**QUANTITATIVE ANALYSIS I**

 **(REF 761)**

**Fall 2013**

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Class hours: Tuesdays, 6:30PM-9:15PM Email: Kamden.Strunk@usm.edu

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 Wednesdays 2:00PM-4:30PM

 or by appointment

**COURSE DESCRIPTION:**

Probability theory and theoretical distributions in experimental design. Techniques include *t*-tests, simple and complex analyses of variance, and analyses of covariance.

**COURSE OVERVIEW:**

This course introduces quantitative analysis using probability theory. We will learn techniques beginning at the level of descriptive statistics and continuing through to general linear model inferential statistics to the level of analyses of covariance. The course will focus on applied educational/behavioral research with a special focus on understanding statistical models and how they apply to research questions.

**Required Course MATERIALS:**

Field, A. (2013). *Discovering statistics using IBM SPSS Statistics* (4th ed.). Los Angeles, CA: SAGE.

Other required course readings will be posted on Blackboard.

IBM SPSS Statistics Version 20.0 or newer. The Premium GradPack (NOT Base GradPack) is recommended. This can be leased for approximately $95 for 12 months or $55 for 6 months. It can also be purchased for slightly more. “Used” versions are not recommended. The library on campus has IBM SPSS, and you may complete your assignments there, but you may consider the investment in the software for your personal computer for future courses, and your own research/thesis/dissertation.

**RECOMMENDED Additional Reading/REFERENCE:**

Keppel, G., & Wickens, T. D. (2004). *Design and analysis: A researcher’s handbook* (4th ed.). Englewood, NJ: Pearson.

**PREREQUISITE COURSES:**

REF 602 or equivalent is required prior to taking this course. Check with the course instructor if you are unsure if you have met the prerequisite.

**Course Objectives:**

1. To understand basic descriptive statistics and their application.
2. To understand the normal distribution and its properties.
3. To understand and apply the normal probability distribution.
4. To gain a basic understanding of the general linear model and how statistical techniques derive from the general linear model.
5. To describe and generalize the relationship among the statistical techniques learned in class.
6. To apply statistical models to applied behavioral/educational research.

**Mode/Style of Teaching:**

The teaching style for this class is a four-domain holistic education model, wherein education is targeted toward the whole person. In this model the “whole person” is conceptualized as the body, mind, soul, and heart, or the “doing”, “thinking”, “creating”, and “feeling” functions. Weekly discussions and course projects are all designed to target these domains and functions to encourage development and growth in all of these areas. This class is also built on a constructivist and social learning model, wherein students are expected to learn from the textbook, from the instructor, and from each other. This is accomplished through a reciprocal social interaction process where students contribute their understanding and knowledge to each other, thus enhancing the overall understanding of everyone in the class and allowing everyone to construct a more complete base of knowledge than would otherwise be possible.

**Course Assignments:**

1. **Projects:** There are five projects in this class. Some projects will involve skill building in analysis and interpretation. Others are opportunities to independently apply analytic skills on applied behavioral research problems using data provided to you to write an APA style results and discussion section, as well as to answer some worksheet-style questions. Each of the five projects will be 100 points.
2. **Exams:** There are two exams in this class. Each exam focuses on the skills and knowledge covered in the preceding unit of the course, but the exams are, of necessity, comprehensive in nature. Each exam will be 250 points.

**Grading Structure/Requirements:**

There are a total of 1000 points in the course, which means you can take your total points and divide by ten to determine your percentage grade in the course. The grading structure is as follows:

|  |  |
| --- | --- |
| **Assignment Type** | **Total Points Possible** |
| Projects | 500 |
| Exams | 500 |
| **TOTAL POINTS** | **1000 points** |

The course is graded as follows: A = 100-91%, A- = 90.99-90%, B+ = 89.99-89% B = 88.99%-81%, B- = 80.99-80%, C+ = 79.99-79%, C = 78.99-71% C- = 70.99-70%, D+ = 69.99-69% D = 68.99-61% D- = 60.99-60%, F < 60%.

**CLASS PREPAREDNESS:**

Students are expected to arrive to class on time and prepared for required coursework. This means arriving prepared for in-class activities that may require the use of the textbook, spare paper, and a basic calculator. You should bring a calculator, the course textbook, and paper with you to each class period to be prepared for in-class activities designed to strengthen conceptual understanding.

**LATE WORK POLICY:**

Late work is not acceptable in graduate work. However, if you find that you are falling behind in your coursework, it is of the utmost importance that you immediately contact your instructor. As soon as you know there is any problem, immediately contact the course instructor. This is the best way to stay caught up with the course, and to achieve the highest possible grade.

If you find that you need to submit late work **it is required that you contact the instructor before submitting any late work.** Any late work submitted without first contacting the instructor to discuss the work and form a plan for getting caught up to date with coursework will not be accepted. This is to make sure that you receive all information you need about which assignments will take priority in getting caught up, and what, if any, credit can be given to late work before beginning. Communication is the key in getting caught up if you find yourself behind on work, so call, email, or stop by, whatever you need to do to get in contact!

If any late work is accepted following communication with the instructor and establishment of a written plan, it will be worth a maximum of 50% of its graded point value. The exact percentage will be established in the written plan you make with the instructor.

