

**COURSE SYLLABUS: PSY 504  
STATISTICS AND METHODOLOGY**

**Instructor:** Marie S. Hammond, Ph.D.  
**Office:** 303A Clay Education Building  
**Phone:** 963 -5152  
**E-Mail Address:** [mhammond1@tnstate.edu](mailto:mhammond1@tnstate.edu) (or [mhammond1@cpsy.com](mailto:mhammond1@cpsy.com) in emergencies)  
**Office Hours:** Mondays: 10:00 am – noon; Tuesdays: 1:00 pm – 4:30 pm;  
Wednesdays: noon – 2:00 pm; Thursdays: 1:00 pm – 4:30 pm

**Catalog Description:**

**PSY 504. STATISTICS AND METHODOLOGY (3).** First course in the masters Research Core sequence. Conceptual treatment of quantitative statistical tools and research methodology for use in research, testing and understanding scientific literature. The student is introduced to different methods of planning and conducting research. Emphasizes the logic underlying research investigation, methodology, analysis, and interpretation of data. Prerequisite: Undergraduate Elementary Statistics.

**Required Texts:**

Cozby, Paul C. (2003). *Methods in Behavioral Research (8<sup>th</sup> ed.)*. Mayfield Publishing Company.  
Witte, R., & Witte, J. (2001). *Statistics (6<sup>th</sup> ed.)*. Fort Worth, TX: Harcourt Brace College Publishers.  
Witte, R., & Witte, J. (2001). *Student Workbook to Accompany Statistics (6<sup>th</sup> ed.)*. Fort Worth, TX: Harcourt Brace College Publishers.

**Suggested Supporting Texts:**

American Psychological Association. (2001). *Publication Manual of the American Psychological Association (5<sup>th</sup> ed.)*. Washington, D.C.: Author.

**Relationship to Knowledge Base Model:**

This course provides methodology necessary to evaluate research data and generate research in psychology and education. Graduate students in our program are being trained to become competent and caring professionals who facilitate learning from a multicultural perspective. Statistical tools enable the student to evaluate evidence obtained from systematic objective procedures rather than by personal experience and authorities, which may have a limited or unicultural perspective. Using such tools, the student is in a position to determine what constitutes “best practice,” the knowledge base of scientific literature that supports practical applications. In this way, the student can make informed decisions concerning appropriate counseling/teaching or other techniques, and to be on the cutting edge of the field as it develops.

Statistical knowledge and skills are thus fundamental to becoming competent and caring professionals. In addition, the master's level student can apply skill in conducting research to generate new knowledge. A multicultural perspective, as it relates to the scientific evaluation of data through statistics, involves consideration of variables of gender, class, race and ethnicity as factors in the selection of effective counseling/teaching strategies, and as variables in basic research studies. (R. Jones, Psy 504 Syllabus)

### **Relationship to Programs:**

This course is required of all students seeking the Masters in Guidance and Counseling or Psychology, and is a prerequisite to more advanced courses in statistics/computer application. The course provides a foundation of basic statistical skills and research methodology necessary to read the research literature and conduct research. (R. Jones, Psy 504 Syllabus)

### **Objectives/Learning Outcomes:**

Objectives of the Course: the student can demonstrate knowledge of the procedures and correct application of basic research methodology and statistical techniques. This course is designed to help you develop skills that will enable you to become both a user and a consumer of basic statistical techniques that are commonly used in contemporary research in the behavioral sciences and education. As many of you are preparing to function as practitioners within multicultural educational and counseling settings, fundamental statistical skills will enable you to better understand and communicate information you may encounter. By the end of this course participants should be able to demonstrate the following:

1. An understanding of the distinction between descriptive and inferential statistics and their applications.
2. Computation and interpretation of descriptive statistical techniques: distributions, averages, variability, the normal curve.
3. An understanding of fundamental concepts in sampling, populations, probability, and sampling distributions.
4. An understanding of the goals and logic of statistical inference and hypothesis testing.
5. An understanding of the basic procedures for developing a research question, selecting procedures and carrying out a research project.
6. Computation and interpretation of measures of correlation.
7. An understanding of how to interpret some basic experimental designs.
8. An understanding of the application of appropriate statistical techniques to basic and applied research in psychology and education.

### **Expanded Description:**

Basic descriptive statistics and research methodology is stressed. Unlike courses taught at a more elementary level that may stress mechanics of hypothesis testing, emphasis is placed on concepts and principles fundamental to an understanding of research in psychology and education.

Expectations:

1. Assigned readings will be completed prior to coming to class.
2. Students will participate in class discussions, online discussion groups and projects, as assigned. The tests will be taken on scheduled dates. **NO MAKEUP TESTS WITHOUT PRIOR ARRANGEMENT WITH THE INSTRUCTOR.**
3. Class assignments will be completed by due date.
4. Graduating students will notify instructor in writing by second week of the term.
5. You are responsible for what you achieve in this class; neither cheating nor plagiarism will be tolerated.
6. Your behavior in the classroom should reflect respect for the rights of classmates and be conducive to an atmosphere of learning.

Attendance:

1. Every student *is* expected to attend each meeting of all classes for which he/she is registered.
2. Attendance sheets will be distributed or class roll will be called at the beginning of each class. Credit for attendance will be based on these sheets or called roll.
3. Only persons registered for this class are allowed to attend unless given specific permission by the instructor. **This includes children or guests**, who are not allowed in the classroom as per university policy.
4. Students are responsible for getting class notes, and handouts if late or absent from class. Absence from class will not be an acceptable excuse for missing assignments or tests.

