

University of Florida
College of Public Health & Health Professions Syllabus
PHC 6937: Public Health Computing (3 Credits, Spring 2019)

Delivery Format: On-Campus
 Tuesday 2nd & 3rd Period (HPNP G-105), Thursday 2nd Period (HPNP G-301A)
 Course Content in E-Learning using CANVAS: <http://elearning.ufl.edu>

Instructor Name:	Dr. Yichao Yu
Room Number:	CTRB 5213
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Office Hours:	Tuesday 4 th Period in CTRB 5213 or by appointment
Preferred Course Communications:	E-mail or CANVAS Inbox

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

PURPOSE AND OUTCOME

Course Overview: This is a three credit course which 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 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 presented using live lectures. Lectures will be given during Tuesday 2nd & 3rd period and Thursday 2nd periods. Throughout the lectures, students will complete short programming exercises using SAS and R to reinforce and practice the techniques covered during the lecture.

DESCRIPTION OF COURSE CONTENT

Course Schedule

Week	Date(s)	Topic(s)	Suggested Readings/Resources
1	01/07-01/11	Introduction to R and Rstudio	The Book of R: Appendix A, B, Chapter 1, 2, 8

Week	Date(s)	Topic(s)	Suggested Readings/Resources
2	01/14-01/18	Subsetting and Summarizing Data in R HW 1: Due 01/24	The Book of R: Chapter 3, 4, 5, 7, 13, and 14
3	01/21-01/25	Data Classes and Data Cleaning in R	The Book of R: Chapter 3, 4, 5, 6
4	01/28-02/01	Data Manipulation and Data Visualization in R HW 2: Due 02/07	The Book of R: Chapter 23 and 24 R for Data Science: Chapter 3
5	02/04-02/08	Writing Functions in R	The Book of R: Chapters 9, 10, and 11
6	02/11-02/15	Statistical Analysis and Simulations in R HW 3: Due 02/21	The Book of R: 18, 19, 20, and 21
7	02/18-02/22	Reports with Rmarkdown and Knitr	R for Data Science: Chapter 27, 29, and 30
8	02/25-03/01	Introduction to SAS Programming HW 4: Due 03/14	LSB: Chapters 1, 2, 10 LSBE: Chapters 1, 2, and 3
9	03/04-03/08	SPRING BREAK – NO CLASS	
10	03/11-03/15	Subsetting and Summarizing Data in SAS	LSB: Chapter 3, 4, and 8 LSBE: Chapters 7, 10, 11, and 12
11	03/18-03/22	Data Formats and Cleaning HW 5: Due 03/28	LSBE: Chapter 5, 6, 11, and 12
12	03/25-03/29	Data Manipulation and ODS Project Proposal: Due 04/01	LSB: Chapters 5, 6, and 8 LSBE: Chapters 8, 13, and 23
13	04/01-04/05	Statistical Analysis and Simulations in SAS HW 6: Due 04/11	LSB: Chapter 9
14	04/08-04/12	SAS Macros	LSB: Chapter 7 LSBE: Chapter 25
15	04/15-04/19	PROC SQL Project Report: Due 04/19	LSBE: Chapter 26
16	04/22-04/26	Student Presentations: In Class	

Note: LSB = Little SAS Book and LSBE = Learning SAS by Example

Holidays: No class during spring break!

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 3.4 or higher. R is available for free and can be download at <https://www.r-project.org/>, RStudio can be downloaded at <https://www.rstudio.com/products/rstudio/download/>. For SAS program purchase information and online documents, please see <https://software.ufl.edu/software-listings/sas-student-licensing.html>. 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](#)
- R for Data Science, by Garrett Grolemund and Hadley Wickham. Available online for free from [link](#)

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

Grades will be based on attendance, labs, homework and a final project.

- **Attendance** will be based on number of absences, where 1 point will be deducted for each unexcused absence up to the total of 10 points.
- **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 next class. Labs are graded for completion. In the case of an excused absences, 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** assignments will be assigned every 2 weeks. The homework are short programming exercises using the SAS/R skills covered during the previous weeks. Homework will be graded for accuracy in completing the assigned programming task. Late submissions will result in a 10% point deduction per day.
- A **final project** will be completed by each student to demonstrate and/or expand on the programming skills learned during this course. Each student will complete a project and give a short presentation during the final week of the class. Examples of project ideas include a formal written report of a data analysis, including tables, graphs, and results using report writing techniques such as Rmarkdown/Knitr and ODS or a simulation experiment. A grading rubric will be provided with the project assignment.

Grading

Requirement	% of final grade
Attendance	10%
In Class Labs (20, 1.5% each)	30%
Homeworks (6, 5% each)	30%
Final Project (Proposal – 5%, Report – 20%, Presentation – 5%)	30%

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

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.

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

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 or Late Submission

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 e-learning support 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 late submission.

Policy Related to Required Class Attendance

Class attendance is mandatory. 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. Excused absences should be communicated to the instructor PRIOR TO missed class days when possible. Regardless of attendance, students are responsible for all materials presented in class and meeting the scheduled due dates for class assignments. Finally, students should preview the currently assigned materials prior to the class meetings, and be prepared to discuss the material. Please note all faculty are bound by the UF policy for excused absences.

STUDENT EXPECTATIONS, ROLES, AND OPPORTUNITIES FOR INPUT

Expectations Regarding Course Behavior

Communication Guidelines: Questions about the course should be in class, through e-mail or 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 feedback on the quality of instruction in this course by completing online evaluations at <https://evaluations.ufl.edu>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. I value your feedback on the course and consistently work to improve the course based on your comments in the evaluations.

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
