

**University of Florida**  
**College of Public Health & Health Professions Syllabus**

**PHC6089: Public Health Computing (3 credit hours)**

Fall 2024

Delivery Format: On-campus

Course Website: <http://elearning.ufl.edu/>

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Instructor Name: Jonathan Fischer, PhD

Room Number: HPNP G112

Meeting Times: Mon 1:55-3:50 PM and Tue 1:55-3:50 PM

Phone Number: 352-294-5459

Email Address: [jfischer1@ufl.edu](mailto:jfischer1@ufl.edu)

Office Hours: TBA

Teaching Assistants: TBA

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. Consequently, 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**

PHC6052 or a similar first course in statistics. Some programming experience is also desirable.

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## **PURPOSE AND OUTCOME**

### **Course Overview**

This is a three-credit course which covers the use of SAS and R to manage and analyze public health data. Students will learn how to import, modify, visualize, and perform common analyses of public health data using SAS and R.

### **Relation to Program Outcomes**

This course is a required concentration core course for MPH Biostatistics students and covers the following competencies.

- Describe the role of biostatistics in public health research.
- Use appropriate statistical methodology to address public health problems.
- Apply software to conduct statistical analyses.

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

Upon successful completion of this course, students will be able to

- 1) Import, export, store, modify, visualize, and analyze public health data using SAS and R
- 2) Demonstrate how to use common SAS procedures and R functions to analyze public health data
- 3) Create SAS MACROS and user defined R functions to solve complex problems
- 4) Use the Output Delivery System to control SAS output
- 5) Implement public health data analyses using SAS and R
- 6) Plan and implement simulations using SAS and R

### **What is expected of you?**

You are expected to actively engage in the course throughout the semester. You must come to class prepared by completing all out-of-class assignments. This preparation gives you the knowledge or practice needed to engage in higher levels of learning during the live class sessions. If you are not prepared for the face-to-face sessions, you may struggle to keep pace with the activities occurring in the live sessions, and it is unlikely that you will reach the higher

learning goals of the course. Similarly, you are expected to actively participate in the live class. Your participation fosters a rich course experience for you and your peers that facilitates overall mastery of the course objectives.

## DESCRIPTION OF COURSE CONTENT

### Topical Outline/Course Schedule

Week	Topics	Due
1 8/19-8/23	Intro to R and RStudio, Basic R, and Data input/output	
2 8/26-8/30	Subsetting data in R, data summarization, and basic plotting	Wed 8/28 - Labs 1-3
3 9/2-9/6	Data classes and data cleaning	Tue 9/3 - Labs 4-5
4 9/9-9/13	Manipulating data in R and data visualization	Mon 9/9 - Labs 6-7  Thu 9/12: - HW 1
5 9/16-9/20	Loops, functions, and statistical analysis	Mon 9/16 - Labs 8-9
6 9/23-9/27	Simulations and reports with R Markdown and knitr	Mon 9/23 - Labs 10-11  Thu 9/26: - HW 2
7 9/30-10/4	Shiny	Mon 9/30 - Lab 12  Thu 10/3: - R project proposal
8 10/7-10/11	Introduction to SAS	Thu 10/10: - HW 3
9 10/14-10/18	Subsetting data and data summarization in SAS	Mon 10/14 - Labs 13-16  Thu 10/17: - R project code and output
10 10/21-10/25	Formats, functions, and data cleaning in SAS	Mon 10/21 - Labs 17-18
11 10/28-11/1	Data manipulation and the Output Delivery System in SAS	Mon 10/28 - Labs 19-21  Thu 10/31: - HW 4

12 11/4-11/8	Statistical Analysis in SAS	Mon 11/4 - Labs 22-23
13 11/11-11/15	SAS Macros	Tue 11/12 - Lab 24  Thu 11/14 - SAS project proposal
14 11/18-11/22	Simulations in SAS	Mon 11/18 - Lab 25  Thu 11/21: - HW 5
15 11/25-12/1	Happy Thanksgiving!	
16 12/2-12/6	PROC SQL	Mon 12/2 - Lab 26  Wed 12/4 - HW 6  Tue 12/10 - SAS project code and output

### Course Materials and Technology

All course lecture and review materials are available online through **Canvas** (<http://elearning.ufl.edu>). You will also need access to the statistical software packages R and SAS (see details below). There is no required textbook to purchase for this course. However, the following textbooks may serve as useful references with additional examples/exercises:

#### Statistics resources:

- Daniel, W.D. (2013): Biostatistics: A Foundation for Analysis in the Health Sciences. 10th Edition, Wiley.
- Agresti, A. (2013): The Art and Science of Learning from Data. 4th Edition, Pearson.

