NURS 6319: Psychometrics and Nonparametric Statistics
Fall 2014

Instructor(s): Daisha J. Cipher, Ph.D.

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Office Hours: Wednesdays 2pm to 4pm

Section Information: NURS 6390, Section 001

Time and Place of Class Meetings:
Pickard Hall, room 216, Wednesday, 4:00 – 6:50 pm and online via Blackboard

Description of Course Content:
This course provides students with the basic knowledge and skills to effectively use biostatistics in different research design and data analysis, and to understand articles in related professional journals. Topics include choosing correct statistical methods and study designs in nursing research and practice; reliability and validity of instruments commonly used on nursing; outcome measurement in health care; common research designs in health care research; nonparametric statistics for dependent samples and independent samples; logistic regression; and survival analysis.

Student Learning Outcomes:
1. The identification and classification of variables in health care research.
2. Understanding outcome measurement specific to patient care settings.
3. Building and managing databases of patient outcome data.
4. Choosing and applying the appropriate research design to answer a given study research question.
5. Making correct statistical choices (parametric versus nonparametric) for comparing dependent and independent samples.
6. Conceptualize, compute, summarize, and interpret the Wilcoxon signed test and Signed-rank test.
7. Conceptualize, compute, summarize, and interpret logistic regression.
8. Compute and interpret test of hypotheses for logistic regression.
9. Discuss the relationship between logistic regression and contingency table analysis.
10. Conceptualize one-sample and two-sample survival analysis.
11. Compute and interpret the Kaplan-Meier survival function.
12. Conceptualize and interpret Cox regression models.
13. Use SPSS to analyze data using each of the statistical methods covered in this class

Required Textbooks and Other Course Materials:

None – handouts are the primary reading material, located on Blackboard (elearn.uta.edu)

Recommended:
1. Daniel, W.W. (2000). *Applied Nonparametric Statistics*. Duxbury Press.
2. Zar, J.H. (1999). *Biostatistical Analysis, 4th ed.* Upper Saddle River: Prentice-Hall.
3. Green, S.B., & Salkind, N.J. (2004). *Using SPSS for Windows and Macintosh: Analyzing and Understanding Data* (4th Edition): Prentice-Hall.

Course Topics:

Bold font indicates in-class dates;
italicized font indicates online class dates

Review Introductory Statistical Concepts Reliability – Internal consistency ***Handout 1 + Instruments***	**August 27**
Reliability and Validity: Internal consistency, test-retest & inter-rater reliability Convergent and Discriminant Validity Bland and Altman Plots ***Handout 2***	**September 3** **HW 1 due**
Discussion: Reliability and Validity	*September 10 online*
Scales of Measurement Measurement Theory Outcome Measurement in Health Care Applied Exploratory Factor Analysis: Understanding Factor Loadings in Measurement ***Handouts 3, 4 + Articles***	**September 17** **HW2 due**
Discussion: Factor Analysis	*September 24 online*
Choosing Between Parametric and Nonparametric Statistics; Performing Tests of Normality Nonparametric statistics for independent samples: Mann-Whitney U Test Nonparametric statistics for independent samples: Kruskal-Wallis Test Nonparametric statistics for dependent samples: Spearman Rank-Order Correlation Coefficient Sign Test and Wilcoxon Signed-Rank Test ***Handouts 5 through 8***	**October 1** **HW 3 due**
Discussion: Nonparametric Alternatives to the t-test	*October 8 online*
Odds Ratios Logistic Regression ***Handouts 9, 10, 11***	**October 15** **HW 4 and 5 due**

Discussion: Multiple Logistic Regression	*October 22 online*
Life Tables and Kaplan Meier Survival Analysis Cox Proportional Hazards Regression ***Handouts 12 and 13***	**October 29** **HW 6 and 7 due**
Discussion: Cox Proportional Hazards Regression	*November 5 online*
Final Exam Review ***Review Worksheet and Datasets***	**November 12** **HW 8 and 9 due**
Discussion: Review Concepts	*November 20 online*

Thanksgiving Holiday: no class activity the week of November 28

FINAL EXAM IN CLASS	**December 3**

Requirements:

Course prerequisite: Introductory statistics course; mastery of basic computer management tasks, proficiency in Microsoft Word and Microsoft Excel, proficiency performing functions within any statistical software package. Moreover, this class requires mastery in the application of hypothesis testing, p values, descriptive statistics, correlation, confidence intervals, ANOVA, t-tests, and chi-square tests.

