UNIVERSITY OF VIRGINIA
SCHOOL OF NURSING

GNUR 8140
STATISTICAL METHODS FOR HEALTHCARE RESEARCH II
SPRING 2016

COURSE INSTRUCTOR	Joel G. Anderson, PhD, CHTP Assistant Professor
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OFFICE HOURS	Wednesdays 1:00pm to 4:00pm, MCL 4027
LECTURE & LAB LOCATION	CMNEB, Room 1120

COURSE DESCRIPTION

Stats II builds upon the foundation gained in Stats I and expands the interpretation of statistical results. In Stats II, we will transition from simply describing a result as significant or non-significant to interpretation of overall results that may or may not be statistically and/or clinically significant. The techniques in Stats II build upon those learned in Stats I and expand these techniques to allow for controlling of sample characteristics and to begin to assess change in research outcomes over time. Special attention will be given to the testing of the assumptions of various statistical methods and to the application and choice of particular statistical models and procedures, with the emphasis on healthcare research. Additionally, there will be a greater focus on writing and presentation skills related to research through a statistical lens, with the final class consisting of a research poster session.

LEARNING OBJECTIVES

Through committed engagement in this course, students will be able to:

1. Explain key concepts related to multivariate statistical analysis and the relationship to the conduct of health care research.
2. Demonstrate proficiency in using statistical software.
3. Analyze health care research questions to determine and apply appropriate statistical procedures.
4. Apply multivariate procedures for statistical comparison, classification, complexity reduction, discrimination, and modeling to various problems in health care research.
5. Present researching findings effectively, both textually and orally.
6. Demonstrate an increased independence, emerging knowledge and skill as an analyst of health care research projects.

FORMAT

This course series is didactic and consists of lectures, discussion and computer analyses of research data. The assigned computer analyses will provide you with an opportunity to gain experience in the use of statistical software for data management and analyses. The stats lab will be offered weekly, except as noted in the schedule. Interactive tutorials on essential aspects of how to use SPSS will be provided, and will involve hands on time using the software.

TEXTBOOKS AND SOFTWARE

Textbooks

Munro, Plichta and Kelvin (2012). Munro's Statistical Methods for Health Care Research (6th *edition*). Lippincott Williams & Wilkins, Philadelphia. ISBN-10: 145111561X
(*Note: This is the same text used for GNUR 8130.*)

In addition to this text, a course pack will be provided to guide your note taking during class. The course pack will be delivered to you in sections relating to each of the statistical topics covered during the course so that you may organize these in a fashion that makes sense to you. The course pack also will include various appendices related to course assignments (the data books) and other resources you will need (statistical tables).

Additional resources will be posted on Collab in advance of each class topic. These handouts will be used during both the lecture time and the lab component, and will include items related to the assignments in lab or outside of class (the data books).

Software

The SPSS standard graduate pack statistical software purchased for GNUR 8130 will be used in this course.

ASSESSMENTS

Data Books (*60% of course grade*):

Data books are a way of acquiring experience in using statistical analysis methods to process real-world data to ask and answer specific research questions. Using research data provided on Collab (or approved data from your research advisor), you will apply the techniques discussed in lecture and practiced in lab to evaluate data, generate statistical results and interpret these results.

Data books will be completed on the topics outlined below. Specific due dates for these assignments also are given below. **Data book assignments must be submitted on the specified due date to obtain full credit.** Late assignments will not be accepted without prior permission. Specific information concerning the variables to include for each data book will be posted on the course Collab site.

DATA BOOK TOPIC	*DUE DATE*
Descriptive Statistics and Baseline Tests	February 9th
Hierarchical Multiple Regression	February 16th
Multinomial Logistic Regression	March 1st
Repeated Measures ANCOVA	March 29th
Mixed Linear Model	May 3rd

Data books will be comprised of two parts: the "working components" and the manuscript draft. Additional information can be found on Collab and will be discussed in class.

Note: You will be given the opportunity to resubmit one data book for which you have received a grade <80%. A different data set must be used for the resubmission and the data book must cover the same statistical technique. The average score of the two data books (the original and the resubmission) will be used to determine the final grade for that particular data book assignment. These resubmissions will be due the last day of class.

Journal Club (*10% of course grade*):

In Stats II, we will continue critiquing peer-reviewed articles in a format fashioned after academic journal clubs. In a journal club, each member is responsible for selecting and leading the discussion of a relevant article. Journal clubs are useful in learning how to assess the literature with a critical eye, observe different ways in which authors present information, discuss the ins and outs of publication, and become more comfortable in talking about research findings.

Journal club topics and presentation dates are listed below. These dates coincide with the due dates and topics for data book assignments.

JOURNAL CLUB TOPIC	*PRESENTATION DATE*
Hierarchical Multiple Regression	February 16th
Multinomial Logistic Regression	March 1st
Repeated Measures ANCOVA	March 29th
Mixed Linear Model	April 26th

Each student will be responsible for one journal club presentation and for choosing an article related to his/her assigned topic. Journal club topics will be assigned at random during the first class session. Articles must be approved by me *at least one week* prior to distribution to the class.

The rubric for evaluating the journal club presentations will be posted on the course Collab site. Grading of journal club presentations will involve peer evaluation.