#### SAS resources:

- The Little SAS Book: A Primer 5th ed., by Lora Delwiche and Susan Slaughter, SAS Institute: Cary, NC (2012).
- SAS Statistics by Example, by Ron Cody, SAS Institute: Cary, NC (2011).

#### R resources:

- Basic Statistics with R: Reaching Decisions with Data 1st ed., by Stephen C. Loftus, Academic Press (2021).
- Statistics with R: A Beginner's Guide, 2nd edition by Robert Stinerock. SAGE Publications (2022).

### Statistical Software

#### R

The current version of R R 4.4.1. R is available for free and can be downloaded at <https://www.r-project.org/>. RStudio is also free, and it can be downloaded at <https://posit.co/download/rstudio-desktop/>.

#### SAS

The current version of SAS is SAS 9.4, and SAS 9.3 or higher is required for this course. There are two main options for SAS access:

- 1) Direct purchase and installation. **This option is only available for Windows users.** SAS can be purchased on campus at the UF computing help desk located at 132 HUB Stadium Road (<https://software.ufl.edu/software-listings/sas.html>); **this can only be done in-person.** Click on the SAS Student page for SAS program purchase information and online documents.
- 2) SAS also has a free virtual app called SAS OnDemand for Academics. For more information and to get access, see [https://www.sas.com/en\\_us/software/on-demand-for-academics.html](https://www.sas.com/en_us/software/on-demand-for-academics.html). It can be used with any operating system.

Option 2 will work for all users and operating systems and has the additional benefit of being free. It does require a few extra steps of file upload/download because it is hosted on a remote server, but we have tutorial videos demonstrating these steps.

### E-learning

An E-Learning site is available for the course (<http://elearning.ufl.edu>). **The weekly schedule and all course materials are available online through this site including grades, assignments, discussions boards, and other course information. It is very important to check the weekly page and review all announcements carefully.**

For technical support for this class unrelated to course content, please contact the UF Help Desk at:

- [helpdesk@ufl.edu](mailto:helpdesk@ufl.edu)
- (352) 392-HELP - select option 2
- <https://helpdesk.ufl.edu/>

### Additional Academic Resources

- [Career Connections Center](#): Reitz Union Suite 1300, 352-392-1601. Career assistance and counseling services.
- [Library Support](#): Various ways to receive assistance with respect to using the libraries or finding resources.
- [Teaching Center](#): Broward Hall, 352-392-2010 or to make an appointment 352- 392-6420. General study skills and tutoring.
- [Writing Studio](#): 2215 Turlington Hall, 352-846-1138. Help brainstorming, formatting, and writing papers.
- Student Complaints On-Campus: [Visit the Student Honor Code and Student Conduct Code webpage for more information.](#)
- On-Line Students Complaints: [View the Distance Learning Student Complaint Process](#)
- Enrollment Management Complaints (Registrar, Financial Aid, Admissions): [View the Student Complaint Procedure webpage for more information.](#)

## ACADEMIC REQUIREMENTS AND GRADING

### Assignments

#### Labs

Labs will consist of a series of short programming exercises as practice for the concepts discussed during the lecture. These will be discussed in class and submitted in Canvas before the indicated dates. Labs are graded for completion and accuracy. In the case of an excused absence, late lab assignments will be accepted for full credit. No credit will be given for missed labs in the case of an unexcused absence.

#### Homework

Homework assignments will be assigned roughly every 2 weeks and consist of short programming exercises using the SAS/R skills covered during previous weeks. Homework will be graded for accuracy. Late submissions will result in a 10% deduction of the maximum possible points, and no assignments will be accepted more than 1 day late without prior approval from the instructor.

