University of Florida
College of Public Health & Health Professions Syllabus

PHC 6089: Public Health Computing (3 credit hours)

Spring: 2024
Delivery Format: Online (Asynchronous)
Course Content in E-Learning using CANVAS: http://elearning.ufl.edu

Instructor Name:	Dr. Lixia Wang
Room Number:	CTRB 5212
Phone Number:	352-294-5919
Email Address:	lixia.wang@phhp.ufl.edu
Office Hours:	Mon & Wed 2-3, or by appointment as necessary.

Preferred Course Communications: CANVAS Inbox or E-mail

NOTE: I prefer you use the Canvas inbox. However, if you need to email me directly, please specify the class you are in. I typically respond to questions within one business day. If you don't receive a response in that time frame, please send me a reminder.

- Ask about specific questions or issues of a personal nature by email through the Canvas inbox in E-learning.
- Ask more general questions (NOT personal or specific quiz questions) on the discussion board in E-learning.

TA: TBD

Prerequisites: PHC 6052: Introduction to Biostatistical Methods or approval of the instructor.

PURPOSE AND OUTCOME

Course Overview: This is a three-credit course that covers using 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 three-credit 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

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

Instructional Methods: This course is fully online (asynchronous). Pre-recorded lectures are provided.

DESCRIPTION OF COURSE CONTENT

Course Schedule

Week	Date(s)	Topic(s)	Assignments Due
1	1/8-1/12	Intro to R and RStudio, Basic R, and Data Input/Output	
2	1/15-1/19	Subsetting Data in R, Data Summarization, and Basic Plotting	
3	1/22-2/26	Data Classes and Data Cleaning	
4	1/29-2/2	Manipulating Data in R and Data Visualization	Homework 1 - R
5	2/5-2/9	Loops, Functions, and Statistical Analysis	
6	2/12-2/16	Simulations, and Reports with Rmarkdown and Knitr	Homework 2 - R
7	2/19-2/23	Work on R project and Shiny (optional)	
8	2/26-3/1	Introduction to SAS	Homework 3 - R
9	3/4—3/8	Subsetting Data and Data Summarization in SAS	R Course Project
(SB)	3/11-3/15	Spring Break	
10	3/18-3/22	Formats, Functions, and Data Cleaning in SAS	Homework 4 - SAS
11	3/25-3/29	Data Manipulation and the Output Delivery System in SAS	Spring Break
12	4/1-4/5	Statistical Analysis in SAS and Macros	Homework 5 - SAS
13	4/8-4/12	Simulations in SAS	Homework 6 - SAS
14	4/15-4/19	PROC SQL	
15	4/22-4/26	Work on SAS Project	SAS Course Project
16	4/29-5/3	Exam Week	

Course Materials and Technology

All students must have access to a computer in class with SAS 9.3 or higher installed and the ability to run R 4 or higher. See http://software.ufl.edu/agreements/sas/student/ for SAS program purchase information and online documents. Computing requirements can be found at http://mph.ufl.edu/current-students/student-essentials/technology-requirements/.

There is no single textbook that covers the material in this course. Listed below are a few suggested references for programming and statistical analyses using SAS and R. These books are available for free as electronic e-books as part of library holdings.

- ***The Little SAS Book: A Primer***, 5th ed., by Lora Delwiche and Susan Slaughter, SAS Institute: Cary, NC (2012). Available for free through the UF library
- ***Learning SAS by Example***, by Ron Cody, SAS Institute: Cary, NC (2007). Available for free through the UF library.
- ***The Book of R: A First Course in Programming and Statistics***, by Tilman M. Davies, No Starch Press: San Francisco (2016). Available for free through the UF library

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

Grades will be based on labs, homework assignments, projects and engagement in community construction.

- **Lab** assignments will consist of a selection of programming exercises provided each lesson to be completed and turned in to CANVAS by the Thursday of the following week. The best way to learn a programming language is to practice and as you will still be learning the syntax, these labs will be graded for completion (5 points – fully completed, 3 points – partially completed or 1 day late, 0 points – mostly incomplete or more than 1 day late). One lowest Lab grade will be dropped.
- **Homework** assignments will be assigned every 2 weeks. The homework assignments are short programming exercises using the R/SAS skills covered during the previous weeks. Homework will be graded for accuracy in completing the assigned programming task. Late submissions within 1 day will result in a 10%-point deduction. No assignments will be accepted more than 1 day late without prior approval from the instructor.
- **SAS and R projects** will be completed by each student. These projects will consist of code examples with output to demonstrate the skills learned during the course applied to a dataset chosen by the student. A grading rubric will be provided with the project assignment.
- **Engagement.** Students in online courses sometimes feel disconnected from the class and their classmates. To encourage interaction, we require students to complete their class trading card. Students must complete and share their class trading card within the first two weeks of the semester to get full credit (2% of the total grade). Completing and sharing class trading card during the 3rd and 4th week will result in a 50% credit deduction. Completing and sharing class trading card after the 4th week will result in a 75% credit deduction. We also encourage students to post and respond on the discussion board in E-Learning.

