

AUBURN UNIVERSITY
Department of Educational Foundations, Leadership, and Technology
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Office Hour: Tuesday 3:00 p.m. – 4:00 p.m.

1. **Course Number and Title:** ERMA 7310 Educational Design and Analysis II

Credit: 3 Semester Hours (Lecture 3)

Prerequisites: ERMA 7300
2. **Date:** August 2011
3. **Required Manual:** Green, S. B. & Salkind, N. J. (2011). Using SPSS for Windows and Macintosh: Analyzing and understanding data (6th ed.). New York.

Other Course Supplements: The professor may provide handouts from time to time to supplement the required manual.

Recommended: (a) Calculator with basic algebraic functions and
(b) **mechanical pencil that takes 0.9mm or 0.7mm size lead. Black color lead and HB or B hardness only.**
4. **Course Description:**

The focus of this course is on the knowledge, concepts, applications, interpretations, and reporting of basic and practical statistical procedures related to educational problems. Specifically, the course covers applications of basic inferential statistics and their applications to education. Content includes sampling and hypothesis testing. Statistical procedures include inferences using F-test, two-way repeated-measures analysis of variance, analysis of covariance, correlation, regression, and discriminate analysis, and factor analysis. In addition, the course is designed to assist students in applying statistical theory and applications to practical situations, so that they may begin to develop and apply their own critical thinking and decision-making skills as future professional educators.

Objectives, Content, Student Activities, and Student Evaluation

5. Course Objectives:

The following objectives are designed to develop students' competence in knowledge, applications, and interpretations of basic statistical procedures used in educational research.

A. Use research and statistical terminology appropriately and accurately

B. Demonstrate knowledge of the following subject matter:

1. Research problems, variables, measurement scales
2. Hypothesis testing, decision rule, alpha level
3. Type I and Type II error
4. Power
5. Effect size
6. Research and Procedures for
 - (a) Correlations
 - (b) Analysis of covariance
 - (c) Two-way repeated-measures analysis of variance
 - (d) Discriminate analysis
 - (e) Regression
 - (f) Factor analysis

C. Use statistical software (SPSS) to perform the following procedures.

1. Two-way repeated-measures analysis of variance
2. Discriminate analysis
3. One-way analysis of covariance
4. Pearson product-moment correlation coefficient
5. Partial correlations
6. Bivariate linear regression
7. Curvilinear relationships
8. Multiple regression
9. Factor analysis
10. Observed power
11. Effect size
12. Check assumptions for statistical tests
13. Create and edit graphs to display results of statistical tests

D. Evaluate educational problems in terms of the appropriate analysis to perform and conduct the procedures.

E. Interpret results of statistical analyses.

F. Report results of statistical analyses

6. Course Content:

The following content will be covered to the extent that time allows.

- A. Course Overview
- B. Two-way repeated-measures analysis of variance
- C. Analysis of covariance
- D. Pearson product-moment correlation coefficient
- E. Partial correlations
- F. Bivariate linear regression
- G. Curvilinear relationships
- H. Multiple regression
- I. Factor analysis
- J. Discriminate analysis
- K. Creating and interpreting graphs
- L. Reporting formats and procedures

7. Course Requirements/Evaluation:

- A. Read all assigned materials prior to class and be prepared to ask questions and respond to questions in class.
- B. Complete all homework assignments.
- C. Complete all tests and the final examination.

Final grades will be based on the following:

| | |
|------------------------------|-------------------|
| 1. Nine homework assignments | 90 points |
| 2. Test 1 | 50 points |
| 3. Mid-term examination | 50 points |
| 4. Final examination | <u>100 points</u> |
| Total | 290 points |

The following grading scale will be used.

- 91% - 100% = A (Superior; very high performance)
- 81% - 90% = B (Above average performance)
- 71% - 80% = C (Average to above average performance)
- 60% - 70% = D (Unacceptable performance)
- Below 60% = F (Failing)

8. **Class Policy Statements:**

The following guidelines should help students to know the course expectations that will help them to complete the course requirements successfully.

- A. There will be no unannounced quizzes in this class. However, it is strongly recommended that students read the material before coming to class. Each student's grade in this course is based on his/her own performance and not in comparison to the performance of others.
- B. Please ask for help if needed **at least 2 work days before class meets**. Email almost anytime works well if you have a quick question. No late homework will be graded. Plenty of lead time will be provided for students in case they have a planned or unplanned absence. The professor will provide due dates for assignments at the time assignments are made or earlier. Only hard copies of homework will be accepted. Assignments should be clean and neat. All assignments should be typed, double-spaced on one side of the paper, using 12-point font and dark, sharp print. Staple all pages together in the upper left corner. Unstapled pages will not be graded. For example, assignments held together with paper clips, folders, rubber bands, three-ring binders etc., will not be accepted. The first page should identify the student by full name, the assignment, and the date. The entire assignment must be turned in at the same time. Partial assignments will not be graded.
- C. Academic dishonesty is an offense that will be reported to the Academic Honesty Committee. (See related pages in the Tiger Cub.)
- D. Attendance/Absences: Attendance is required at each class meeting. It is the student's responsibility to arrange for a classmate to take notes for him/her and to get a copy of all handouts for him/her in the event of an absence.
- E. Accommodations: Students who need special accommodations in class, as provided for by the American Disabilities Act, should arrange a confidential meeting with the instructor during office hours the first week of classes - or as soon as possible if accommodations are needed immediately. You must bring a copy of your Accommodation Memo and an Instructor Verification Form to the meeting. If you do not have these forms but need accommodations, make an appointment with the Program for Students with Disabilities, 1244 Haley Center, 844-2096.
- F. Honesty Code: The University Academic Honesty Code and the Tiger Cub Rules and Regulations pertaining to Cheating will apply to this class.
- G. Professionalism: As faculty, staff, and students interact in professional settings, they are expected to demonstrate professional behaviors as defined in the College's conceptual framework. These professional commitments or dispositions are listed below:

--Engage in responsible and ethical professional practices

- Contribute to collaborative learning communities
- Demonstrate a commitment to diversity
- Model and nurture intellectual vitality

9. Justification for Graduate Credit

Graduate courses “should be progressively more advanced in academic content than undergraduate programs” and should “foster independent learning” (SACS guidelines 3.6.1 and 3.6.2). Further, the guidelines presented in the Statement of Clarification of the Definition and Use of 6000-level courses as approved by the Graduate Council, May 21, 1997 apply:

Factors to consider in evaluating a course for graduate credit include but are not limited to the following:

- use of specific requisites
- content of sufficient depth to justify graduate credit (materials beyond the introductory level)
- content should develop the critical and analytical skills of students including their application of the relevant literature
- rigorous standards for student evaluation (all students in a 6000-level course must be evaluated using the same standards)
- course instructor must hold graduate faculty status or be approved by the Dean of the Graduate School

10. Methodologies and Course Evaluation:

A variety of teaching techniques and strategies will be used in the instruction of this course. The principal methods of instruction include lectures and demonstrations. Students will evaluate the course using a checklist of criteria.

Please Note: This syllabus is tentative and changes may be made as necessary and appropriate.

Please check email BEFORE each class meeting to be sure there are no class announcements. Thanks. ☺ Dr. K.