This course requires the completion of a final exam, 9 homework assignments, and online participation. Homework will be assigned regularly to help students apply the lecture topic. Most assignments will require both pen/pencil/calculator as well as a computer with the statistical software package, SPSS. SPSS is available in Pickard Hall 216. You must accompany all Homework Assignments with "Homework Summary Sheet" provided on the handout website.

Online Discussion Forums:
For those weeks that involve an online discussion, your topic will be introduced on Blackboard on the Sunday prior to the date shown on the schedule at 8:00 pm CST. Postings of comments and questions should begin on Monday and no later than Tuesday at 11:59 pm so that all discussion can be completed by Friday at 1:00pm. Essentially, the main discussion points should be made in the early to middle part of the week so that everything can be wrapped up by Friday afternoon.

Your grade for online participation will be based on postings made between the time at which the topic is introduced on Sunday night and Friday at noon. Students who begin their postings after Tuesday night can receive no more than 7 points for the week.

There will be 6 weeks of online posting requirements, for a maximum of 10 points per week. Final totals will be inflated to a scaling of 100 before being submitted to the grade calculation described below. **Students must post at least 2 substantive postings to receive a perfect "10".**

Homework:
Homework is due on the date indicated on the schedule, in class (no electronic submissions) by 4:00pm CST. Homework turned in after the due date will not be counted, unless you obtain written permission from the instructor. Please note that such permission will only be granted in cases of family emergency/illness or a similar event.

HW 1: Compute KR-20 coefficient on dataset using pencil/paper and SPSS

HW 2: Compute Kappa coefficient on dataset using pencil/paper and SPSS

HW3: Compute principal components analysis using SPSS

HW 4: Compute Mann-Whitney U test using pencil/paper and SPSS

HW 5: Compute Kruskal-Wallis Test using pencil/paper and SPSS

HW 6: Compute Sign test and Wilcoxon signed ranks test using pencil/paper and SPSS

HW 7: Compute multiple logistic regression analysis using SPSS

HW 8: Compute Kaplan-Meier survival analysis using SPSS

HW 9: Compute Cox PH regression analysis using SPSS

Teaching Methods/Strategies:
This course involves the applications of statistical formulas and concepts using both pencil/paper problem solving as well as using computer applications. The course materials are presented audiovisually and active participation from all class members is expected.

Descriptions of major assignments and examinations with due dates: There are 6 discussion forums. The 9 homework assignments are due on the dates indicated above. The final exam is on December 4. Each of these account for 33.33% of the course grade. Failure to take the exams on the designated exam days will result in an exam grade of zero.

Grading Policy:

	% of Final Grade
Homework Assignments:	1/3
Online Participation	1/3
Final Exam:	1/3

Students with a final grade of 91 to 100 will receive an 'A'
Students with a final grade of 81 to 90 will receive a 'B'
Students with a final grade of 71 to 80 will receive an 'C'
A final grade of <71% constitutes failure.

Attendance Policy: Regular class attendance and participation is expected of all students. Students are responsible for all missed course information.

Drop Policy: Students may drop or swap (adding and dropping a class concurrently) classes through self-service in MyMav from the beginning of the registration period through the late registration period. After the late registration period, students must see their academic advisor to drop a class or withdraw. Undeclared students must see an advisor in the University Advising Center. Drops can continue through a point two-thirds of the way through the term or session. It is the student's responsibility to officially withdraw if they do not plan to attend after registering. **Students**

will not be automatically dropped for non-attendance. Repayment of certain types of financial aid administered through the University may be required as the result of dropping classes or withdrawing. Contact the Financial Aid Office for more information.

