

**THE UNIVERSITY OF NEW MEXICO**  
**C&J 507 – Section 001**  
**Quantitative Data Analysis**  
**SPRING 2008**

**Class**

**We, 4:00 – 6:30 pm, C&J 121**

**Olaf Werder**

**Office: C&J 230**

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**Office Hours: We, 2:00-4:00pm**

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**Lab**

**Mo, 7:00 – 9:00 pm, C&J 134**

**Benjamin Mabe**

**Office: C&J 129**

**Phone: 241-9363**

**[bmabe@unm.edu](mailto:bmabe@unm.edu)**

**Office Hours: Mo, 12:30 – 3:30 pm**

**Course Materials**

**Required Text**

Your required texts are:

- Salkind, N. J. (2007). *Statistics for people who think they hate statistics. 3<sup>rd</sup> edition.* Thousand Oaks, CA: Sage.
- Pallant, J. (2006). *SPSS Survival Manual.* New York: Open University Press.

Supplemental readings may also be handed out in class. You are responsible for making sure that you have gotten all the readings and supplemental in-class handouts and assignments if you were absent.

**Supplemental Readings**

Listed below are some supplemental books that may be useful resources to you during the semester.

Morgan, S., Reichert, T., and Harrison, T. (2002). *From Numbers to Words.* Boston, MA: Allyn & Bacon.

Keller, D. K. (2006). *The Tao of statistics.* Thousand Oaks, CA: Sage.

Williams, F., & Monge, P. (2001). *Reasoning with Statistics: How to read quantitative research,* (5<sup>th</sup> Ed.). Orlando, FL: Harcourt College Publishers.

## **Course Overview**

The purpose of this course is to provide understanding and skills in quantitative research methods in communication study, with main emphasis on the statistical methods most commonly used in communication research. Quantitative research methods are those in which concepts are operationalized as variables expressed in numerical form. Our course centers on the following statistical methods; Chi square, t-test, analysis of variance (ANOVA), Pearsonian correlation, multiple regression, factor analysis, and exploratory data analysis. About two-thirds of communication research is quantitative in nature. Most of this quantitative research utilizes statistical methods. So whether you intend to use statistical methods in your research, or just read and understand it, you need to possess the skills of statistical methods.

We stress the interrelationship between statistical methods and communication theories. While many of the problem-sets in this course can be completed with a pencil and calculator, you will learn to use the most popular data-analysis tool (SPSS). You will not need to use more than simple mathematical/algebra in this course, at about the level of a high school math course. C&J 507 is required for all MA students in our department because of its fundamental nature in conducting and understanding communication research. Our course is one part of the core program for a Ph.D. degree in Communication at the University of New Mexico. C&J 507, or equivalent, is a prerequisite to C&J 607, Quantitative Research Methods.

## **Expectations of the Students**

- You are expected to attend class, participate in class activities, and complete all homework assignments
- You are expected to participate actively as a peer consultant on other students' research proposals
- You are expected to manage your time and workload
- You are expected to ask for help when needed while developing the ability to work independently
- You are expected to adhere to the ethical standards of the department (see guidelines)

## **Ethical Conduct**

This course emphasizes ethical practices and perspective. Above all, students and instructors should strive to communicate and act, both in class interactions and in assigned coursework, in a manner directed by personal integrity, ho-

nesty, and respect for self and others. Included in this focus is the need for academic honesty by students as stated by the UNM Pathfinder. Students need to do original work and properly cite sources. For example, be aware of plagiarism--directly copying more than 3 or 4 words from another author without quoting (not just citing) the author is plagiarism. Further, dishonesty in quizzes, tests or assignments; claiming credit for work not done or done by others; hindering the academic work of other students; misrepresenting academic or professional qualifications within or without the University; and nondisclosure or misrepresentation in filling out applications or other University records is also considered a violation of ethical conduct.

All such cases will be at a minimum receive a zero grade for that particular exam or assignment and at a maximum may result in failure in the course and be reported to the proper university committee.

