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

**Credit:** 3 Semester Hours (Lecture 3)  

**Prerequisites:** ERMA 7300

2. **Date:** January 2014


**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 and partial correlations, bivariate linear regression, and multiple regressions. In addition, the course is designed to assist students in applying statistical theory and procedures 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. These objectives will be covered to the extent that time allows.

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) Analyses of covariance
   (c) Two-way repeated-measures analysis of variance
   (d) Regressions
   (e) Two-way analysis of variance

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

1. Two-way repeated-measures analysis of variance
2. One-way and two-way analysis of covariance
3. Pearson product-moment correlation coefficient
4. Partial correlations
5. Bivariate linear regression
6. Curvilinear relationships
7. Multiple regressions
8. Observed power
9. Effect size
10. Check assumptions for statistical tests
11. 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. One-way and two-way repeated-measures analysis of variance  
C. Analyses of covariance  
D. Pearson product-moment correlation coefficient  
E. Partial correlations  
F. Bivariate linear regression  
G. Curvilinear relationships  
H. Multiple regressions  
I. One-way and two-way analysis of variance  
J. Creating and interpreting graphs  
K. 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 lab assignments.  
C. Complete all tests and the final examination.

Final grades will be based on the following:

<table>
<thead>
<tr>
<th>Item</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Lab assignments</td>
<td>50</td>
</tr>
<tr>
<td>2. Test 1</td>
<td>50</td>
</tr>
<tr>
<td>3. Mid-term examination</td>
<td>50</td>
</tr>
<tr>
<td>4. Final examination</td>
<td>100</td>
</tr>
<tr>
<td>Total</td>
<td>250</td>
</tr>
</tbody>
</table>

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.

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

Students, especially in graduate level courses, are expected to behave as mature adults. Talking to peers during a lecture, a demonstration, or when another student is asking a question in class are rude and disrespectful behaviors. Such behaviors will not be tolerated in class to assure that all students can hear the lecture, demonstration or questions asked in class. Consequently, the professor will ask that students engaged in conversation with classmates during class lectures, demonstrations, or discussions please excuse themselves from the class. Any student excused from the class for lack of professionalism will receive a 10-point deduction from their final points for the course per occurrence.
To be clear – you would not talk to your neighbor if the principal of your school is making a presentation; so don’t do it in this class during my lectures, demonstrations, or contributions by your peers.

If you know you are going to be late for class, please communicate with me prior to class, explain the reason for your anticipated tardiness and then enter the classroom quietly and quickly so that there is minimal distraction to other students.

--Contribute to collaborative learning communities

--Demonstrate a commitment to diversity

--Model and nurture intellectual vitality

9. **Technology Policy**

**Technology Policy**

Technology is part of our everyday lives and advances in technology have made our lives easier, in some respects. In this class we will utilize some of these technologies. However, there is a time and a place for the use of each type of technology.

It is the policy of this Professor that any student using technology (cell phone, tablet devices, any other electronic devices, or programs other than MS Word or SPSS) during class time will be penalized 10 points off their final point average per occurrence.

To make this clear – if I observe you using your phone, your IPad or any other mobile device during lecture or during classroom exercises, you will lose 10 points from your final average, each time I observe you. In addition, if the computer is using any other programs besides MS Word or SPSS, including but not limited to Facebook, You Tube, email service providers and other programs, you will lose 10 points from your final average.

Students are advised to load data sets for the demonstrations for each lesson onto a thumb drive/flash drive or CD before coming to class. Data sets for lab exercises need not be downloaded until class time when pertinent data sets are announced.

**In-Class Exercises**

During the course of this semester, some in-class lab exercises will be collected and graded with the points applied to the student’s final average. The professor reserves the right to determine the number of graded in-class exercises that will be applied to the student’s final average. In-class lab exercises cannot be made up – once missed, if graded, those points are
lost. Students will not be able to determine which in-class exercises will be graded, all in-class exercises should be performed alone, without the aid of other students (unless the Professor has given explicit permission for students to share). Students observed talking, discussing or sharing information during an in-class exercise without permission to do so, will be asked to leave the classroom; a grade of F-Academic Dishonesty will be recorded for the semester for the students involved.

To be clear – if you are talking, sharing information or receiving information from another classmate, during an in-class exercise – that is CHEATING!

NOTE: Statistics is a building process, each course builds on the concepts and ideas learned previously – if you didn’t learn the previous material correctly, you may not be able to learn the new material. If you are struggling, please ask for help early in the semester. I am always open and willing to help you. You may ask or email specific questions to me that are confusing to you or for which you need additional clarification.

10. **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

11. **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.
The Socratic method will be used to check for understanding and clarity. Students are encouraged to offer comments and ask questions at any time during the lectures or demonstrations. Also, students are encouraged to build on other students’ comments and questions. 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.

Please Note: I welcome you to this class and I sincerely want it to be a productive and pleasant learning experience for all of us.

Thanks. 😊 Dr. K.