University of Florida
College of Public Health & Health Professions Syllabus
PHC 6790: Biostatistical Methods Using SAS (3 credits)
Fall: 2021
Delivery Format: Online and On-campus
Course Website: elearning.ufl.edu

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Teaching Assistant: Dorothy Ellis (Dorothy.ellis@ufl.edu
TA office location and hours: TBD or by appointment
Preferred Course Communications: E-Learning website or email

Prerequisites

PHC6050c: Biostatistical Methods I and PHC6051: Biostatistical Methods II -OR- Instructor determination of equivalent background

PURPOSE AND OUTCOME

Course Overview

The purpose of this course is to introduce and prepare students for biostatistical computing using the SAS statistical software. It builds on the knowledge obtained in the Biostatistical Methods I and II courses by reinforcing the material and focusing on application within the SAS framework. Topics covered include data management, frequency tables, linear and non-linear models, longitudinal data analysis, Matrix programming, simulation, and using SAS macros.

Relation to Program Outcomes

This will prepare students for future SAS programming and analysis needs within future coursework, graduate assistantships, as well as for future marketability and employment. The course counts as elective credit for MS Biostatistics students.

Course Objectives and/or Goals

Upon successful completion of the course, students should be able to (with SAS):
1. Import, export, and manipulate datasets
2. Initiate and perform basic and intermediate analyses
3. Interpret output from common procedures
4. Perform basic power analysis and create macros and simulations

Instructional Methods

Students are responsible for all course material, including reading required materials, watching required videos for each week, and course participation. For on-campus students, attendance and class readiness and participation are also required. Online students must meet participation requirements with weekly activity on class message boards.

Blended Learning

What is blended learning and why is it important?

A Blended Learning class uses a mixture of technology and face-to-face instruction to help you maximize your learning. Knowledge content that, as the instructor, I would have traditionally presented during a live class lecture is instead provided online before the live class takes place. This lets me focus my face-to-face teaching on course activities designed to help you strengthen higher order thinking skills such as critical thinking, problem solving, and collaboration. Competency in these skills is critical for today's health professional.

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	Topic	Chapter/Readings*	Assignments
1	Intro to SAS	1	HW 1
2	Statistics and Measurement in Health Research	2	HW 2
3	Clinical Trials	3	HW 3
4	Epidemiology/Observational Research	4	Lab 1
5	ANOVA/ANCOVA	6	HW 4
6	Regression	7	HW 5
7	Multiple Linear Regression	8	HW 6
8	Logistic Regression	9	HW 7
9	Generalized Linear Models	10	HW 8
10	Longitudinal Data Analysis I	12	HW 9
11	Longitudinal Data Analysis II	13	
12	Longitudinal Data Analysis III	14	Lab 2
13	Matrix Programming with SAS/IML	TBA	HW 10
14	Programming Macros	TBA	
15	Simulations with SAS/Missing Data	TBA+18	Final (take home)

Course Materials and Technology

*Required text: *Applied Medical Statistics Using SAS* (2013), by Geoff Der and Brian Everitt. CRC Press, Boca Raton, FL. ISBN 978-1439867976.

Optional text: The Little SAS Book: a primer, 6th edition (2019), Delwiche and Slaughter. SAS, Cary, NC. ISBN 978-1642952834

Note: Note that 'The Little SAS Book' 6th edition is currently available in electronic version for free from the UF. We will go over how to access it in the first class or during the first week.

Analysis will be performed with the SAS software. Examples of the use of this software will be included in assigned readings, course materials, and classroom activities.

Info for Obtaining SAS:

For on-campus students SAS 9.4 (SAS Education Analytical Suite) available for use on personal computer for $35 with information at:

https://software.ufl.edu/software-listings/sas-student-licensing.html

To enroll in the SAS Student Home Use Program, students can obtain the SAS from the UF Computing Helpdesk at the Hub

As an alternative (and for distance learning students), with internet access, SAS is also available (along with other applications such as Microsoft Office) on the free UFApps server (see http://info.apps.ufl.edu/). **Note that this is the manner that most students in the last couple of years have accessed SAS.**

See the SAS Information Sheet on the elearning site for more details and options. Please do not panic, there are always issues in the first week or so and they have always been worked out within a few days.

For technical support for this class, please contact the UF Help Desk at:

- 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.

ACADMIC REQUIREMENTS AND GRADING

Assignments

Homework (50%) will be assigned approximately once a week (10 expected assignments, each at 5% of total grade). Assignments will include: importing, exporting, and manipulating datasets; performing statistical analyses and basic power analyses; conducting simulations; creating macros; and interpreting results. Students are encouraged to consult one another on homework problems and programming issues, but everyone should perform their own programming and write-up and turn in their own homework along with the code that produced it; no "blind copying" or other obvious copying is permitted. Also, absolutely no assistance on class assignments should involve anyone not enrolled in the current course. Sample solutions will be provided and time allotted for questions. Care should be taken with respect to detail of assignments. **Of note, I will stress that a bunch of SAS output is not a valid HW submission. This does not show me that you understand what information is important and how to interpret it.** Homework write-ups and related files (e.g. SAS code) will be turned in electronically via the e-learning system. Approximately half will be graded for completion and the other half for content.

Laboratory/Group assignments (15%) may be worked on as group exercises. Each member of the group must attest that there was (approximately) equal participation in the final product with a statement such as "This assignment was significantly contributed to by all team members". Assignments will be turned in electronically via the e-learning system (one per group). Two Lab/Group assignments, each at 7.5% of final grade.

