

University of Florida
College of Public Health & Health Professions Syllabus
PHC 6937: Frontiers in Biostatistics (3)
 Spring: 2024
 Delivery Format: Online
 Course Content in CANVAS using E-learning: <http://elearning.ufl.edu>

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| Instructor Name: | Dr. Robert Parker |
| Room Number: | CTRB 5219 |
| Phone Number: | 352-294-5906 |
| Email Address: | rlp176@php.ufl.edu |
| Office Hours: | by appointment |
| Teaching Assistants: | TBD |
| Preferred Course Communications: | E-mail or CANVAS Inbox |

Prerequisites: *PHC 6092: Introduction to Biostatistical Theory and PHC 6050C: Biostatistical Methods I or Permission of the instructor*

PURPOSE AND OUTCOME

Course Overview

This course will introduce biostatistics Master and PhD students to current issues and methods in modern biostatistics research. Current faculty will present selected topics from their current research.

Relation to Program Outcomes

Successful completion of this course fulfills one of the elective requirements for the MS and PhD programs in Biostatistics.

Course Objectives and/or Goals

By the end of this course, students should be able to

- 1) Describe modern statistical issues, new data types, and why new methods are needed.
- 2) Select and apply modern methods to analyze real world data sets while remaining aware of their limitations.
- 3) Use statistical software to implement modern analyses and interpret output.
- 4) Describe and interpret the theory of selected modern biostatistical methods.

Instructional Methods

Lectures will be provided on CANVAS each week by a different faculty member who will present selected topics from his/her current research.

DESCRIPTION OF COURSE CONTENT

Topical Outline/Course Schedule

| Week | Date(s) | Topic(s) | Lecturer |
|------|---------|--|----------------------|
| 1 | Jan 8 | Intro to Causal Inference | Babette Brumback |
| 2 | Jan 15 | Clustering and applications to EHR | Shu Wang |
| 3 | Jan 22 | Sparse Clustering Algorithms | Zhiguang (Caleb) Huo |
| 4 | Jan 29 | Disease Screening and Spatio-Temporal Disease Surveillance | Peihua Qui |

| Week | Date(s) | Topic(s) | Lecturer |
|------|---------|---|---------------|
| 5 | Feb 5 | Introduction to Privacy-preserved Data Collection and Analysis | Sam Wu |
| 6 | Feb 12 | Statistical Classification | Subharup Guha |
| 7 | Feb 19 | Microbiome Data Modeling and Joint Modeling of Longitudinal and Survival data | Zhigang Li |
| 8 | Feb 26 | Special Topics in Survival Analysis | Somnath Datta |
| 9 | Mar 4 | Introduction to Omics Data | Susmita Datta |
| 10 | Mar 18 | Statistical Genomics | Rhonda Bacher |
| 11 | Mar 25 | Statistical Genomics | Rhonda Bacher |
| 12 | Apr 1 | Adaptive Designs and Interim Analysis in Clinical Trials | John Kairalla |
| 13 | Apr 8 | Design and analysis of vaccine trials with cluster randomized designs | Ira Longini |
| 14 | Apr 15 | Test Negative Designs | Natalie Dean |
| 15 | Apr 22 | Modeling Transmission of Infectious Diseases with Missing Data | Yang Yang |

Course Materials and Technology

Course information, readings, assignments, and grades are available on CANVAS at <http://elearning.ufl.edu>. You must have a Gatorlink account to log on. Students must also have access to a computer that can run R 3.4 or higher.

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

- Discussions: There will be weekly graded discussions through CANVAS for each students to provide a summary of what he/she learned along with at least one question regarding the topic from that week. Although responses to other posts are not required, we encourage students to continue exploring the topics introduced each week through discussions with each other. Discussions are graded as successful or unsuccessful. A successful post will be approximately 250 words and include at least one question about the current lecture topic. One drop grade will be provided. No late submissions will be accepted without prior approval from the instructor.
- Homework: Each week a small homework set or a critical review of a paper related the lectures will be assigned in CANVAS. Examples of typical assignment problems will ask students to use R or other statistical software to analyze data, interpret statistical output, apply new definitions, compare and contrast methods, or derive results discussed during the lectures. Assignments are due the Thursday following the week of lectures. The homeworks are graded for accuracy. Solutions will be posted the Friday after the assignment is due. No late assignments will be accepted, but one drop will be provided.

Grading

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|-------------------------------|------------------|
| Requirement | % of final grade |
| Discussions (15, ~2.67% each) | 40% |
| Homeworks (13, ~5.45% each) | 60% |

Point system used (i.e., how do course points translate into letter grades).

Example:

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

Please be aware that a C- is not an acceptable grade for graduate students. The GPA for graduate students must be 3.0. in all 5000 level courses and above to graduate. A grade of C counts toward a graduate degree only if a sufficient number of credits in courses numbered 5000 or higher have been earned with a B+ or higher. In addition, the Bachelor of Health Science Program does not use C- grades.

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|---------------------|----------|-----------|-----------|----------|-----------|-----------|----------|-----------|-----------|----------|-----------|----------|-----------|----------|-----------|------------|
| 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>

Policy Related to Make up Exams or Other Work

Students are allowed to make up work ONLY as the result of excused absences consistent with the College policy. Work missed for excused absences will be accepted for full credit, but work missed for any other reason will receive a grade of zero.

Any requests for make-ups due to technical issues MUST be accompanied by the ticket number received from LSS when the problem was reported to them. The ticket number will document the time and date of the problem. You MUST e-mail me within 24 hours of the technical difficulty if you wish to request a make-up.

Excused absences must be consistent with university policies in the Graduate Catalog (<http://gradcatalog.ufl.edu/content.php?catoid=10&navoid=2020#attendance>) and require appropriate documentation. Additional information can be found here:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

Please note all faculty are bound by the UF policy for excused absences. 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

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. 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 for each session.

Communication Guidelines

Questions about course material should be through e-mail or through the CANVAS Inbox.

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/>.

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
