**INTRODUCTION TO EDUCATIONAL STATISTICS**

**(REF 602)**

**Spring 2015**

Instructor: Kamden K. Strunk, Ph.D. Phone: 601-266-6520

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

Office hours: Tuesdays 9:00AM-11:00AM Office Address: OMH 103B

Wednesdays 3:00PM-6:00PM

Or By Appointment (appointments recommended during office hours)

**COURSE DESCRIPTION:**

Concepts and computations in descriptive statistics. Introduction to sampling procedures and inferential processes in educational research.

**COURSE OVERVIEW:**

This course introduces basic statistical concepts and methods appropriate for educational research and evaluation. The course will focus in two basic ‘units’. The first ‘unit’ will be in descriptive statistics, probabilities, and quantitative reasoning. The second ‘unit’ will introduce inferential statistics and methods for hypothesis testing and evaluating statistical effects. By the end of the course, students will understand and be comfortable with the use of descriptive statistics, probability theory, and null hypothesis significance testing. In addition, students will be able to conduct a number of inferential tests with proficiency and be comfortable in statistical analysis software (SPSS). A further outcome of this course will be the ability to write about, understand, and discuss statistical test outcomes.

**Required Course MATERIALS:**

Privatera, G. J. (2012). *Statistics for the behavioral sciences*. Thousand Oaks, CA: SAGE.

American Psychological Association. (2010). *Publication manual of the American Psychological Association* (6th ed.). Washington, DC: Author.

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.

**Course Objectives:**

1. To understand basic descriptive statistics and their application.
2. To understand and concepts of variability and their application.
3. To understand and apply probability theory.
4. To understand and apply correlation.
5. To gain a basic understanding of the general linear model and how statistical techniques derive from the general linear model.
6. To learn and apply basic inferential statistical techniques, including nonparametric tests.
7. To gain proficiency in writing about, discussing, and interpreting statistical results.

**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 four projects in this class. These projects may involve calculations for the purpose of building connections among concepts, or may involve conducting an analysis in SPSS. Projects might also involve completing an APA style manuscript by writing the results and discussion section as practice for writing about research findings. Each of the four projects will be 100 points.
2. **Exams:** There are three exams in this class. Each exam will be 200 points. Exams will include calculations, interpretation, and theory questions. You may bring a single-sided sheet of handwritten equations (equations only – no explanations, key, or legend to those equations), as well as a calculator and blank paper to exams to assist you. Calculators may not be internet, WiFi, any other communications system, or camera enabled. Cell phones or computers may not be used as a calculator for exams. A limited number of simple calculators may be available during exams if the calculator you bring is not acceptable or if you forget a calculator.

**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 | 400 |
| Exams | 600 |
| **TOTAL POINTS** | **1000 points** |

The course is graded as follows: A = 1000-910, A- = 909.9-900, B+ = 899.9-890 B = 889.9-810, B- = 809.9-800, C+ = 799.9-790, C = 789.9-710 C- = 709.9-700, D+ = 699.9-690 D = 689.9-610 D- = 609.9-600, F < 600.

**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** |
| 1  01/14/15 | Ch. 1 & 2 | Introduction & Visual Displays of Data |  |
| 2  01/21/15 | Ch. 3 & 4 | Measures of Central Tendency & Variability |  |
| 3  01/28/15 | Ch. 5 | Probability Theory |  |
| 4  02/04/15 | Ch. 6 | The Normal Distribution | Project Zero Due |
| 5  02/11/15 | Ch. 7 | Sampling Distributions |  |
| 6  02/18/15 | None | **EXAM ONE** (on Blackboard) | **EXAM ONE**  **(**on Blackboard) |
| 7  02/25/15 | Ch. 8 | Hypothesis Testing & the *z*-test |  |
| 8  03/04/15 | Ch. 9 | One-sample and Dependent samples *t-*tests |  |
| 9  03/11/15 | None | **NO CLASS – Spring Break** |  |
| 10  03/18/15 | Ch. 10 | Independent-samples *t*-tests |  |
| 11  03/25/15 | Ch. 12 | The one-way ANOVA | Project One Due |
| 12  04/01/15 | None | **EXAM TWO** (on Blackboard) | **EXAM TWO**  (on Blackboard)  Project Two Due |
| 13  04/08/15 | Ch. 15 | Correlation |  |
| 14  04/15/15 | Ch. 17 & 18 | Nonparametric tests | Project Three Due |
| 15  04/22/15 | Ch. 16 | Simple Linear Regression |  |
| 16  04/29/15 | None | **FINAL EXAM** (on Blackboard) | **FINAL EXAM**  (on Blackboard) |

*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.