Quizzes (*15% of course grade*):

There will be 5 quizzes in Stats II. Each of these quizzes will be delivered via Collab and will focus on application and conceptualization of the course content rather than the simple recollection of facts, in a similar fashion to the quizzes in Stats I. These quizzes will be designed to assess learning as we go along.

You will have a 4-day window for completing the quizzes (e.g., from Friday to Monday before the class session) as noted in the syllabus. If you anticipate needing more time to take the quizzes, please see me as soon as possible to work out the logistics.

Student Poster Session (*15% of course grade*):

In Stats II, students will take part in a public poster session. The poster session will involve presentations by each student concerning his or her draft manuscript generated from the data books. The poster session will be held during the last class session on **May 3rd**.

Instructions and the rubric used for evaluating the posters will be posted on the course Collab site. Grading of poster presentations will involve peer evaluation.

COURSE SCHEDULE AND TOPICS (*Schedule subject to change*)

Date	Lecture Topics	Pre-lecture Readings	Data Book, Journal Club & Quiz Topics
January 26th	Multiple regression	Munro, Ch. 13	
February 2nd	Multiple regression (*cont*)		
February 9th	Multinomial logistic regression	Munro, Ch. 14 ***No journal club***	Descriptive statistics and baseline tests
February 16th	Multinomial logistic regression (*cont*)	Journal club selections	Hierarchical multiple regression
February 23rd	Multi-factor and Repeated measures ANOVA/ANCOVA	Munro, Ch. 9	
March 1st	Multi-factor and Repeated measures ANOVA/ANCOVA (*cont*)	Munro, Ch. 9 Journal club selections	Multinomial logistic regression
March 8th	**SPRING BREAK** ***No lecture or lab***		
March 15th	Multi-factor and Repeated measures ANOVA/ANCOVA (*cont*)		
March 22nd	Multi-factor and Repeated measures ANOVA/ANCOVA (*cont*)		
March 29th	Mixed linear models	Hayes, 2006 (Additional readings will be posted on *Collab*) Journal club selections	Repeated measures ANCOVA
April 5th	Mixed linear models (*cont*)		
April 12th	Mixed linear models (*cont*)		
April 19th	Mixed linear models (*cont*)		
April 26th	Overview of factor analysis	Journal club selections (*mixed linear models*)	
May 3rd	**POSTER SESSION (*no lab*)**		Mixed linear models

POLICIES AND PROCEDURES

COURSE EVALUATION

Students must earn a passing grade on each category of the assessment methods (data books, quizzes, and poster) to pass the course.

Data book assignments must be submitted on the specified due date to obtain full credit. Late assignments will not be accepted without prior permission.

School of Nursing Grading Scale:

97-100	= A+	77-79	=	C+
94-96	= A	74-76	=	C
90-93	= A-	70-73	=	C-
87-89	= B+	67-69	=	D+
84-86	= B	64-66	=	D
80-83	= B-	60-63	=	D-
		Below 60	=	F

Students should refer to the University Record and School of Nursing Student Handbook for the complete policy on the grading scale and unsatisfactory grades. Below 80 is a failing grade for graduate nursing students.

LATE ASSIGNMENTS

If other obligations or circumstances will prevent you from completing any of the course requirements, please contact me so that we can create a solution. **Don't wait until you are behind!** If you contact me at least two weeks prior to a due date, we may be able to extend the deadline to accommodate any extenuating circumstances. Otherwise, **late assignments will be docked 0.5 points per business day** to encourage you to keep up with the course.

PRIVACY & CONFIDENTIALITY GUIDELINES

Faculty and students who utilize patient information as part of any educational experience must follow patient privacy and confidentiality guidelines outlined in the School of Nursing Handbook policy on research and clinical data. These guidelines include, but are not limited to, HIPPA regulations. These guidelines need to be followed when constructing and using research databases.

ATTENDANCE/CANCELLATIONS

Class attendance is expected. Official cancellations as a result of weather will be determined by UVA. Please call the SON's main phone for official cancellation information: (434) 924-0141. Other cancellations are rare, but if necessary, an e-mail will be sent related to the cancellation.

In the event of widespread illness, the syllabus may be modified to facilitate course completion.

HONOR CODE

Please review the University of Virginia Honor Policy (www.virginia.edu/honor/pledge.html), which will apply in this course.

The pledge, which **must be included on all graded assignments**, is as follows:

On my honor as a student I have neither given nor received aid on this assignment.

MISSION AND PHILOSOPHY

UNIVERSITY OF VIRGINIA MISSION STATEMENT

- The central purpose of the University of Virginia is to enrich the mind by stimulating and sustaining the spirit of free inquiry directed to understanding the nature of the universe and human existence. The philosophy of the School of Nursing is consistent with that of the University as it prepares leaders in health care.

SCHOOL OF NURSING MISSION STATEMENT AND PHILOSOPHY

- The University of Virginia's School of Nursing is committed to educating future leaders, extending the boundaries of nursing and health care knowledge through research, and providing high-quality and compassionate health care in service to the citizens of the Commonwealth of Virginia, the nation, and the world.
  (*Approved by Faculty Organization, April 2008*)

The PhD program prepares graduates to:

- Demonstrate advanced knowledge of nursing, related sciences and humanities, and methods of inquiry.
- Expand the research base of nursing theory and practice.
- Serve the Commonwealth, the nation, and the world by addressing major nursing and health care issues in a scholarly manner.