#### Projects

SAS and R projects will be completed by each student. These projects will consist of an initial proposal and culminate in the submission of annotated code with well-formatted using a dataset chosen by the student. A grading rubric will be provided with each project assignment.

### Grading

Assignment type	Number	Percent of final grade
Labs	26	13%
Homework	6	36%
Project proposals	2	6%
Project code	2	25%
Project reports	2	20%
<b>Total</b>		<b>100%</b>

Percentage Earned	Letter Grade	Grade Points
[93, 100]	A	4.0
[90, 93)	A-	3.67
[87, 90)	B+	3.33
[83, 87)	B	3.0
[80, 83)	B-	2.67
[77, 80)	C+	2.33
[73, 77)	C	2.0
[70, 73)	C-	1.67
[67, 70)	D+	1.33
[63, 67)	D	1.0
[60, 63)	D-	0.67
<60	E	0.0
-	WF	0.0
-	I	0.0
-	NG	0.0
-	S-U	0.0

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.

More information on UF grading policy may be found at: <https://gradcatalog.ufl.edu/graduate/regulations/#Grades>.

### Exam Policy

There are no exams in this course.

### 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. Late submissions made within 24 hours of the initial due date will be accepted at a grade penalty of 10% of the maximum points available unless arrangements have been made ahead of time with the instructor. 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). You should email me within 24 hours of the original due date in these circumstances.

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

Please note all faculty are bound by the UF policy for excused absences. For information regarding the UF attendance policies, see the Graduate Catalog (<https://gradcatalog.ufl.edu/graduate/regulations/#Attendance%20Policies>). I do not take formal attendance, though attendance and participation are expected parts of the course. Please arrive on-time for class meetings to the extent possible.

## **STUDENT EXPECTATIONS, ROLES, AND OPPORTUNITIES FOR INPUT**

### **Expectations Regarding Course Behavior**

It's critical to review the weekly page in Canvas and read all announcements carefully. Each week's materials will be clearly identified on the course E-learning site. Students are expected to work through the material as scheduled. It is very important to work through all content contained on this site as directed and ask questions about the material you do not understand. Working through the content from start to finish is the best approach to achieve a high level of understanding and success in this course. In addition, it is your responsibility to review the comments and feedback we give on your graded assignments. Cell phones should not be used in class, and computers are only permissible for class-related activities.

### **Communications Guidelines**

Questions about course material should be asked during office hours or posted on the course discussion boards in E-Learning. Questions about specific quiz questions or issues of a personal nature should be sent by email through E-Learning. For questions asked Monday-Thursday, we will try our best to respond within 24 hours. For questions asked Friday-Sunday, we will respond by Monday or as soon as possible thereafter. Additionally, please review the UF guidelines for online communications: <https://teach.ufl.edu/wp-content/uploads/2020/04/NetiquetteGuideforOnlineCourses.docx>

### **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 Handbook for additional details:

<https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>  
<https://graduateschool.ufl.edu/work/handbook/>

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

### **Recording Within the Course**

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A “class lecture” is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or

appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To “publish” means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third-party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

### **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: <https://phhp.ufl.edu/policy-classroom-guests-of-students/>

### **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.

- U Matter, We Care: If you or someone you know is in distress, please contact [umatter@ufl.edu](mailto:umatter@ufl.edu), 352-392-1575, or visit [U Matter, We Care website](#) to refer or report a concern and a team member will reach out to the student in distress.
- Counseling and Wellness Center: [Visit the Counseling and Wellness Center website](#) or call 352-392-1575 for information on crisis services as well as non-crisis services.
- Student Health Care Center: Call 352-392-1161 for 24/7 information to help you find the care you need, or visit the [Student Health Care Center website](#).

- University Police Department: Visit [UF Police Department website](#) or call 352-392-1111 (or 9-1-1 for emergencies).
- UF Health Shands Emergency Room / Trauma Center: For immediate medical care call 352-733-0111 or go to the emergency room at 1515 SW Archer Road, Gainesville, FL 32608; Visit the [UF Health Emergency Room and Trauma Center website](#).
- GatorWell Health Promotion Services: For prevention services focused on optimal wellbeing, including Wellness Coaching for Academic Success, visit the [GatorWell website](#) or call 352-2734450.

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.

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### **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."

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