- HOLIDAY –	BAP PRESENTATION DRAFT
WEEK 15 Dec 2	BAP Presentations (10 minutes/student or team) Final Exam Practice Questions from Textbook	BAP PRESENTATION (430p) Practice Questions
WEEK 16 Dec 6-10	FINAL EXAM CHAPTER: 7 and SPSS: 8-13	

* Please note, the instructor reserves the right to change the syllabus during the semester (e.g., deadlines, grading scheme). In the event that a change is made, you will be notified. Assignments and due dates provided on BlackBoard. More deadlines: http://catalog.utep.edu/undergrad/welcome-to-utep/academic-calendar/