Applied Regression Analysis

PHTH 6210
Bouvé College of Health Sciences
Department of Health Sciences
Spring 2017

Instructor: Justin Manjourides, Ph.D.
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Credit Hours: 3
Class Location: 293 Ryder Hall
Class Time: Wednesdays, 5-7:30 p.m.

Course Description:
This course is intended for graduate students and will build upon the fundamental concepts and methods of biostatistics with applications to health disciplines. Topics include hypothesis testing, and regression models for continuous, binary, count, and time-to-event data. Examples and readings will be drawn from the public health literature. The SAS statistical software package will be introduced and used throughout the course.

Course Objectives:
By the end of this course students will be able to:

- Create, test, and interpret statistical hypotheses.
- Perform and interpret general linear regression models.
- Think critically about statistics reported in medical literature.
- Use SAS to summarize, analyze, and display data.

Prerequisite for the course:

- Successful completion of PHTH5210 (Biostatistics in Public Health) or equivalent, or permission of the instructor.

Required text:
Regression Methods in Biostatistics: Linear, Logistic, Survival, and Repeated Measures Models, 2nd Edition, by Eric Vittinghoff et al.

This book is available electronically through the Northeastern Library:
http://onesearch.northeastern.edu/NU:NEU_ALMA51196800840001401&tabs=viewOnlineTab

Additional Books:
Hosmer DW, Lemeshow S (2000). *Applied Logistic Regression*, Wiley, 2nd Edition.
OpenIntro : an open source introductory statistics book. www.openintro.org

Additional Materials:
SAS (available on campus computers and for download from ITS)
Calculator

Classroom Policies:
Students are encouraged to work together on homework assignments, but each student must submit their own work. Classroom participation benefits everyone; students are expected to participate actively in class discussions.
Attendance is mandatory.

Academic Honesty / Accommodation Statement

- Complete adherence to Northeastern University's Academic Honesty and Integrity Policy is required. Requirements can be found at: http://www.osccr.neu.edu/policy.html. Infractions will be dealt with according to the university's disciplinary process at: http://www.osccr.neu.edu/process.html
- Cell phones and other audible electronic devices must be turned off in class.
- University policy dictates that students must seek the instructor's permission to tape record class lectures.
- The use of computers, palm pilots, phones, and other such devices during examinations is not allowed.
- Appropriate accommodations will be made for students with disabilities in accordance with University policies, http://www.drc.neu.edu.

Course Grading Criteria:

There will be a total of 7 homework assignments. Each will be due at the beginning of class. Late assignments will not be accepted. If you need to miss a class, your homework assignment should be delivered to the instructor by 5pm on the day it is due. You may work in groups on the assignments, but each student must turn in their own work, written in their own words. Copied assignments, joint assignments, cut-and-pasted answers, etc., will result in a grade of 0.

A majority of the weeks will begin with the discussion of an assigned article from the literature. Students are expected to come to class having read the article and prepared for a discussion.

Quizzes (2): 20% each
Final exam: 20%
Assignments (7): 35%
Article Discussions: 5%

Grades: A 94+; A- 90 to 93; B+ 88 to 89; B 83 to 87; B- 80 to 83; C+ 76 to 79; C 70-75; F less than 70

Date	Topics	Readings (To be completed prior to the corresponding topic)	HW
11-Jan	Introduction, Multiple Linear Regression	Vittinghoff: Ch 1, Ch2, 3.3	**HW 1 Assigned** **Install/Access SAS**
18-Jan	Introduction to SAS (Computer lab) 140 Snell Library	Install SAS	**HW 1 Due** SAS handout (not to be turned in)
25-Jan	Multiple Linear Regression 2	Vittinghoff: 4.3, 4.4, 4.6	**HW 2 Assigned**
1-Feb	Multiple Linear Regression 3	Vittinghoff: 4.7, 10.4	**HW 2 Due** **HW 3 Assigned**
8-Feb	Logistic Regression 1	Vittinghoff: 3.4, 5.1, 5.2, 5.3	**HW 3 Due** **Quiz 1 Assigned**
15-Feb	Logistic Regression 2	Vittinghoff: 5.4, 5.7, 5.8, 10.1.1	**Quiz 1 Due** **HW 4 Assigned**
22-Feb	Sample Size and Power	Vittinghoff: 4.8	**HW 4 due** **Articles to be read**
1-Mar	Multinomial Regression	Vittinghoff: 5.5.6	**Discuss Articles** **Quiz 2 assigned**
15-Mar	Poisson Regression	Vittinghoff: 8.1, 8.2, 8.3	**Quiz 2 Due** **Articles assigned**

22-Mar	Poisson Regression 2	Vittinghoff: 8.4	**Discuss Articles** **HW 5 Assigned**
29-Mar	Mediation Analyses (Guest: Dr. Carmel Salhi)	TBA	**HW 5 Due**
5-Apr	Survival Analysis 1	Vittinghoff: 3.5, 6.1	**HW 6 Assigned**
12-Apr	Survival Analysis 2	Vittinghoff: 6.2	**HW 6 Due** **Final Assigned**
19-Apr	Survival Analysis 3	Vittinghoff: 6.3, 6.4, 6.6.1, 6.6.3, 6.7	**Final Due**

**Dates and topics are subject to change at the discretion of the instructor.