

**University of Florida**  
**College of Public Health & Health Professions Syllabus**  
**PHC 6051 Biostatistical Methods II**  
**3 credits, Spring 2025**

Delivery Format: Campus and asynchronous online  
 Canvas: <http://elearning.ufl.edu>

**Instructor:** Jonathan Fischer  
**Locations for campus section:** HPNP G110 (M 1:55 – 2:45 pm & W 1:55 – 3:50 pm)  
**Phone Number:** 352-294-5459  
**Email Address:** [jfischer1@ufl.edu](mailto:jfischer1@ufl.edu)  
**Office:** CTRB 5223  
**Office Hours:** Tue and Wed 12:00-1:00 pm or by appointment  
**Teaching Assistants:** See Canvas page

Preferred Course Communications:

- To ask specific questions or discuss issues of a personal nature, please use the Canvas inbox in E-learning.
- To ask general questions, please post on the discussion board in E-learning.
- NOTE: My email address is [jfischer1@ufl.edu](mailto:jfischer1@ufl.edu). There is another person with a nearly identical name and similar email address. To avoid confusion, I prefer you use the Canvas inbox. However, if you need to email me directly, be sure to use the correct address as shown here. I typically respond to questions within one business day, so please verify that you used the correct address if you don't receive a response in that time.

Prerequisites: *PHC6050c (Biostatistical Methods I) or permission of instructor. You must also have access to R.*

## **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 teaches students fundamental biostatistics concepts and methods and how to apply them, interpret results, and communicate technical concepts effectively.

### **Course Objectives and/or Goals**

Upon completion of the course, students will be able to:

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

## Instructional Methods

Class sessions will consist of a mix of lectures and case studies with data using R following the presentation in the required textbook (see below). Any additional resources will be made available to students in Canvas. Assessments will consist of weekly homework assignments and two take-home exams. Recordings will be linked in Canvas for each session.

## Topical Outline/Course Schedule

Week of	Topic	Book chapters	Assignment
Jan 13 <sup>th</sup>	Introduction and likelihood theory	Appendix A, Ch 1	
Jan 20 <sup>th</sup>	Binary and binomial data	Ch 2-4	HW 1
Jan 27 <sup>th</sup>	Binary and binomial data	Ch 2-4	HW 2
Feb 3 <sup>rd</sup>	Binary and binomial data	Ch 2-4	HW 3
Feb 10 <sup>th</sup>	Count regression	Ch 5	HW 4
Feb 17 <sup>th</sup>	Contingency tables	Ch 6	HW 5
Feb 24 <sup>th</sup>	Multinomial data	Ch 7	HW 6
Mar 3 <sup>rd</sup>	Generalized linear models	Ch 8-9	HW 7
Mar 10 <sup>th</sup>	Generalized linear models	Ch 8-9	Exam 1
Mar 24 <sup>th</sup>	Generalized linear models	Ch 8-9	HW 8
Mar 31 <sup>st</sup>	Random effects models	Ch 10	HW 9
Apr 7 <sup>th</sup>	Random effects models	Ch 10	HW 10
Apr 14 <sup>th</sup>	Repeated measures and longitudinal data	Ch 11	HW 11
Apr 21 <sup>st</sup>	GLMMs and GEEs	Ch 13	HW 12
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## Course Materials and Technology

**Texts:** The required text is

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

**Software:** Students will need to use R. R and RStudio can be downloaded free from <https://www.r-project.org/> and <https://posit.co/>.

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

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

## ACADEMIC REQUIREMENTS AND GRADING

### Grading

Requirement	Percent of final grade	Notes
Homework	60%	12 assignments, 5% each
Exams	40%	2 exams, 20% each (take-home)

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.

Percentage Earned	Letter Grade
[93,100]	A
[90,93)	A-
[87,90)	B+
[83-87)	B
[80-83)	B-
[77,80)	C+
[73,77)	C
[70,73)	C-
[67,70)	D+
[63,67)	D
[60,63)	D-
< 60	E

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 <https://catalog.ufl.edu/graduate/regulations/>

### **Policy Related to Make up Exams or Other Work**

All work is expected to be submitted on Canvas by the specified due date and time. For late work, the policies below apply.

- 1) Each student will have a budget of two “tokens” which can be spent (one token = one assignment) to avoid late penalties for homework assignments submitted within 48 hours of the initial submission deadline. This should be indicated upon submission of the assignment.
- 2) Otherwise, late submissions made within 48 hours of the initial due date will be accepted at a grade penalty of 10% of the maximum points available for each day late unless arrangements have been made ahead of time with the instructor; no other late work will be accepted.
- 3) Late submissions without penalty are available only due to illness or other unanticipated circumstances, consistent with College policy. Be prepared to provide documentation from a health care provider in such cases (e.g., a doctor’s note or correspondence with the UF Computing help desk). If possible, you should email me within 24 hours of the original due date in these circumstances.

### **Policy Related to Required Class Attendance**

We will follow the UF Attendance Policy. Please note all faculty are bound by the UF policy for excused absences. Excused absences must be consistent with university policies in the Graduate Catalog (<https://catalog.ufl.edu/graduate/regulations/>).

## **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**

Please see the guidelines linked here: <http://biostat.ufl.edu/current-students/e-learning-resources/e-learning-basics/etiquette-online/>.

### **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/>.

### **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. 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**

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center. [Click here to get started with the Disability Resource Center](#). It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

### **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](http://www.multicultural.ufl.edu)