**TENTATIVE Course Calendar:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Week** | **Readings** | **Content** | **Project** |
| 18/27/13 | Chapter 1 | Introduction, Review of Basic Concepts, and Sampling Methods |  |
| 29/3/13 | Chapter 3 | Descriptive Statistics, Standardization, Normal Curve, and Normality |  |
| 39/10/13 | Selected Readings | Probability |  |
| 49/17/13 | Selected Readings | The Probability Distribution, and Sampling Distributions | **Project 1 (in class)** |
| 59/24/13 | Selected Readings | Null Hypothesis Significance Testing and the *z­-*test |  |
| 610/1/13 | **EXAM ONE** | **EXAM ONE** | **EXAM ONE** |
| 710/8/13 | Selected Readings | Effect Size Estimates and Confidence Intervals |  |
| 810/15/13 | Chapter 5 | One Sample *t*-test and Independent Samples *t*-test | **Project 2 (in class)** |
| 910/22/13 | Chapter 9 | Dependent-Samples *t*-test |  |
| 1010/29/13 | Chapter 11 | One-Way Analysis of Variance | **Project 3 DUE** |
| 1111/5/13 | Chapter 12 & 13 | Factorial Analysis of Variance | **Project 4 DUE** |
| 1211/12/13 | Chapter 12 & 13 | Factorial Analysis of Variance |  |
| 1311/19/13 | Chapter 12 | Analysis of Covariance | **Project 5 DUE** |
| 1411/26/13 | **NO CLASS** | **NO CLASS** | **NO CLASS** |
| 1512/3/13 | **EXAM TWO** | **EXAM TWO** | **EXAM TWO** |

*Note.* All readings other than the textbook can be found on Blackboard listed under the name of that week’s topic. Other outside readings may be added to this schedule as needed.

**Possible Changes to the Syllabus:**

This syllabus is your contract for production in the course. If changes are made to it they will be posted on Blackboard and announced in class or by email. No changes increasing requirements will be made as they might adversely affect your grade.

**Additional Information and Policies:**

Graduate study requires a high level of independence, accountability, and conscientiousness in order to achieve success both in their program and in careers that require graduate study. As such, a number of guidelines are helpful that make clear the expectations of graduate students.

1. Students are expected to adhere to the highest standard of academic integrity. Students are bound by and responsible for knowing the information contained in the policies set forth in the DES Academic Integrity Policy and the USM Student Handbook. In no instances will lack of familiarity with these policies excuse a violation. Procedures for dealing with academic dishonesty and consequences can be found in the above-mentioned policies, and may range from a reprimand and opportunity to rewrite an assignment, a reduced grade, a ‘0” or “F” being awarded for the assignment, a “0” or “F” being awarded for the class, and recommendation for dismissal from the program, suspension, or expulsion from the university.

Violations of this policy include plagiarism in all forms and extend to the use of internet resources. Any information that originates from another source must be noted as such in student materials. Other forms of academic dishonesty include, but are not limited to, buying papers, copying paragraphs/pages of text/whole papers off the Internet, copying another student’s answers/papers, multiple submissions (e.g. “self plagiarism”), etc.

1. Students are expected to be in class for the entire class period every class meeting. If there is an unavoidable conflict (such as a professional conference that coincides with a class meeting) this should be communicated with the instructor as early as possible. In the event that you have a legitimate emergency that prevents you from attending class, you should: 1) contact the instructor by phone and/or email immediately upon learning you will be unable to attend class (this should be before the class meets), 2) take appropriate steps to catch up with in-class learning opportunities, 3) ensure that all of your work that was due during that class meeting makes it to the instructor before the class meeting ends (email it, have a friend drop it by the ESR office, etc.). Failure to be in class during an exam without agreement from and prior arrangements with the course instructor will result in a grade of zero on the exam.
2. Students are responsible for checking their USM email account regularly for course announcements and course-related communications.
3. This course uses Blackboard as a tool to manage course readings and other materials not included in the required texts for this course and for online course discussions. Students are expected to have a working knowledge of Blackboard in order to access materials and participate in online course discussion.
4. All individuals, students and instructor alike, are expected to adhere to standards of academic honesty, common courtesy, and respect for others. Free discussion, inquiry, and expression in class are encouraged. Behavior that interferes with either teaching or learning is not acceptable. Talking, ringing phones, eating, etc. can be extremely distracting; rude, impolite, or offensive behavior will not be tolerated. Students may be barred from class as a result of behavior that *in the opinion of the professor* negatively affects the learning/work environment. Since cell phones and pagers can be disruptive, except as provided for in advance, cell phones and pagers should be silent during class time.
5. If a student has a disability that qualifies under the Americans with Disabilities Act (ADA) and requires accommodations, he/she should contact the Office for Disability Accommodations (ODA) for information on appropriate policies and procedures. Disabilities covered by ADA may include learning, psychiatric, physical disabilities, or chronic health disorders. Students can contact ODA if they are not certain whether a medical condition/disability qualifies Mailing address: 118 College Drive #8586, Hattiesburg, MS 39406-0001; Telephone (610) 266-5024; TTY: (601) 266-6837; Fax: (601) 266-6035. Individuals with hearing impairments can contact ODA using the Mississippi Relay Service at 1-800-582-2233 (TTY) or email Suzy Hebert at Suzanne.Hebert@usm.edu.