Graduate students who wish to change a schedule by either dropping or adding a course must first consult with their Graduate Advisor. Regulations pertaining to adding or dropping courses are described below. Adds and drops may be made through late registration either on the Web at MyMav or in person through the student's academic department. Drops can continue through a point two-thirds of the way through the term or session. It is the student's responsibility to officially withdraw if they do not plan to attend after registering. **Students will not be automatically dropped for non-attendance**. Repayment of certain types of financial aid administered through the University may be required as the result of dropping classes or withdrawing. Contact the Financial Aid Office for more information. The last day to drop a course is listed in the Academic Calendar available at http://www.uta.edu/uta/acadcal.

1. A student may not add a course after the end of late registration.
2. A student dropping a graduate course after the Census Date but on or before the end of the 10th week of class may with the agreement of the instructor, receive a grade of W but only if passing the course with a C or better average. A grade of W will not be given if the student does not have at least a C average. In such instances, the student will receive a grade of F if he or she withdraws from the class. Students dropping a course must: (1) complete a Course Drop Form (available online http://www.uta.edu/nursing/MSN/drop_resign_request.pdf or Graduate Nursing office rooms 512 or 606); (2) obtain faculty signature and current course grade; and (3) submit the form to Graduate Nursing office rooms 512 or 606.
3. A student desiring to drop all courses in which he or she is enrolled is reminded that such action constitutes withdrawal (resignation) from the University. The student must indicate intention to withdraw and drop all courses by completing a resignation form in the Office of the Registrar or by: (1) Completing a resignation form (available online http://www.uta.edu/nursing/MSN/drop_resign_request.pdf or Graduate Nursing office rooms 512 or 606; (2) obtaining faculty signature for each course enrolled and current course grade; (3) Submitting the resignation form in the College of Nursing office room 512 or 606; and (4) The department office will send resignation form to the office of the Registrar.
4. In most cases, a student may not drop a graduate course or withdraw (resign) from the University after the 10th week of class. Under extreme circumstances, the Dean of Graduate Studies may consider a petition to withdraw (resign) from the University after the 10th week of class, but in no case may a graduate student selectively drop a course after the 10th week and remain enrolled in any other course. Students should use the special Petition to Withdraw for this purpose. See the section titled Withdrawal (Resignation) From the University for additional information concerning withdrawal. http://www.grad.uta.edu/handbook

Last Day to Drop or Withdraw: October 29, 2014

Americans with Disabilities Act: The University of Texas at Arlington is on record as being committed to both the spirit and letter of all federal equal opportunity legislation, including the *Americans with Disabilities Act (ADA)*. All instructors at UT Arlington are required by law to provide "reasonable accommodations" to students with disabilities, so as not to discriminate on the basis of that disability. Any student requiring an accommodation for this course must provide the instructor with official documentation in the form of a letter certified by the staff in the Office for Students with Disabilities, University Hall 102. Only those students who have officially documented a need for an accommodation will have their request honored. Information regarding diagnostic criteria and policies for obtaining disability-based academic accommodations can be found at www.uta.edu/disability or by calling the Office for Students with Disabilities at (817) 272-3364.

Academic Integrity: It is the philosophy of The University of Texas at Arlington that academic dishonesty is a completely unacceptable mode of conduct and will not be tolerated in any form. All persons involved in academic dishonesty will be disciplined in accordance with University regulations and procedures. Discipline may include suspension or expulsion from the University. According to the UT System Regents' Rule 50101, §2.2, "Scholastic dishonesty includes but is not limited to cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts."

Plagiarism: Copying another student's paper or any portion of it is plagiarism. Copying a portion of published material (e.g., books or journals) without adequately documenting the source is plagiarism. Consistent with APA format, if five or more words in sequence are taken from a source, those words must be placed in quotes and the source referenced with author's name, date of publication, and page number of publication. If the author's ideas are rephrased, by transposing words or expressing the same idea using different words, the idea must be attributed to the author by proper referencing giving the author's name and date of publication. If a single author's ideas are discussed in more than one paragraph, the author must be referenced, according to APA format. Authors whose words or ideas have been used in the preparation of a paper must be listed in the references cited at the end of the paper. Students are expected to review the plagiarism module from the UT Arlington Central Library via http://library.uta.edu/tutorials/Plagiarism

Student Support Services Available: The University of Texas at Arlington provides a variety of resources and programs designed to help students develop academic skills, deal with personal situations, and better understand concepts and information related to their courses. These resources include tutoring, major-based learning centers, developmental education, advising and mentoring, personal counseling, and federally funded programs. For individualized referrals to resources for any reason, students may contact the Maverick Resource Hotline at 817-272-6107 or visit www.uta.edu/resources for more information.

