Applied statistics I

Course Description

This is a course in applied univariate statistics, which includes the use of the Statistical Package for the Social Sciences (SPSS) with exercises related to various descriptive and inferential statistical techniques. The primary purpose of the course is to introduce the learner to the basic concepts, procedures, and practices in statistics as related to education and other social sciences.

Rationale

Early in their studies, doctoral students should gain knowledge and competency in basic statistical procedures. This course will enable the students to acquire statistical vocabulary, to better understand research studies in their professional fields, to become more critical of statistical presentations in their fields and in the mass media, and to become prepared to learn more complex procedures to analyze and interpret quantitative data.

Course Objectives/Learning Outcomes

Upon successful completion of the course, students will demonstrate knowledge and understanding of basic statistical procedures by:

- Differentiating among the scales of measurement.
- Constructing frequency distribution tables and graphs.
- Calculating and describing the measures of central tendency and variability.
- Converting raw scores into standard scores.
- Explaining the Central Limit Theorem.
- Constructing and explaining confidence intervals.
- Computing and explaining selected effect sizes.
- Testing hypotheses in one-sample and two-sample designs, simple correlation and regression, chi-square test of independence, and chi-square goodness of fit tests.
- Using the Statistical Package for the Social Sciences (SPSS) for the purpose of data entry, manipulation, and analysis.
State Adopted Proficiencies for Teachers and/or Administrators/Counselors - NA

TExES Competencies - NA

Carnegie Project on the Educational Doctorate (CPED) Principles:

4. Provides field-based opportunities to analyze problems of practice and use multiple frames to develop meaningful solutions.

5. Is grounded in and develops a professional knowledge base that integrates both practical and research knowledge, that links theory with systemic and systematic inquiry

6. Emphasizes the generation, transformation, and use of professional knowledge and practice.

Textbook


Course Packet (derived from various sources)

Recommended or Supplemental Reading


Frey, B.B. (2015). *100 questions (and answers) about tests and measurement*. LA, CA: SAGE


Salkind, N.J. (2012). *100 questions (and answers) about research methods*. LA, CA: SAGE


Course Topics

- Unit 1 – Introduction,
  Field, pp. xxiv – xxvi, Chapter 1, Course Packet, Unit 1

- Unit 2 – Basic Measurement Concepts
  Field, Chapter 1, Course Packet, Unit 2
- Unit 3 – Frequency Distributions
  Field, Chapters 1 & 5, Course Packet, Unit 3

- Unit 4 – Measures of Central Tendency and Variability
  Field, Chapter 1, Course Packet, Unit 4

- Unit 5 – The Normal Distribution and Standard Scores
  Field, Chapter 1, Course Packet, Unit 5

- Unit 6 – Sampling, Sampling Distributions, Confidence Intervals, and Central Limit Theorem
  Field, Chapter 2; Course Packet, Unit 6

- Unit 7 – Hypothesis Testing
  Course Packet, Unit 7
  - One-Sample z-test
  - One-Sample t-test
  - Sample Size Estimation

- Unit 8 – Testing Hypothesis About Two Means
  Field, Chapter 10, Course Packet, Unit 8
  - Two Independent Samples
  - Two Correlated Samples
  - Sample Size Estimation
  - Effect Size Computation

- Unit 9 – Simple Correlation
  Field, Chapter 8; Course Packet, Unit 9
  - Statistical Significance
  - Practical Significance
  - Sample Size Estimation

- Unit 10 – Simple Regression
  Field, Chapter 9, Course Packet, Unit 10
  - Raw-Score Formula
  - Z-Score Formula
  - Standard Error of Estimate

- Unit 11 – Chi-Square Test
  Field, Chapter 19, Course Packet, Unit 11
  - Chi-Square Test of Independence
  - Chi-Square Goodness-Of-Fit Test

- Unit 12 – SPSS, Field, Chapter 4
Instructional Methods and Activities

- Lecture/discussion
- Practice problems
- Homework assignments
- Analyzing data, using SPSS

Evaluation and Grade Assignment

Homework Assignments (see the course packet for details) 30%
SPSS Assignment (see the course packet for details) 10%
Test 1, open book/notes (Units 1 – 5) 30%
Test 2, open book/notes (Units 6 – 11) 30%

Grading Scale:
90 - 100 A
80 - 89 B
70 – 79 C
60 - 69 D
< 60 F

Incomplete, I - “An incomplete notation may be given to a student who is passing but has not completed a term paper, examination, or other required work for reasons beyond the student’s control other than lack of time.”

