University of Florida
College of Public Health & Health Professions Syllabus
PHC 6051: Biostatistical Methods II (3 credit hours)
Spring: 2018
Delivery Format: On-Campus and Online
E-Learning: lss.at.ufl.edu

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Campus Course Hours: Mondays 1:55-3:50 and Wednesdays 4:05-4:55
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Office Hours: Thursdays 10am-12pm and by appointment
Teaching Assistants: Natalie DelRocco, email via Canvas inbox
Preferred Course Communications: email

Prerequisites: Biostatistical Methods I or permission of the instructor. Students must own a laptop that can run the statistical package R, which is freely available at http://cran.r-project.org/.

PURPOSE AND OUTCOME

Course Overview

This is the second course of a two-course sequence with the purpose of providing students with the fundamentals of biostatistical data analysis. This course focuses on extensions of linear regression. Students will learn methods for binary, count, and multinomial data, including generalized linear models; mixed effects models will also be covered. Students will learn to use the statistical package R for data analysis.

Relation to Program Outcomes

This course serves the knowledge and skills student learning objectives by preparing students to communicate the underpinning of biostatistics concepts and methods and to apply biostatistical concepts and methods, interpret results, and communicate.

Course Objectives and/or Goals

Upon successful completion of the course, students should be able to:

- Formulate a statistical problem in terms of an extended linear regression model in a way that meets the goals of a collaborating health scientist
- Apply and interpret methods for binary, multinomial, and count data
- Describe and interpret the basic theory of generalized linear models
- Apply and interpret methods utilizing random effects
- Interpret statistical analyses while remaining aware of limitations.

Instructional Methods

Lectures with slides, data analysis demonstrations in R, and whiteboard use. Lectures will be videotaped and made available to students. Homework assignments. Some homework assignments will consist of individual students presenting solved textbook exercises to the class. Two takehome exams.

DESCRIPTION OF COURSE CONTENT

Topical Outline/Course Schedule

1. Introduction. Likelihood Theory. (Jan 7, 9)
2. Binary and Binomial data (Jan 14, 16, 23, 28, 30)
3. HOLIDAY NO CLASS Mon Jan 21
4. Count regression (Feb 4, 6)
5. Contingency Tables (Feb 11, 13)
6. EXAM 1 Takehome Handed out Feb 20 Due Feb 27
7. Multinomial data (Feb 18, 20)
8. Generalized Linear Models (Feb 25, 27)
9. SPRING BREAK (Mar 4, 6)
10. Generalized Linear Models (Mar 11, 13)
11. Other GLMs (Mar 18, 20)
12. NO CLASS Mar 25, 27 -- we will try to find an alternative time
13. Random Effects Models (Apr 1, 3, 8)
14. Repeated Measures and Longitudinal Data (Apr 10, 15)
15. GLMMs and GEE (Apr 17, Apr 22)
16. EXAM 2 Takehome Handed Out Apr 15 Due Monday Apr 22
17. Return EXAM 2 and go over solutions (Apr 24).

Course Materials and Technology

Required text: *Extending the Linear Model with R: Generalized Linear, Mixed Effects, and Nonparametric Regression Models, Second Edition* (2016), by Julian J. Faraway. Chapman & Hall, Boca Raton, Florida. ISBN: 978-1-4987-2096-0.

Additional Course Materials Available via E-Learning at lss.at.ufl.edu

For technical support for this class, please contact the UF Help Desk at:

- Learning-support@ufl.edu
- (352) 392-HELP - select option 2
- https://lss.at.ufl.edu/help.shtml

ACADEMIC REQUIREMENTS AND GRADING

Assignments

Students are responsible for all course material, including reading required materials prior to each class.

The assessment will include class participation, assignments (written and oral), and two exams. Class participation will include weekly attendance and participation in discussions.

Class participation: 10%
Assignments: 40%
Exam 1 (mid-semester): 25%
Exam 2 (end of term): 25%

The grading scale for this course consists of the standard scale, including minus grades, below.

93% - 100% = A
90% - 92% = A-
87% - 89% = B+
83% - 86% = B
80% - 82% = B-
77% - 79% = C+
73% - 76% = C
70% - 72% = C-
67% - 69% = D+
63% - 66% = D
60% - 62% = D-
Below 60% = E

Please be aware that a C- is not an acceptable grade for graduate students. A grade of C counts toward a graduate degree only if an equal number of credits in courses numbered 5000 or higher have been earned with an A.