Electronic Communication Policy: The University of Texas at Arlington has adopted the University "MavMail" address as the sole official means of communication with students. MavMail is used to remind students of important deadlines, advertise events and activities, and permit the University to conduct official transactions exclusively by electronic means. For example, important information concerning registration, financial aid, payment of bills, and graduation are now sent to students through the MavMail system. All students are assigned a MavMail account. ***Students are responsible for checking their MavMail regularly.*** Information about activating and using MavMail is available at http://www.uta.edu/oit/email/. There is no additional charge to students for using this account, and it remains active even after they graduate from UT Arlington.

To obtain your NetID or for logon assistance, visit https://webapps.uta.edu/oit/selfservice/. If you are unable to resolve your issue from the Self-Service website, contact the Helpdesk at helpdesk@uta.edu.

Librarian to Contact:
Helen Hough, *Nursing Librarian*
Phone: (817) 272-7429
E-mail: hough@uta.edu
http://libguides.uta.edu/nursing

College of Nursing additional information:

Status of RN Licensure: All graduate nursing students must have an unencumbered license as designated by the Texas Board of Nursing (BON) to participate in graduate clinical nursing courses. It is also imperative that any student whose license becomes encumbered by the BON must

immediately notify their Associate Dean for the MSN Program, Department of Advanced Practicum Dr. Gray/Dr. Schira. The complete policy about encumbered licenses is available online at: www.bon.state.tx.us

Student Code of Ethics: The University of Texas at Arlington College of nursing supports the Student Code of Ethics Policy. Students are responsible for knowing and complying with the Code. The Code can be found in the student handbook online: http://www.uta.edu/nursing/handbook/toc.php

No Gift Policy: In accordance with Regent Rules and Regulations and the UTA Standards of Conduct, the College of Nursing has a "no gift" policy. A donation to one of the UTA College of Nursing Scholarship Funds, found at the following link: http://www.uta.edu/nursing/scholarship_list.php would be an appropriate way to recognize a faculty member's contribution to your learning. For information regarding Scholarship Funds, please contact the Dean's office.

Course Evaluation:
Course evaluation is a continuous process and is the responsibility of both the faculty and the students. Ongoing feedback (formative evaluation) is the only way to improve the course and to assure that it meets your needs and those of the discipline of nursing. It is your responsibility to give immediate, constructive feedback regarding class structure and process.

Formal evaluation of the course and the instructor occurs at the end of the course. You will receive instructions at your University of Texas at Arlington e-mail address about how to complete the course evaluations online. Your ratings and comments are sent to a computer not connected to the College of Nursing, and faculty members do not receive the results until after they have turned in course grades.

Bomb Threats:
If anyone is tempted to call in a bomb threat, be aware that UTA will attempt to trace the phone call and prosecute all responsible parties. Every effort will be made to avoid cancellation of presentations/tests caused by bomb threats. Unannounced alternate sites will be available for these classes. Your instructor will make you aware of alternate class sites in the event that your classroom is not available.

Online Conduct: The discussion board should be viewed as a public and professional forum for course-related discussions. Students are free to discuss academic matters and consult one another regarding academic resources. The tone of postings should be professional in nature.
It is not appropriate to post statements of a personal or political nature, or statements criticizing classmates or faculty. Inappropriate statements/language will be deleted by the course faculty and may result in denied access to the Discussion boards. Refer to UTACON Student Handbook for more information.

For this course Blackboard communication tools, discussion boards, and UTA MAV email will be used extensively and should be checked often.

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