Course Schedule and Policies

1. Course schedule follows the course topics.
2. Late assignments are not accepted except in extenuating circumstances at the discretion of the instructor. Students who find that they are unable to be at an examination session because of illness or extenuating circumstances should contact the instructor as soon as the condition becomes apparent to arrange fair and practical extensions.
3. The instructor expects complete honesty in the completion of test and assignments. Plagiarism, “the act of taking the work/writings of another person and passing them off as one's own,” is not tolerated.
4. Cell phones must be off. Text messaging is not allowed. No food consumption.

Grade Appeals

As stated in University Rule 13.02.99.C2.01, Student Grade Appeals, a student who believes that he or she has not been held to appropriate academic standards as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading, may appeal the final grade given in the course. The burden of proof is upon the student to demonstrate the appropriateness of the appeal. A student with a complaint about a grade is encouraged to first discuss the matter with
the instructor. For complete details, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, see University Rule13.02.99.C2, Student Grade Appeals, and University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures. These documents are accessible through the University Rules Web site at http://www.tamucc.edu/provost/university_rules/index.html. For assistance and/or guidance in the grade appeal process, students may contact the Office of Student Affairs.

Disability Accommodations

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please call or visit Disability Services at (361) 825-5816 in Corpus Christi Hall, Room 116. If you are a returning veteran and are experiencing cognitive and/or physical access issues in the classroom or on campus, please contact the Disability Services office for assistance at (361) 825-5816.

Academic Integrity/Plagiarism

University students are expected to conduct themselves in accordance with the highest standards of academic honesty. Academic misconduct for which a student is subject to penalty includes all forms of cheating, such as illicit possession of examinations or examination materials, falsification, forgery, complicity or plagiarism. In this class, academic misconduct or complicity in an act of academic misconduct on an assignment or test will result in failing the course.

Dropping a Class

I hope that you never find it necessary to drop this or any other class. However, events can sometimes occur that make dropping a course necessary or wise. Please consult with me before you decide to drop to be sure it is the best thing to do. Should dropping the course be the best course of action, you must initiate the process to drop the course by going to the Student Services Center and filling out a course drop form. Just stopping attendance and participation WILL NOT automatically result in your being dropped from the class. This term, 9.21.2018 is the last day to drop a class and an automatic grade of “W” will be assigned to the student.

Classroom/Professional Behavior

Texas A&M University-Corpus Christi, as an academic community, requires that each individual respect the needs of others to study and learn in a peaceful atmosphere. Under Article III of the Student Code of Conduct, classroom behavior that interferes with either (a) the instructor’s ability to conduct the class or (b) the ability of other students to profit from the instructional program may be considered a breach of the peace and is subject to disciplinary sanction outlined in article VII of the Student Code of Conduct. Students engaging in unacceptable behavior may
be instructed to leave the classroom. This prohibition applies to all instructional forums, including classrooms, electronic classrooms, labs, discussion groups, field trips, and the like.

Statement of Civility

Texas A&M University-Corpus Christi has a diverse student population that represents the population of the state. Our goal is to provide you with a high quality educational experience that is free from repression. You are responsible for following the rules of the University, city, state, and federal government. We expect that you will behave in a manner that is dignified, respectful, and courteous to all people, regardless of sex, ethnic/racial origin, religious background, sexual orientation or disability. Behaviors that infringe on the rights of another individual will not be tolerated.

Statement of Academic Continuity

In the event of an unforeseen adverse event, such as a major hurricane and classes cannot be held on the campus of Texas A&M University–Corpus Christi, this course would continue through the use of Blackboard and/or email. In addition, the syllabus and class activities may be modified to allow continuation of the course. Ideally, University facilities (i.e., emails, web sites, and Blackboard) will be operational within two days of the closing of the physical campus. However, students need to make certain that the course instructor has a primary and a secondary means of contacting each student.