University of Florida College of Public Health & Health Professions
PHC 6053: Regression Methods for the Health and Life Sciences
(Spring 2014 Sections 4958 & 164D)
Monday 7th Period HPNP G114 & Wednesday 7th – 8th Period HPNP G101

Instructor Information:

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Prerequisites: PHC 6052 or equivalent and familiarity with SAS at the PHC 6052 level. All students must have access to SAS 9.2 or higher, preferably for in-class use. See https://software.ufl.edu/agreements/sas/student/ for SAS program purchase information and online documents. Other computing requirements can be found at http://www.mph.ufl.edu/students/computer.htm.

Course Overview: This course introduces graduate students in fields other than statistics to a wide range of modern regression methods. Emphasis is on modeling driven by actual data from studies in a variety of areas, primarily from health, biology, and ecology. The primary topics are multiple linear regression, logistic regression, and Poisson regression. A main goal is to learn what approach to use among the linear and nonlinear models, and how to determine if the fit is adequate. By the end of the course, students will achieve competency in carrying out the analyses in SAS.

Course Objectives: Upon completion of the course, students will be able to:
- Select appropriate methods for a scenario; determine if a linear or a nonlinear approach is appropriate
- Use statistical software for performing regression analysis in the SAS language
- Test and interpret linear models for continuous outcome data (normal linear model)
- Test and interpret models for categorical outcome data (logistic and Poisson regression)
- Draw appropriate conclusions for both randomized designed experiments and observational studies
- Communicate clearly to subject matter experts the purposes and results of complex statistical analysis, both orally and in writing.

Required Textbook: Vittinghoff, Glidden, Shiboski, and McCulloch (2012): Regression methods in Biostatistics 2nd edition, Springer. Book website: http://www.biostat.ucsf.edu/vgsm. The textbook is available online through the UF library (http://link.springer.com/book/10.1007/978-1-4614-1353-0#). A PDF file will also be provided through the E-Learning site for this course.

Recommended SAS books: The Little SAS Book: A Primer 5th ed. (2012), by Lora Delwiche and Susan Slaughter - Available online via UF Library (http://library.books24x7.com/toc.aspx?bookid=50231) or Applied Statistics and the SAS Programming Language (2005), by Ron P. Cody and Jeffrey K. Smith.

Assigned readings should be completed prior to the class on the date assigned in the schedule. Any questions you have regarding material presented should be clarified by asking in class or posting on the course discussion board. YOU ARE RESPONSIBLE FOR ALL MATERIAL IN THESE ASSINGMENTS.

E-Learning: An E-Learning site in Sakai will be available for the course containing grades, discussion boards, and other course information. E-learning is accessible at lss.at.ufl.edu or through my.ufl.edu. You must have a valid Gatorlink ID and password. For assistance, call the UF Help Desk at 392-HELP

Communication:
- Questions about course material should be posted on the course discussion boards in E-Learning.
- Questions of a personal nature (grades, etc.) should be sent via email or discussed in person.
- **Note:** When emailing the instructor using the E-learning mail tool, ALWAYS check the box "send a copy to the recipients email." This will result in the fastest possible response.

Course Requirements/Evaluation/Grading:
Your grade in this course will be based on exams, assignments, and attendance. Total points earned will be based on the following:

☐ Two Exams (20% each) ☐ Assignments (50%) ☐ Attendance (10%)

- Exams and assignments often require data analysis
- Assignments will be due Wednesday at 9 PM with a very short and strict grace period of 1 hour.

No late work will be accepted. No make-up exams will be given except as deemed necessary by University of Florida policy. The grading scale for this course consists of the scale, including minus grades, below. The conversion factors for grade point values assigned to each grade are also included (in parentheses):

94% - 100% = A (4.00)	77% - 79% = B- (2.67)	64% - 66% = D+ (1.33)
90% - 93% = A- (3.67)	74% - 76% = C+ (2.33)	60% - 63% = D (1.00)
85% - 89% = B+ (3.33)	70% - 73% = C (2.00)	57% -592% = D- (0.67)
80% - 84% = B (3.00)	67% - 69% = C- (1.67)	Below 57% = E (0.00)

For more detail on letter grades and university policies related to them, see the Registrar's Grade Policy regulations at https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx

Policy Related to Class Attendance: Class attendance is mandatory. Excused absences follow the criteria of the UF Graduate Catalogue (e.g., illness, serious family emergency, military obligations, religious holidays), and should be communicated to the instructor prior to the missed class day when possible. UF rules require attendance during the first two course sessions. Regardless of attendance, students are responsible for all material presented in class and meeting the scheduled due dates for class assignments. Finally, students should read the assigned readings prior to the class meetings, and be prepared to discuss the material.

Classroom etiquette: Please come to class on time and be prepared to stay until the time scheduled as the end of class. Pagers and cell phones should not be used in class. Avoid "side" conversations. Please consider that your conversation may interrupt the attention of someone seated near you. Generally, you should be speaking to the class as a whole or participating in group discussions as directed by the instructor. I welcome in-class questions. Your question will nearly always be one that other students also have.

Policy Related to Make-up Exams or Other Work: Students are allowed to make up work ONLY as the result of illness or other unanticipated circumstances warranting a medical excuse and resulting in the student missing a homework or project deadline, consistent with College policy. Documentation from a health care provider is required. Work missed for any other reason will receive a grade of zero.

Course and Instructor Evaluation Process: Students are expected to provide feedback on the quality of instruction in this course based on 10 criteria. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. These evaluations are conducted online at https://evaluations.ufl.edu. Summary results of these assessments are available to students at https://evaluations.ufl.edu/results/.

