University of Florida
College of Public Health & Health Professions Syllabus

PHC6052: Public Health Computing (3 credits)
Fall 2021
Delivery format: Online
Course content in E-learning using Canvas: http://elearning.ufl.edu

Instructor:	Jonathan Fischer, PhD
Meeting Information:	Asynchronous
Office phone:	352-294-5459
Email address:	jfischer1@ufl.edu
Office hours:	Mon 5:15-6:15 PM
	Tue 4-5 PM & 7-8 PM
	Wed 2-4 PM
Teaching assistants:	Ian Murphy
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Preferred communication:	Email

Details on OH: I don't distinguish between different courses for my office hours to offer you the maximal flexibility in when you can attend. All OH will be accessible by Zoom and those attending before 5 PM can also come to my office in CTRB 5223. Though you may drop in, I strongly prefer you sign up for a time slot ahead of time. The links to the Zoom and sign-up sheet will be posted on Canvas.

Prerequisites: There are no specific prerequisite courses, but students should be comfortable working with equations and performing basic mathematical calculations including order of operations, fractions, and square roots.

Additional information on all course policies can be found in the Graduate Catalog at https://catalog.ufl.edu/graduate/regulations/.

Purpose and Outcome

Course Overview: This 3-credit course is a sophisticated introduction to the concepts and methods of biostatistical data analysis. The topics include descriptive statistics, probability, standard probability distributions, sampling distributions, point and confidence interval estimation, hypothesis testing, power and sample size estimation, one and two-sample parametric and non-parametric methods for analyzing continuous or discrete data, and simple linear regression. The SAS statistical software package will be taught in this class for data management and statistical analyses.

Relation to Program Outcomes: This three-credit course is a required concentration core course for MPH Biostatistics students and covers the following competencies:
- Analyze quantitative and qualitative data using biostatistics, informatics computer-based programming and software, as appropriate.
- Communicate audience-appropriate public health content, both in writing and through oral presentation.

Course Objectives and/or Goals: Upon successful completion of the course, students will be able to:
- CO-1: Describe the role biostatistics serves in the discipline of public health.
- CO-2: Differentiate among different sampling methods and discuss their strengths and limitations.
- CO-3: Describe the strengths and limitations of designed experiments and observational studies.
- CO-4: Distinguish among different measurement scales, choose the appropriate descriptive and
- inferential statistical methods based on these distinctions, and interpret the results.
- CO-5: Determine preferred methodological alternatives to commonly used statistical methods when assumptions are not met.
- CO-6: Apply basic concepts of probability, random variation, and commonly used statistical probability distributions.
- CO-7: Use statistical software to analyze public health data.
- CO-8: Develop presentations based on statistical analyses for both public health professionals and educated lay audiences.

Instructional Methods: This course is presented using a mix of lectures and guided activities. Lectures will generally be posted Mondays and activities on Thursdays. You should review the materials provided in the online textbook prior to watching the corresponding lecture.

Course Schedule, Materials, and Technology

Tentative Schedule
This schedule is subject to change. All assignments are due at 11:59 PM ET on the day indicated.

Content to Review	Monday	Thursday	Assignments Due
Week 1 Introduction & Preliminaries	8/23 Syllabus and Course Introduction	8/26 SAS Demonstration	**8/26** - Quiz 0 - Syllabus - Assignment 1: Self-Assessment
Week 2 Unit 1A - EDA for One Variable	8/30. Preliminaries and EDA for One Variable	9/2 EDA for Two Variables	**9/2** - Quiz 1: Preliminaries - SAS Verification
Week 3	9/6	9/9	**9/9**

Unit 1B - EDA for Two Variables	No Class - Labor Day	Activity - Variables	- Quiz 2: EDA for 1 Variable
Week 4 Unit 2 - Collecting Data	9/13 Causation and Producing Data	9/16 Activity - Experimental design	**9/16** - Quiz 3: EDA for Two Variables - Assignment 2A: EDA for One Variable (Software)
Week 5 Unit 3A - Probability	9/20 Probability	9/23 Activity - Probability	**9/23** - Quiz 4: Causation - Assignment 2B: EDA for One Variable (Questions)
Week 6 Unit 3B - Discrete Random Variables	9/27 Discrete Random Variables	9/30 Activity - Discrete Random Variables	**9/30** - Quiz 5: Probability - Assignment 3A: Cases CC and CQ (Software)
Week 7 Unit 3B - Continuous Random Variables	10/4 Continuous Random Variables	10/7 Activity - Continuous Random Variables	**10/7** - Quiz 6: Discrete Random Variables - Assignment 3B: Cases CC and CQ (Written)
Week 8 Unit 3B - Sampling Distributions	10/11 Sampling Distributions	10/14 Activity - Sampling Distributions	**10/14** - Quiz 7: Continuous Random Variables - Assignment 4: Independent Events
Week 9 Unit 4A - Estimation	10/18 Estimation	10/21 Activity - Estimation	**10/21** - Quiz 8: Sampling Distributions - Assignment 5A: EDA for Two Variables (Software)
Week 10 Unit 4A - Hypothesis Testing	10/25 Hypothesis Testing	10/28 Activity - Hypothesis Testing	**10/28** - Quiz 9: Estimation - Assignment 5A: EDA for Two Variables (Written)
Week 11 Unit 4B - Inference for Relationships Case CQ	11/1 Case CQ	11/4 Activity - Case CQ	**11/4** - Quiz 10: Hypothesis Testing - Course Project Part 1
Week 12 Unit 4B - Inference for Relationships Case CC	11/8 Case CC	11/11 No class - Veterans Day	**11/12** - Course Project Part 2
Week 13 Unit 4B - Inference for Relationships Case QQ	11/15 Case QQ	11/18 Activity - Case CC	**11/18** - Quiz 11: Case CC
Week 14 Review	11/22 Activity - Case QQ	11/25 No Class - Thanksgiving	**11/23** - Course Project Part 3
Week 15 Review	11/29 Review	12/2 Work on projects	**12/2** - Quiz 12: Cases CQ & QQ - Assignment 6: Examples from Literature
Week 16	12/6	12/9	**12/6**

Perspectives	Perspectives in Biostatistics	No class - Reading day	- Quiz 13: Units 1-3 Review - Quiz 14: Unit 4 Review **12/9** - Course Project Part 4 - Assignment 7: End of Semester Self-Assessment

Textbooks: All course materials are available online either through Canvas (http://elearning.ufl.edu) or in the online open access textbook (http://bolt.mph.ufl.edu). There are no required textbooks to purchase for this course. You may find the following books useful as references.

