

University of Florida
College of Public Health & Health Professions Syllabus
PHC 6051: Biostatistical Methods II (3 credit hours)
Spring: 2021
Delivery Format: On-Campus and Online
E-Learning: lss.at.ufl.edu

Instructor Name: Steven Foti, Ph.D.

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Campus Course Hours: Mondays 1:55-3:50 and Wednesdays 4:05-4:55

Campus Course Room: HPNP G-114

Office Hours: Thursdays 11am-1pm and by appointment

Teaching Assistants: Dongyuan Wu, 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. Homework assignments. Some homework assignments will consist of individual students presenting solved textbook exercises to the class. Two take-home exams.

DESCRIPTION OF COURSE CONTENT

Topical Outline/Course Schedule

This is a tentative schedule of topics and due dates that is subject to change during the semester with advance notice from instructor.

Week	Date(s)	Topic(s)	Readings
1	1/11	Introduction, Likelihood Theory	Appendix A, Chapter 1
2	1/18	Binary and Binomial Data	Ch. 2-4
3	1/25	Binary and Binomial Data	Continued
4	2/1	Binary and Binomial Data	Continued; HW1 (due 2/5)
5	2/8	Count Regression	Ch. 5; HW3 (due 2/19)
6	2/15	Contingency Tables	Ch. 6; Journal Article
7	2/22	Multinomial Data	Ch. 7; HW 4 (due 3/5)
8	3/1	Generalized Linear Models	Ch. 8-9; Exam 1 (3/5 – 3/12)
9	3/8	Generalized Linear Models	Continued;
10	3/15	Generalized Linear Models	Continued; HW 5 (due 3/19)
11	3/22	Random Effects Models	Ch. 10
12	3/29	Random Effects Models	Continued; HW6 (due 4/9)
13	4/5	Repeated Measures & Longitudinal Data	Continued
14	4/12	RM & LD	Ch. 11 & 13
15	4/19	GLMMs and GEE	Exam 2 (4/12-4/19)

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%

Grading

Percentage Earned	Letter Grade
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. The GPA for graduate students must be 3.0 based on 5000 level courses and above to graduate. A grade of C counts toward a graduate degree only if based on credits in courses numbered 5000 or higher that have been earned with a B+ or higher.

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

More information on UF grading policy may be found at:

<http://gradcatalog.ufl.edu/content.php?catoid=10&navoid=2020#grades>

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).

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 participate and engage in classroom discussions in a professional manner. The nature of these discussions will often have elements that depend on personal preference and further, due to the nature of statistics, may have more than one acceptable answer/solution. Therefore, students are expected to be considerate of others' responses that may not align with their own.

Communications Guidelines

Please follow general [netiquette guidelines](#) in all course communications with the instructor and fellow students.

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 professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/students/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

On Campus Face-to-Face

We will have face-to-face instructional sessions to accomplish the student learning objectives of this course. In response to COVID-19, the following policies and requirements are in place to maintain your learning environment and to enhance the safety of our in-classroom interactions.

- You are required to wear approved face coverings at all times during class and within buildings. Following and enforcing these policies and requirements are all of our responsibility. Failure to do so will lead to a report to the Office of Student Conduct and Conflict Resolution.
- This course has been assigned a physical classroom with enough capacity to maintain physical distancing (6 feet between individuals) requirements. Please utilize designated seats and maintain appropriate spacing between students. Please do not move desks or stations.
- Sanitizing supplies are available in the classroom if you wish to wipe down your desks prior to sitting down and at the end of the class.
- Follow your instructor's guidance on how to enter and exit the classroom. Practice physical distancing to the extent possible when entering and exiting the classroom.
- If you are experiencing COVID-19 symptoms (<https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/symptoms.html>), please use the UF Health screening system (<https://coronavirus.ufhealth.org/screen-test-protect/covid-19-exposure-and-symptoms-who-do-i-call-if/>) and follow the instructions on whether you are able to attend class.
 - Course materials will be provided to you with an excused absence, and you will be given a reasonable amount of time to make up work (<https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/>).

Policy Related to Guests Attending Class

Only registered students are permitted to attend class. However, we recognize that students who are caretakers may face occasional unexpected challenges creating attendance barriers. Therefore, by exception, a department chair or his or her designee (e.g., instructors) may grant a student permission to bring a guest(s) for a total of two class sessions per semester. This is two sessions total across all courses. No further extensions will be granted. Please note that guests are **not** permitted to attend either cadaver or wet labs. Students are responsible for course material regardless of attendance. For additional information, please review the Classroom Guests of Students policy in its entirety. Link to full policy: <http://facstaff.php.ufl.edu/services/resourceguide/getstarted.htm>

SUPPORT SERVICES

Accommodations for Students with Disabilities

If you require classroom accommodation because of a disability, it is strongly recommended you register with the Dean of Students Office <http://www.dso.ufl.edu> within the first week of class or as soon as you believe you might be eligible for accommodations. The Dean of Students Office will provide documentation of accommodations to you, which you must then give to me as the instructor of the course to receive accommodations. Please do this as soon as possible after you receive the letter. Students with disabilities should follow this procedure as early as possible in the semester. 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.

Inclusive Learning Environment

Public health and health professions are based on the belief in human dignity and on respect for the individual. As we share our personal beliefs inside or outside of the classroom, it is always with the understanding that we value and respect diversity of background, experience, and opinion, where every

individual feels valued. We believe in, and promote, openness and tolerance of differences in ethnicity and culture, and we respect differing personal, spiritual, religious and political values. We further believe that celebrating such diversity enriches the quality of the educational experiences we provide our students and enhances our own personal and professional relationships. We embrace The University of Florida's Non-Discrimination Policy, which reads, "The University shall actively promote equal opportunity policies and practices conforming to laws against discrimination. The University is committed to non-discrimination with respect to race, creed, color, religion, age, disability, sex, sexual orientation, gender identity and expression, marital status, national origin, political opinions or affiliations, genetic information and veteran status as protected under the Vietnam Era Veterans' Readjustment Assistance Act." If you have questions or concerns about your rights and responsibilities for inclusive learning environment, please see your instructor or refer to the Office of Multicultural & Diversity Affairs website: www.multicultural.ufl.edu