## **Students with Disabilities**

**Q**ualified students with physical and learning disabilities needing appropriate academic adjustments should contact me as soon as possible to ensure your needs are met in a timely manner. Handouts are available in alternative accessible formats upon request.

## **Diversity**

**T**his course encourages different perspectives related to such factors as gender, race, nationality, ethnicity, sexual orientation, religion, and other relevant cultural identities. This course seeks to foster understanding and inclusiveness related to such diverse perspectives and ways of communicating.

## **Course Requirements**

**T**he requirements for the course have been designed to provide students with concepts and experiences needed to meet the above-stated objectives and to measure the amount of success toward reaching these objectives.

### **Midterm Examination**

**T**he exam will test your understanding and ability to apply key concepts, calculations and theory. I emphasize critical thinking and application over memorization on exams. Students are expected to complete the exam on the scheduled date.

Make travel arrangements accordingly. Make up exams will ONLY be given if arrangements are made prior to the exam day with me, and only then for appropriate, university approved, situations.

### **Problem Sets**

The purpose of the stat lab is to provide you with instruction and personal tutoring about statistical methods. Each stat lab will typically begin with a half hour or so of lecture and discussion (focused on the week's problem set), led by Ben, followed by individual statistical work on the computers. You should complete all 11 problem sets in our course, but we will drop the one with the lowest score. The problem sets are designed to help you learn the skills involved in each of the statistical methods taught in the course as well as familiarize you, and make you comfortable with, the software used to compute quantitative problems. Ben (and sometimes Olaf) will be there to help out when needed.

### **Article Critique**

You will read and critique one qualitative research article. The article and critique guidelines will be provided.

### **Term Project**

Your term project is an opportunity to explore a topic in communication study in depth, and to internalize the uses of statistical methods. You will design your study, collect the data (unless you already have the data gathered), analyze these data, and report the results in a 20-30 page report, written in APA format that is required by most communication journals. Students who have enrolled in this course in the past have said that the term project has helped them to remove the mystery of communication research. You should plan on obtaining data from at least 100 respondents (or other units of observation/ analysis), depending on power analysis. You can work in pairs, but each person will be responsible for their own data collection, RQ/Hyp, and analysis. You can work together on the review of literature and then combine your data for your final paper and presentation.

The deadlines for your term project are:

1. **February 6:** Pre-proposal (title, objective(s), data-gathering plan). Page limit: One
2. **February 20:** Draft proposal (title, objective(s), research questions/hypotheses, background/importance, proposed research methods). Page limit: Five
3. **March 5:** Proposal, including literature review, Page limit; Ten

4. **April 2:** Final draft of the research methods section of the paper, detailing how you will analyze your data. Page limit: Four new pages (plus the updated versions of the rest of your proposal for a total of 14 pages). Apply for IRB approval.
5. **April 16:** Draft copy of your completed term project paper, Page limit: 30 pages.
6. **April 30 or May 7:** Presentation of your term project in class (15 minutes)
7. **May 14:** Final term paper due (no incompletes, please; they do not work well in our course and they teach you bad scholarly habits).

The criteria for evaluation of the term project paper are those used by most conferences and journals in our discipline:

1. Originality of your study in building upon past research.
2. Quality of the research design, data, and analysis; how well you avoid or explain shortcomings of your research.
3. Quality of writing: Clear, APA style, freedom from spelling or grammatical mistakes, organization of the paper. You can ask a friend to help with the editing.
4. Critical thinking about both past research and your own study (the later evinced by a self-reflexive discussion in your conclusions section).

<b>Course Evaluation</b>
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Your final grade in the course will be determined based on the following:

Ten problem-sets (80 pts.) + CA task (20 pts.) .....	100
Article critique .....	75
In-class midterm exam .....	100
Peer project discussant .....	25
Term project paper .....	<u>200</u>
Total .....	500

A+	97.5%-100%	A	92.5%-97.4%
A-	89.5%-92.4%	B+	87.5%-89.4%
B	82.5%-87.4%	B-	79.5%-82.4%
B-	79.5%-82.4%	C+	77.5%-79.4%

## Tentative Schedule

The tentative course outline is listed below. If changes in the schedule are necessary, they will be announced in class.