Grading

Requirement	% of final grade
Class Trading Card	2%
Labs (26)	16%
Homework (6)	42%
R Project	20%
SAS Project	20%

Points Earned	<60	[60,63)	[63,67)	[67,70)	[70,73)	[73,77)	[77,80)	[80,83)	[83,87)	[87,90)	[90,93)	[93,100]
Letter Grade	E	D-	D	D+	C-	C	C+	B-	B	B+	A-	A
Grade Points	0	.67	1	1.33	1.67	2.0	2.33	2.67	3.0	3.33	3.67	4.0

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.

More information on the UF grading policy may be found at:
http://gradcatalog.ufl.edu/content.php?catoid=10&navoid=2020#grades

Policy Related to Make up 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.

Policy Related to Required Class Attendance

This is a fully online asynchronous course. "Attendance" means you are expected to go through the course materials, take notes, and pay attention to and post in the discussion boards. This is to be done at your own pace, but assignments and projects have scheduled deadlines to keep you on track. You are welcome to get ahead if you need flexibility in future weeks. Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at

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

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 a good 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.

Communication Guidelines:
Questions about course material should be asked during office hours or posted on the course discussion boards in E- Learning. Questions about specific assignment questions or issues of a personal nature should be sent via the CANVAS Inbox 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 Monday or as soon as possible thereafter.

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/.

ADVICE

- **Time commitment.** The best way to learn a programming language is to practice. Programming can be very time consuming. It is expected that you will spend a **minimum** of 10-12 hours per week on this course. Breaking this time up into blocks of 1-3 hours split over as many days of the week as possible given your schedule is generally more effective, since normally working too long in one sitting is not conducive to learning. Debugging code usually takes longer than you think it should and is a great source of frustration, especially when a deadline is fast approaching. Make sure you start each assignment early.
- **Learn to use the material to your greatest advantage.** If you understand the material or if you have experience with certain topics, it may not be necessary to review all of the content we provide.
- **Feel free to use Google to find code snippets and modify them so they work for your purpose.** This is what we all do. :)
- **Stay on track.** Make sure to ask via Inbox/email or post questions on discussion board when you don't understand and stay on track with the material. **Getting behind can be difficult to fix in any course, but especially an asynchronous one.** Let the instructor know as soon as possible if you feel you are falling behind.
- Here are some **Tips for not falling behind:**
  - Keep in mind that typically lab assignments are due on Tuesdays while homework assignments and course projects are due on Thursdays.
  - For each weekly module, study the material and start doing the corresponding assignments during the week. Ask questions via Canvas Inbox or email or post your questions on the discussion board.
  - Review and try to finish the assignments on weekend before the assignment due date. Write down questions if there are any.
  - Join my office hours on Monday and Wednesday or the TA's office hours to discuss your questions and complete assignments on time.

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

Content to Review	Tuesday	Thursday
Week 1	1/9	1/11
Intro to R and RStudio, Basic R, and Data Input/Output		
Week 2	1/16	1/18
Subsetting Data in R, Data Summarization, and Basic Plotting	**Lab 1, Lab 2, Lab 3 (Week 1 Module)**	
Week 3	1/23	1/25
Data Classes and Data Cleaning	**Lab 4, Lab 5 (Week 2 Module)**	
Week 4	1/29	2/1
Manipulating Data in R and Data Visualization	**Lab 6, Lab 7 (Week 3 Module)**	**Homework 1 - R (Week 2 Module)**
Week 5	2/6	2/8
Loops, Functions, and Statistical Analysis	**Lab 8, Lab 9 (Week 4 Module)**	**R Project Proposal**
Week 6	2/13	2/15
Simulations, and Reports with Rmarkdown and Knitr	**Lab 10, Lab 11 (Week 5 Module)**	**Homework 2 - R (Week 4 Module)**
Week 7	2/20	2/22
Work on R project and Shiny (optional)	**Lab 12 (Week 6 Module)**	
Week 8	2/27	2/29
Introduction to SAS		**Homework 3 - R (Week 6 Module)**

Content to Review	Tuesday	Thursday
Week 9	3/5	3/7
Subsetting Data and Data Summarization in SAS	**Lab 13, Lab 14, Lab 15, Lab 16 (Week 8 Module)**	**R Course Project**
Spring Break	Spring Break	Spring Break
Week 10	3/19	3/21
Formats, Functions, and Data Cleaning in SAS	**Lab 17, Lab 18 (Week 9 Module)**	**Homework 4 (Week 9 Module)**
Week 11	3/26	3/28
Data Manipulation and the Output Delivery System in SAS	**Lab 19, Lab 20, Lab 21 (Week 10 Module)**	
Week 12	4/2	4/4
Statistical Analysis in SAS and Macros	**Lab 22, Lab 23 (Week 11 Module)**	**Homework 5 (Week 11 Module)**
Week 13	4/9	4/11
Simulations in SAS	**Lab 24, Lab 25 (Week 12 Module)**	**Homework 6 (Week 13 Module)**
Week 14	4/16	4/18
PROC SQL	**Lab 26 (Week 13 Module)**	
Week 15	4/23	4/25
Wrap-up (All classes at UF end on 4/24)	**SAS Course Project**	