**Student Requirements/Evaluation:**

There will be one quiz and a two exams, each based on material in the textbook and material presented in class. These may include multiple choice, short essays, and computational items. Any of the **Exercises** in the book may be included on a test. Additionally, each student is expected to turn in a research proposal including a brief literature review, a thorough method section, and a cursory plan for statistical analysis.

Requirements:

Quiz:	20 points	Intermediate paper assignments:
Test #1 & Final Exam:	50 points each	- summary of sources (10 pts.)
Paper:	30 points	- topic/question, introduction, cites (10 pts.)
Discussion group work:	20 points	- paper outline (10 pts.)
TOTAL:	200 points	

Grading System:

A	90% and up	C	70%-79%	F	Less than 60%
B	80%-89%	<b>D</b>	<b>60%-69%</b>		

### Required Paper:

Each student is required to turn in a paper by the due date indicated. This paper will be in the form of a research proposal. The purpose of this exercise is to provide a realistic “tryout” of the students’ skills and knowledge developed over the course of the semester. Students will develop a research question (keep it narrow and focused) and support for the proposed research, structure the research methodology, outline the statistical analysis to be used, and project expected results. The format of the paper will use APA Publication Manual (5<sup>th</sup> edition).

The research question **MUST** be discussed with, **AND** approved by the professor by the fifth class session. Students will be graded on the thoroughness and quality of the research proposal – you will be demonstrating your mastery and understanding of research methodology and statistical analysis. In other words, can you formulate a research question, support it using research, as well as think through how you will conduct the research and analyze the data obtained from the subjects? Your last task will be to think through how you will present the information so that practitioners and other researchers can benefit from your work.

### Discussion group work:

Given the difficulties students generally have in a course of this nature, taking advantage of multiple heads in working through and understanding the issues can be quite helpful. In order to facilitate this process, and to be able to intervene and assist groups in their learning, “discussion groups” will be formed within the WebCT site for this course. The goal is to provide a mutual support network for each student, one that is not too intrusive (like a “chat room”), but that is available relatively flexibly to assist the student in developing their understanding of and ability to apply the course content.

Students are expected to engage in an ongoing dialogue with other group members to discuss questions about the material under discussion in class, their understanding of the materials, and matters related to their research paper and their work in class. Students are expected to contribute at least two “assists” per week. An “assist” is defined as assistance provided to another student, whether in response to a question, or a suggestion for the student to follow-up on. Students are also expected to submit one question or query for assistance to the group at least once per week.

This process should be especially helpful in working on your papers, since students are sometimes hesitant to discuss things with their professor. However, I will be able to monitor the discussion, so that if students are getting off course, I can submit a comment to the group to get things back on track and facilitate everyone’s understanding.

Note that this component of the course will not begin until after WebCT is up and running for this class. The request was placed as soon as possible after my arrival on campus, but I am not sure how long it will take to get everything in place. Until that happens, you are encouraged to use email and other means of communicating.

**Course/Instruction Evaluation:**

Toward the end of the semester, students have the opportunity to evaluate the course and the instructor. These evaluations are administered by a student in the course, and are anonymous. Evaluations are not shared with the instructor until final grades have been submitted.

**Accommodations**

If special accommodations are required by students, the student must request them of the instructor and contact the Office of Disabled Students, 117 Campus Center (963-7400).

**Tentative Course Schedule**

- Week 1:** Introduction to the Course: Introductions; Textbook assignment; Review Syllabus
- Week 2:** Witte: Chapters 1-2 (Introduction; Describing data with tables)  
Cozby: Chapters 1-2 (The scientific understanding of behavior; Where to start)
- Week 3:** Cozby: Chapters 3-4 (Ethical research; Studying Behavior)  
Witte: Chapters 3-4 (Describing data with graphs; Describing data with averages)  
Due: research paper topic and brief summary of sources
- Week 4:** Cozby: Chapters 5-6 (Measurement Concepts; Observing behavior)  
Witte: Chapter 5 (Describing variability)
- Week 5:** **Quiz #1**  
Cozby: Appendix A: Writing Research Reports
- Week 6:** Cozby: Chapters 7-8 (Survey research; Experimental design)  
Witte: Chapters 6-7 (Normal Distributions – basics & applications)  
Due: research question, introductory paragraph, reference list
- Week 7:** Cozby: Chapters 9-10 (Conducting experiments; Complex experimental designs)  
Witte: Chapters 8 (Z-scores)
- Week 8:** Cozby: Chapter 11 (Quasi-experimental, single-subject, and developmental research designs)  
Witte, Chapters 9 (Correlation)  
Finish up business and review
- Week 9:** **Test #1**  
Witte: Chapter 26 (Postscript: Which Test?)
- Week 10:** Witte: Chapters 11-12 (Populations & Samples; Probability)  
Due: outline of paper/research proposal
- Week 11:** Witte: Chapters 13-14 (Introduction to & More about Hypothesis Testing)

**Week 12:** Witte: Chapters 18-19 (T-tests for one sample & two independent samples)

**Week 13:** Witte: Chapter 22 (one way ANOVA)

**Week 14:** Witte: Chapter 24 (Chi-Square)  
**Papers/Research Proposals Due Today!!!!**

**Week 15:** Complete any unfinished business  
Review for final exam

**Week 16:** Final examination: **Test #2**