DATE	LECTURE	LAB	RELEVANT CHAPTERS	ASSIGNMENTS
Jan 23	<b>Introduction and Refresher</b> Getting acquainted, Quantitative vs. Qualitative Paradigms, What do Statistics do?, Descriptive versus Inferential, Independent versus Dependent Variables, Levels of measurement, Validity and Reliability, Reading research reports	Create an SPSS file and input data	Salkind—1  Pallant—1-5	
Jan 30	<b>Descriptive Statistics</b> Mean and Variance, Indexes of central tendency and dispersion, Variance, Visual display of data, Causality, Ethics	Generate and report descriptive statistics with the provided data set. Create visual representations.	Salkind—2-4  Pallant—6-7	
Feb 6	<b>HYP/RQ, Probability, &amp; Estimations</b> Normal curve, One-tailed/ two-tailed, Sampling error, Null hypothesis, Probability levels, Type I and II errors, Confidence intervals, Significance, Power and Effect Size, Conceptual and operational definitions	Create a simple survey to investigate an area of interest in communication—collect 30 surveys	Salkind—6-7, 9  Pallant--10	Pre-proposal Due
Feb 13	<b>Sampling and Survey Analysis</b> (Scale construction, measurement) Population and sample, Scale construction, Survey methods, Questionnaire creation, Creating an index	Test the construction of the survey; compute alphas	Salkind—  Pallant—8-9	
Feb 20	<b>Content Analysis/Experimental Design</b> Purpose, Coding, Unit of analysis Inter-coder reliability, Designs, Internal validity, Pre/post test	Content analysis exercise (due on March 19)	Salkind—6  Pallant—8-9	Draft proposal Due
Feb 27	<b>Non-parametric Statistics</b> Cross-tabulation, computing chi-square, degrees of freedom, related nonparametric measures	Generate and analyze a crosstab report from the provided data set	Salkind—16  Pallant—16	
Mar 5	<b>Parametric Statistics: t-test, z-score</b> Method for Student's t, Interpretation, z-scores, Repeated measures	Generate and report chi-square and t-test values using the provided data set or your own	Salkind—8,10-11  Pallant--17	Proposal Due 3/9 <i>Review for Midterm</i>
Mar 12	MIDTERM			MIDTERM
Mar 19	NO CLASS—SPRING BREAK			

Mar 26	<b>Parametric Statistics: Single-factor ANOVA</b> Single-factor model, F-test, advantage of F over t, Analysis of covariance, Assumptions for ANOVA	Generate and report ANOVA values using the provided data set or your own	Salkind—12 Pallant—18-19	Content Analysis Due
Apr 2	<b>Multiple Factor Analysis of Variance (factorial ANOVA)</b> Multiple-factor model, Main effect, Interaction effect, Interaction patterns	Generate and report factorial ANOVA values using the provided data set or your own	Salkind—13 Pallant--20	Draft of research methods section
Apr 9	<b>Analyses of Relationships: Correlation</b> Nature of correlations, Pearson coefficient, Covariance, Scatter plots, Partial correlation, Dummy" variables, Outliers, Other visual illustrations	Generate and report correlation values using the provided data set or your own	Salkind—5,14 Pallant—11-12	Article Critique Due
Apr 16	<b>Analyses of Relationships: Regression</b> Regression line, Least squares estimation, Residuals, Hypotheses test with F, Coefficient of determination ( $R^2$ )	Generate and report regression values using the provided data set or your own	Salkind—15 Pallant—13-14	Draft of completed project
Apr 23	<b>Factor Analysis</b> Factor matrix, Eigenvalue, Loadings, Rotation	Perform a factor analysis and report results using the provided data set or your own	Salkind—17 Pallant--15	
Apr 30	<b>Presentations</b>	Open lab		Presentations Discussant Report
May 7	<b>Presentations</b>	Open lab		Presentations Discussant Report
May 14				Project Due