Applied statistics II

Course Description

The course in advanced statistical procedures is a continuation of EDLD 6333. Special emphasis is placed on analysis of variance (ANOVA) techniques, namely, one-way and factorial ANOVA, analysis of covariance (ANCOVA), repeated measures ANOVA, and multivariate analysis of variance (MANOVA), as well as multiple regression analysis, logistic regression analysis, and discriminant analysis. Also included are selected nonparametric statistical techniques and sample size estimation for various statistical procedures. The course includes hands-on experiences in the use of Statistical Package for the Social Sciences (SPSS) with exercises related to the topics covered. Prerequisite: EDLD 6333

Rationale

Students who complete the doctoral degree should be both knowledgeable and competent in advanced statistical procedures. The course will enable the students to not only become better and wiser consumers of the research done by others, but also better able to conduct high quality educational research themselves.

Course Objectives/Learning Outcomes

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

1. Successfully stating null and alternative/research hypotheses, given research questions.
2. Successfully selecting and performing appropriate statistical techniques, given research questions.
3. Successfully interpreting and reporting results, given research questions.
4. Successfully using the Statistical Package for the Social Sciences (SPSS) to perform statistical analyses of data.
State Adopted Proficiencies for Teachers and/or Administrators/Counselors - NA

TEExES Competencies - NA

Textbooks


Course Packet (derived from various sources)

Recommended Reading


Course Topics

- Unit 1 - Review of Basic Statistics [Field, Chapters 1 – 5, Course Packet]
- Unit 2 - One-Way Analysis of Variance [Field, Chapter 11, Course Packet]
- Unit 3 - Post-Hoc and A Priori Comparisons [Field, Chapter 11, Course Packet]
- Unit 4 - Factorial Analysis of Variance [Field, Chapter 13, Course Packet]
- Unit 5 - Analysis of Simple Effects [Field, Chapter 13, Course Packet]
- Unit 6 - Analysis of Co-variance [Field, Chapter 12, Course Packet]
- Unit 7 – Univariate Repeated Measures ANOVA [Field, Chapter 14, Course Packet]
- Unit 8 – Split Plot Repeated Measures ANOVA [Field, Chapter 15, Course Packet]
- Unit 9 - Multiple Regression Analysis [Field, Chapters 7 & 8, Course Packet]
- Unit 10 - Logistic Regression Analysis [Field, Chapter 19, Course Packet]
- Unit 11 – MANOVA/Discriminant Analysis [Field, Chapter 16, Course Packet]
• Unit 12 - Nonparametric Statistics [*Field, Chapters 6 & 18, Course Packet*]
  ➢ Spearman Rank Order and Kendal Rank-Order Correlation Coefficients
  ➢ Kendal Coefficient of Concordance
  ➢ Chi-Square Test of Independence and Chi-Square Goodness-of-Fit Test
  ➢ Fisher’s Exact Test
  ➢ Kappa Coefficient
  ➢ The Mann-Whitney-Wilcoxon U Test
  ➢ The Wilcoxon Matched-Pairs Signed-Ranks Test
  ➢ The Kruscal-Wallis Test
  ➢ The Friedman Test
  ➢ Bonferroni Inequalities Approximation Post Hoc Procedure

• Unit 13 - Sample Size Estimation [*Course Packet*]

**Instructional Methods and Activities**

• Lecture/discussion
• Practice problems
• Homework assignments
• Data analysis exercises

**Evaluation and Grade Assignment**

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Homework (Data Analysis) Assignments</td>
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<tr>
<td>Test 1 (Unit 1)</td>
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<td>Test 2 (Units 2 – 8)</td>
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<td>Test 3 (Units 9 – 13)</td>
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Grading Scale:

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<td>80 - 89</td>
<td>B</td>
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<td>70 - 79</td>
<td>C</td>
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<tr>
<td>60 - 69</td>
<td>D</td>
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<tr>
<td>&lt; 60</td>
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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 or drink in the computer lab.

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, _____________ 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 (can be in place of classroom/professional behavior)

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.