- 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.

Software: In PHC 6052 you are only responsible for SAS. We are using SAS Version 9.3 (or higher) in this course. The current version available is SAS 9.4. See the SAS information sheet for specific instructions. There are several options for SAS access, though depending on your operating system, not all may work.

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). Click on the SAS Student page for SAS program purchase information and online documents. You must be on campus to take advantage of this option.
2) SAS is also available, along with other applications such as Microsoft Office, on the free UFApps server (https://info.apps.ufl.edu). This may be the best option for Mac users. To use SAS on UFApps, you will need to learn how to upload and download files to and from the UFApps server. See the Using SAS on UFApps document for specific instructions.
3) SAS also has a free virtual app called SAS University Edition. For more information and to download the needed software, see https://www.sas.com/en_us/software/university-edition.html. It can be used with Windows, OS X, and LINUX systems.
4) For some departments, SAS may also be available through their IT group or remote desktop. Check with your own department for SAS access.

Academic Requirements and Grading

Assignments: Grades will be based on quizzes, homework assignments, and the course project..

- There will be untimed **quizzes** in Canvas covering the material from the previous week. You can take each quiz up to three times before the due date, and your highest score will be recorded. When you submit a quiz attempt, you will see your grade and be able to review your responses.with feedback. We highly recommend that you start your first

attempt early and take your three attempts on different days with time for reviewing the course material in between.

- **Homework assignments** will involve data analysis using SAS and/or questions which cannot be easily presented in quizzes. These should be started well ahead of the due date.
- Each student will individually perform a **course project** consisting of a guided data analysis based upon two (hopefully linearly related) quantitative variables. The relationship between the two variables will be investigated using different approaches. This course project will be completed in 4 steps during the semester.

Grading:

Requirement	% of final grade
Quizzes (15)	15%
Assignments (7)	35%
Software for Assignments (3)	15%
Software for Course Project (Parts 1/2/3)	15%
Course Project (Part 4)	20%

Final Average	[94, 100]	[90, 94)	[87, 90)	[83, 87)	[80, 83)	[77, 80)	[73, 77)	[70, 73)	[67, 70)	[63, 67)	[63, 67)	<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 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.

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	3.67	2.33	2.0	1.67	1.33	1.0	0.67	0.0	0.0	0.0	0.0	0.0

Policy Related to Make-up Work: Students are allowed to make up work only as the result of excused absences consistent with College policies. 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 UF Computing help desk (http://helpdesk.ufl.edu/) correspondence. You must email me within 24 hours of the technical difficulty if you wish to request a make-up.

Policy Related to Required Class Attendance: This class is asynchronous and thus has no required attendance.

Student Expectations, Roles, and Opportunities for Input

Expectations Regarding Course Behavior: Students are responsible for all materials presented and meeting the scheduled due dates for assignments. Students should preview currently assigned materials prior to the corresponding lectures and activities.

Communication Guidelines: Questions about course material should be asked through email or via the Canvas Inbox. A member of the course staff will respond within one business day and often sooner.

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

Professionalism and COVID

As students pursuing a path in the health professions or public health, it is crucial to demonstrate professional behaviors that reflect integrity and commitment to the health of patients, fellow health professionals, and to populations we serve. To accomplish this, a strong responsibility for the well-being of others must be evident in our decisions, along with accountability for our actions. Professionalism in the health disciplines requires adherence to high standards of conduct that begin long before graduation. This is particularly true during times of health emergencies such as the COVID pandemic, given our professional habits can have a direct impact upon the health of persons entrusted to us.

If you are not vaccinated, get vaccinated. Vaccines are readily available at no cost and have been demonstrated to be safe and effective against the COVID-19 virus. Visit this link for details on where to get your shot, including options that do not require an appointment: https://coronavirus.ufhealth.org/vaccinations/vaccine-availability/. Students who receive the first dose of the vaccine somewhere off-campus and/or outside of Gainesville can still receive their second dose on campus.

Continue to regularly visit coronavirus.UFHealth.org and coronavirus.ufl.edu for up-to-date information about COVID-19 and vaccination.

COVID-19 Symptoms

See https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/symptoms.html for information about COVID-19 symptoms, which may include fever, cough, shortness of breath or difficulty breathing, fatigue, chills, muscle or body aches, headache, sore throat, congestion or runny nose, nausea or vomiting, diarrhea, and loss of taste or smell.

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/publicresults/.

Recording Within the Course: Lecture recordings will be provided each week. 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.

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 by visiting https://disability.ufl.edu/students/get-started/. 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. 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 website for more information: http://www.counseling.ufl.edu. Online 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 352-392-1161 or visit https://shcc.ufl.edu/.
- Crisis intervention is always available 24/7 from the Alachua County Crisis Center at 352-264-6789 or 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 an inclusive learning environment, please see your instructor or refer to the Office of Multicultural & Diversity Affairs website at www.multicultural.ufl.edu.