Statement of University's Honesty Policy: At the University of Florida, each student is bound by the academic honesty guidelines of the University and the student conduct code printed in the Student Guide and on the University website. **The Honor Code states: "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity."** Cheating, lying, misrepresentation, or plagiarism in any form is unacceptable and inexcusable behavior. Students are expected to act in accordance with the University of Florida policy on academic integrity (see Student Conduct Code, the Graduate Student Handbook or this web site for more details**:** http://www.dso.ufl.edu/sccr/).

My personal expectations and comments regarding academic integrity: Students will often be encouraged to discuss the material with other members of the class on homework and other assignments. I believe we learn best when individual learning and group cooperation are present. However, I expect that no student will ever do any of the following:

- Have another person complete any assignment in this course
- Copy another student's work on any assignment in this course
- Use materials provided by a previous student in the course for any purpose. Do not seek to obtain or accept offers of such materials (delete any materials you obtained prior to the beginning of the course)

I want to stress that in this class, if you focus on learning the material and worry less about the grade you will receive, you will be rewarded with knowledge that will be much more useful to you in the future than the grade received in this class.

Accommodations for Students with Disabilities: If you require classroom accommodation because of a disability, you must first register with the Dean of Students Office (http://www.dso.ufl.edu/). The Dean of Students Office will provide documentation to you, which you then give to the instructor when requesting accommodation. The College is committed to providing reasonable accommodations to assist students in their coursework.

Counseling and Student Health: Students may occasionally have personal issues that arise in the course of pursuing higher education or that may interfere with their academic performance. If you find yourself facing problems affecting your coursework, you are encouraged to talk with an instructor and to seek confidential assistance at the University of Florida Counseling Center, 352-392-1575 or visit their web site for more information: http://www.counseling.ufl.edu/cwc/.

The Student Health Care Center at Shands is a satellite clinic of the main Student Health Care Center located on Fletcher Drive on campus. Student Health at Shands offers a variety of clinical services, including primary care, women's health care, immunizations, mental health care, and pharmacy services. The clinic is located on the second floor of the Dental Tower in the Health Science Center. For more information, contact the clinic at 392-0627 or check out the web site at: http://shcc.ufl.edu/

Crisis intervention is always available 24/7 from Alachua County Crisis Center: (352) 264-6789.

BUT – *Do not wait until you reach a crisis to come in and talk with us. We have helped many students through stressful situations impacting their academic performance. You are not alone so do not be afraid to ask for assistance*.

Schedule: Adjustments to this schedule are possible during the semester. The instructor will strive to be informative and fair with any changes.

Wk	Date	Topic	Reading	HW Due
1	1/6	Introduction to Course and Course Materials		
1	1/8	**Topic 1:** Exploratory and Descriptive Methods	P1, ix-x, Ch1, Ch2	A.1 (Topic 1)
2	1/13	**Topic 1:** Exploratory and Descriptive Methods		
2	1/15	**Topic 2:** Simple Linear Regression	P2, 3.1-3.3	A.2 (Topic 1)
3	1/20	**No Class Session:** Holiday		
3	1/22	**No Class Session:** Students Prepare for Multiple Linear Regression I	P3, 4.1-4.3	A.3 (Topic 2)
4	1/27	**Topic 3:** Multiple Linear Regression I: Some Basics		
4	1/29	**Topic 3:** Multiple Linear Regression I: Some Basics		A.4 (Topics 2 and 3)
5	2/3	**Topic 3:** Multiple Linear Regression I: Some Basics	P4, 4.4-4.6	
5	2/5	**Topic 4:** Multiple Linear Regression II: Confounding, Mediation and Interaction		A.5 (Topic 3), A.6 (Topic 3)
6	2/10	**Topic 4:** Multiple Linear Regression II: Confounding, Mediation and Interaction		
6	2/12	**Topic 4:** Multiple Linear Regression II: Confounding, Mediation and Interaction		A.7 (Topic 4), A.8 (Topic 4)
7	2/17	**Topic 4:** Multiple Linear Regression II: Confounding, Mediation and Interaction	P5, 4.7, 4.9	
7	2/19	**Topic 5:** Building the Regression Model: Model Selection and Validation		A.9 (Topic 4)
8	2/24	Review		
8	**2/26**	**Exam I (In-class via E-Learning)**		
9	3/3	**No Class Session:** Spring Break		
9	3/5	**No Class Session:** Spring Break		
10	3/10	**Topic 5:** Building the Regression Model: Model Selection and Validation		
10	3/12	**Topic 5:** Building the Regression Model: Model Selection and Validation	P6, 3.4, 5.1	
11	3/17	**Topic 6:** Logistic Regression I: Contingency Tables and Simple Logistic Regression		
11	3/19	**Topic 6:** Logistic Regression I: Contingency Tables and Simple Logistic Regression		
12	3/24	**Topic 6:** Logistic Regression I: Contingency Tables and Simple Logistic Regression	P7, 5.2	
12	3/26	**Topic 7:** Logistic Regression II: Multiple Logistic Regression		A.10 (Topic 6), A.11 (Topics 6 and 7)
13	3/31	**No Class Session:** Students Review Logistic Regression I & II		
13	4/2	**No Class Session:** Students Review Logistic Regression I & II		A.12 (Topic 7)
14	4/7	**Topic 7:** Logistic Regression II: Multiple Logistic Regression		
14	4/9	**Topic 7:** Logistic Regression II: Multiple Logistic Regression	P8, 5.4	A.13 (Topic 7)
15	4/14	**Topic 8:** Logistic Regression III: Diagnostics and Model Selection		
15	4/16	**Topic 9:** GLM and Poisson Regression	P9, 8.1, 8.3, 8.5	A.14 (Topic 7)
16	4/21	Review		
16	**4/23**	**Exam II (In-class via E-Learning)**		