**University of Florida**
**College of Public Health & Health Professions Syllabus**
**PHC 6089: Public Health Computing (3)**
Spring: 2022 T 2-3 (8:30-10:25 am) R 2 (8:30-9:20 am) in HPNP G-111
Delivery Format: Face to Face
Course Content in E-Learning using CANVAS: http://elearning.ufl.edu

Instructor Name:                                        Dr. Robert Parker
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Email Address:                                          rlp176@phhp.ufl.edu
Office Hours:                                            W 1:55-2:45 via ZOOM
Preferred Course Communications:                       E-mail or CANVAS Inbox

TA:                                                    Samuel Anyaso (sanyasosamuel@ufl.edu)

**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 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 presented using prerecorded lectures. 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) | Assignments Due |
|---|---|---|---|
| 1 | 1/5 to 1/7 | Intro to R and Rstudio, Basic R, and Data Input/Output | |
| 2 | 1/10 to 1/14 | Subsetting Data in R, Data Summarization, and Basic Plotting | |
| 3 | 1/18 to 1/21 | Data Classes and Data Cleaning | |
| 4 | 1/24 to 1/28 | Manipulating Data in R and Data Visualization | Homework 1 - R |
| 5 | 1/31 to 2/4 | Loops, Functions, and Statistical Analysis | |
| 6 | 2/7 to 2/11 | Simulations, and Reports with Rmarkdown and Knitr | Homework 2 - R |
| 7 | 2/14 to 2/18 | Shiny | |
| 8 | 2/21 to 2/25 | Introduction to SAS | Homework 3 - R |
| 9 | 2/28 to 3/4 | Subsetting Data and Data Summarization in SAS | R Course Project |
| 10 | 3/14 to 3/18 | Formats, Functions, and Data Cleaning in SAS | |
| 11 | 3/21 to 3/25 | Data Manipulation and the Output Delivery System in SAS | Homework 4 - SAS |
| 12 | 3/28 to 4/1 | Statistical Analysis in SAS and Macros | |
| 13 | 4/4 to 4/8 | Simulations in SAS | Homework 5 - SAS |
| 14 | 4/11 to 4/15 | PROC SQL | Homework 6 - SAS |
| 15 | 4/18 to 4/20 | Work on SAS Project | |
| 16 | 4/25 & 4/29 | Exam Week | SAS Course Project |

**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

**Assignments**
Grades will be based on labs, homeworks and projects.

- **Lab** assignments will consist of a selection of programming exercises provided at the end of 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).
- **Homework** assignments will be assigned every 2 weeks. The homeworks 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. 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 students. 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.

**Grading**

| Requirement | % of final grade |
|---|---|
| Labs | 15% |
| Homeworks | 45% |
| R Project | 20% |
| SAS Project | 20% |

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.

| 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 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.

**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. UF rules require attendance during the first two course sessions. 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 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/.

**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.phhp.ufl.edu/services/resourceguide/getstarted.htm

**Online Synchronous Sessions:**
Our class sessions may be audio visually recorded for students in the class to refer back and for enrolled students who are unable to attend live. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded.  If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded.  If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.

**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