Letter grade to grade point conversions fixed by UF:

Letter Grade	**A**	**A-**	**B+**	**B**	**B-**	**C+**	**C**	**C-**	**D+**	**D**	**D-**	**E**	**WF**	**I**	**NG**	**S-U**
Grade Points	4.0	3.67	3.33	3.0	2.67	2.33	2.0	1.67	1.33	1.0	0.67	0.0	0.0	0.0	0.0	0.0

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

Exam Policy
The two exams are take-home exams. Students are bound by the UF honor code (see below) and may neither give nor receive aid on the exams. Students may not share exams or exam solutions with anyone else at any time, even after the course is finished.

Policy Related to Make up Exams or Other Work
As the exams are take-home exams, I do not expect anticipate students needing to make up missed exams. In the event of unusual circumstances, a student could receive an extension of the due-date or an incomplete grade in the course.

The same policy applies to missed homework deadlines. Students are permitted to work together on homeworks; however, in the end, each student must conduct his or her own statistical analyses and must write-up results and conclusions and other question answers independently, in accordance with the UF honor code (see below).

The solutions to the textbook exercises are posted on e-Learning as a zipped file. Students are encouraged to do exercises in the textbook and check their own work. We will go over some textbook exercises together in class. Students may not share the textbook exercise solution set with anyone else at any time, even after the course is finished.

Policy Related to Required Class Attendance

Attendance of all class sessions is expected. We will follow the UF Attendance Policy.
For information regarding the UF Attendance Policy see the Registrar website for additional details:
https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx

STUDENT EXPECTATIONS, ROLES, AND OPPORTUNITIES FOR INPUT

Expectations Regarding Course Behavior

Students are expected to show up for class prepared and on time. Cell phones are to be silenced during class unless there is an emergency, in which case please inform the instructor.

Communication Guidelines

Students are expected to participate in class discussions. Assignments must be clearly written in reasonably good English.

Academic Integrity

Students are expected to act in accordance with the University of Florida policy on academic integrity. As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following pledge:

"**We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity**."

You are expected to exhibit behavior consistent with this commitment to the UF academic community, and on all work submitted for credit at the University of Florida, the following pledge is either required or implied:

"On my honor, I have neither given nor received unauthorized aid in doing this assignment."

It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated. Violations will be reported to the Dean of Students Office for consideration of disciplinary action. For additional information regarding Academic Integrity, please see Student Conduct and Honor Code or the Graduate Student Website for additional details:
https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/
http://gradschool.ufl.edu/students/introduction.html

Please remember cheating, lying, misrepresentation, or plagiarism in any form is unacceptable and inexcusable behavior.

Online Faculty Course Evaluation Process

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at https://evaluations.ufl.edu. 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. Summary results of these assessments are available to students at https://evaluations.ufl.edu/results/.

SUPPORT SERVICES

Accommodations for Students with Disabilities

If you require classroom accommodation because of a disability, you must register with the Dean of Students Office http://www.dso.ufl.edu within the first week of class. The Dean of Students Office will provide documentation of accommodations to you, which you then give to me as the instructor of the course to receive accommodations. Please make sure you provide this letter to me by the end of the second week of the course. The College is committed to providing reasonable accommodations to assist students in their coursework.

Counseling and Student Health

Students sometimes experience stress from academic expectations and/or personal and interpersonal issues that may interfere with their academic performance. If you find yourself facing issues that have the potential to or are already negatively affecting your coursework, you are encouraged to talk with an instructor and/or seek help through University resources available to you.

- The Counseling and Wellness Center 352-392-1575 offers a variety of support services such as psychological assessment and intervention and assistance for math and test anxiety. Visit their web site for more information: http://www.counseling.ufl.edu. On line and in person assistance is available.
- You Matter We Care website: http://www.umatter.ufl.edu/. If you are feeling overwhelmed or stressed, you can reach out for help through the You Matter We Care website, which is staffed by Dean of Students and Counseling Center personnel.
- 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. 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: https://shcc.ufl.edu/
- Crisis intervention is always available 24/7 from:
  Alachua County Crisis Center
  (352) 264-6789
  http://www.alachuacounty.us/DEPTS/CSS/CRISISCENTER/Pages/CrisisCenter.aspx

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.