

**VANDERBILT UNIVERSITY  
SCHOOL OF NURSING**

Summer, 2003

**NRSC 396: Bivariate Statistics for the Health Sciences**

**Course Description:** Introduction to selected bivariate parametric and nonparametric inferential statistics for use with research designs relevant to the health sciences. Emphasizes use of SPSS-PC and interpretation of output generated by the SPSS-PC program. Continuation of selected topics related to quantitative research methods begun in NRSC 393.

**Prerequisites** NRSC 392 (Comparative Research Methods) and NRSC 393 (Quantitative Research Methods), or consent of instructor. A basic working knowledge of SPSS-PC or similar statistical software is assumed.

**Credit** 2 semester hours

**Time/place** Wednesdays, 9:00 a.m – noon;  
Room 250 Frist Hall

<b>Faculty</b>	Ken Wallston, Ph.D.*	and	Joe Hepworth, Ph.D.
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\* Course coordinator

**Course Objectives:** At the conclusion of this course, the student will be able to:

1. Select and communicate the reasoning behind the appropriate bivariate inferential statistic(s) suitable for most situations arising in the health sciences.
2. Utilize SPSS-PC to compute relevant statistics and generate statistical reports.
3. Communicate, both verbally and in writing, the proper interpretation of selected bivariate statistics from computer printouts and journal articles.
4. Write a data analysis section as part of a quantitative research proposal.
5. Describe the steps used to develop and test the psychometric properties of a scale using an existing data set.

**Competencies:** In meeting these objectives, students will develop the following competencies:

1. Critical analysis of the research literature in the health sciences.
2. Knowledge of research methods (as applied to data analysis).
3. Critical comparisons of research methods (as applied to choice of statistical procedures).
4. Dissemination of research findings (and results).
5. Quantitative data management strategies.
6. Quantitative data analysis techniques.

**Course Requirements:**

1. Weekly preparation for class, including assigned readings.
2. Completion of occasional homework assignments (including writing up the Results section for one or more studies).
3. Rewriting the quantitative research proposal from NRSC 393 based on feedback and adding a data analysis section
4. Successful completion of one take-home examination.

**Texts:**

**Required:**

Munro, Barbara Hazard. 200X. *Statistical Methods for Health Care Research, 4th Edition*. Philadelphia, PA: Lippincott.  
Pedazur, Elazar J. and Schmelkin, Liora Pedhazur. 1991. *Measurement, Design, and Analysis: An Integrated Approach*. Hillsdale, NJ: Erlbaum.

**Supplemental:**

Hays, W.L. 1991. *Statistics, 5<sup>th</sup> Edition*. Orlando, FL: Harcourt Brace.

In addition, journal articles reporting statistical procedures covered in class will be occasionally assigned. Students will need access to SPSS-PC.

**Evaluation:** Student performance will be based on completion of homework assignments (30%); a rewrite of a quantitative research proposal including a section on data analysis (30%); and a take-home final examination (40%).

**GRADING SYSTEM:**

A+	=	96.5 - 100	A	=	92.5 - 96.4	A-	=	89.5 - 92.4
B+	=	86.5 - 89.4	B	=	82.5 - 86.4	B-	=	79.5 - 82.4
C+	=	76.5 - 79.4	C	=	72.5 - 76.4	C-	=	69.5 - 72.4
F	=	≤ 69.4						

**HONOR CODE POLICY:** Students are required to adhere to the Vanderbilt University Honor Code for the completion of all work used to determine the student=s grade unless otherwise stipulated. Students may consult with one another on routine homework assignments, but not on the take-home examinations.

**DUE PROCESS:** The instructors welcome the opportunity to work closely with you to facilitate your learning and to assist you in meeting course objectives. If at any time you have concerns regarding the course, discuss the problem first with Dr. Wallston. If further discussion is needed, contact Dr. Nancy Wells, Director of the Ph.D. Program in Nursing Science. You should bring a written statement of the problem or grievance to this meeting. If the problem still persists, you may contact Dr. Peter Buerhaus, Associate Dean for Research of the School of Nursing. If this does not resolve the matter, contact Dr. Colleen Conway-Welch, Dean of the School of Nursing.

NRSC 396 Class Schedule -- Summer, 2003

WEEK	DATE(s)	TOPICS	READINGS
Week 1	May 7*	Review of Bivariate Statistics Covered in NRSC 393 Scale Development Project: Next Steps	
Week 2	May 14	Scale Development Using Existing Data-I	
Week 3	May 21*	Simple Linear Regression	Munro: Chapter on Regression (up to Section on Multiple Regression) P & S Ch. 17 Hand-out Homework Assignment (Due 5/28)
Week 4	May 28*	Regression Diagnostics	Munro: Chapter on Regression (Pages on Testing Assumptions by Analyzing Residuals) Visit by Katherine Jones, PhD, RN (Faculty Candidate)
Week 5	June 4	Scale Development using Existing Data-II	
Week 6	June 11	Oneway ANOVA, Post-Hoc Tests, Kruskal-Wallis test	Munro: Chapter on Differences Among Group Means: One- ANOVA (up to Planned Comparisons) P&S: Chapter 19 Hand-out Homework Assignment (Due 6/18)
Week 7	June 18*	Planned Comparisons	Remainder of Munro chapter
Week 8	June 25	Review of Bivariate Statistics Last day to hand-in Revised Research Proposal Hand-out Take-home final examination (Due 7/2)	

\* Dates when Joe Hepworth will be in class