Class participation (10%) will include weekly attendance and active participation in discussions and message boards. Online students will have a weekly requirement for online discussion boards. For on-campus students, all unexcused class absences for scheduled classes will result in decrement to participation grade. A participation rubric will be included on the e-learning site.

Final exam (25%) will be assigned in the last week of class and will be a take home exam with 4 days allotted to completion. Exam materials will be turned in electronically via the e-learning system. University designated reading days will not be included in the 4 day exam allotment.

Late Exams will be assessed a 10% penalty for each hour, beginning at 12:01am after it is due and each subsequent hour (e.g., 9:01am results in a 0).

Grading

The grading scale for this course consists of the scale, including minus grades, below. The conversion factors for grade point values that are assigned to each letter grade are also included:

93% - 100% = A
90% - 92.99% = A-
87% - 89.99% = B+
83% - 86.99% = B
80% - 82.99% = B-
77% - 79.99% = C+
73% - 76.99% = C
70% - 72.99% = C-
67% - 69.99% = D+
63% - 66.99% = D
60% - 62.99% = D-
Below 60% = 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	Grade Points
A	4.0
A-	3.67
B+	3.33
B	3.0
B-	2.67
C+	2.33
C	2.0
C-	1.67
D+	1.33
D	1.0
D-	0.67
E	0.0
WF	0.0
I	0.0
NG	0.0
S-U	0.0

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

Final Take-Home Exam Policy

Absolutely no communication with anyone concerning the exam or course material is allowed during 'take home' exam. All programming, thinking, output, interpretation, and write up should be 100% your own. If you believe there is a problem with an element of the exam, you may let the instructor know, but I may just tell you to continue as best you can. Please select carefully what relevant output to include in your write-up (NOT ALL OF IT) and then, in your write-up, refer specifically to the values/results/output that assist with addressing the question. All analyses should be completed with SAS. As always, include your code as a separate and well documented .sas file as well as a .log file with your assignment. The honor pledge should be completed at the bottom of the assignment. There is a 10% exam grade penalty (for each) if documented code file is not included or honor pledge is not completed.

Policy Related to Make Up Exams or Other Work

All assignments need to be handed in on time. Grading will penalize late assignments. Late Homework and Laboratory/Group assignments will be assessed a 10% penalty for each day, beginning at 12:01am the day after it is due and each subsequent day. Missed assignments will receive a zero score. For the final exam, late submissions will lose 10% with an additional 10% each hour. Personal issues with respect to fulfillment of course requirements will be handled on an individual basis, but after an assignment is due is not the correct time to bring up issues.

Please note: 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 e-mail me within 24 hours of the technical difficulty if you wish to request a make-up.

Policy Related to Required Class Attendance

Attendance of all class sessions is required (for campus students) and online participation is required (for online students). Please contact the instructor as early as possible regarding possible absences. Students are expected to show up for class on time and be prepared to participate.

Excused absences must be consistent with university policies in the Graduate Catalog (http://gradcatalog.ufl.edu/content.php?catoid=10&navoid=2020#attendance). Additional information can be found here: https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx

STUDENT EXPECTATIONS, ROLES, AND OPPORTUNITIES FOR INPUT

Expectations Regarding Course Behavior

Cell phones are to be silenced during class unless there is an emergency, in which case please inform the instructor. Students should be prepared and ready to participate in class and on the e-learning course site as applicable. Excused absences follow the criteria of the UF Graduate Catalogue (e.g., illness, serious family emergency, military obligations, and religious holidays). Unexcused absences will affect participation grade, with three or more unexcused absences from scheduled sessions result in a 0% for that grade component. Regardless of attendance, students are responsible for all material presented in class and meeting the scheduled due dates for class and lab assignments. Finally, students should read the assigned readings prior to the class meetings, and be prepared to discuss the material for each session.

Communications Guidelines

Course discussions (online and in-class) should be respectful, thoughtful, and courteous. Please review and follow the UF *Netiquette Guidelines:*
http://teach.ufl.edu/wp-content/uploads/2012/08/NetiquetteGuideforOnlineCourses.pdf

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.

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.

In response to COVID-19, the following professional practices are in place to maintain your learning environment, to enhance the safety of our in-classroom interactions, and to protect the health and safety of ourselves, our patients, our neighbors, and our loved ones.

- You are required to wear approved face coverings at all times while in Health Science Center classrooms and within Health Science Center buildings even if you are vaccinated.
- If you are sick, stay home and self-quarantine. Please visit the UF Health Screen, Test & Protect website about next steps, retake the questionnaire and schedule your test for no sooner than 24 hours after your symptoms began. Please call your primary care provider if you are ill and need immediate care or the UF Student Health Care Center at 352-392-1161 (or email covid@shcc.ufl.edu) to be evaluated for testing and to receive further instructions about returning to campus. UF Health Screen, Test & Protect offers guidance when you are sick, have been exposed to someone who has tested positive or have tested positive yourself. Visit the UF Health Screen, Test & Protect website for more information.
- Continue to follow healthy habits, including best practices like frequent hand washing.
- Avoid crowded places (including gatherings/parties with more than 10 people)

Sanitizing supplies are available in the classroom if you wish to wipe down your desks prior to sitting down and at the end of the class. Hand sanitizing stations will be located in every classroom.

Course materials will be provided to you with an excused absence, and you will be given a reasonable amount of time to make up work. If you are withheld from campus by the Department of Health through Screen, Test & Protect you are not permitted to use any on campus facilities. Students attempting to attend campus activities when withheld from campus will be referred to the Dean of Students Office.

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.

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: http://facstaff.phhp.ufl.edu/services/resourceguide/getstarted.htm

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.

- 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. Online and in person assistance is available.

- U 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

- **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.

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.