University of Florida
College of Public Health & Health Professions Syllabus
Course PHC 7065: Advanced Skills in Epidemiological Data Management (2 credit hours)
Semester: Spring 2024
Delivery Format: On-Campus, HPNP G-110/over Zoom (for students enrolled in the Certificate in
Psychiatric Epidemiology only),
Tuesday 3 pm - 4:55 pm
Course Website: https://elearning.ufl.edu/

Instructor Name: Yiyang Liu, PhD MPH
Office Location: 2004 Mowry Road, Clinical and Translational Research Building (CTRB) #4233
Phone Number: 352-294-4572
Email Address: yliu26@ufl.edu
Office Hours: Thursday 1-2:30 PM (in office or over Zoom
https://ufl.zoom.us/j/97910242161?pwd=bXpOTUVLblJoRm5uTTl1QlVDYk0yQT09)
Preferred Course Communications: Canvas message, Email

Prerequisites
PHC 6052 and PHC 6000 (or equivalent), or instructor permission.

PURPOSE AND OUTCOME

Course Overview

This course focuses on providing critical SAS and SQL programming skills needed to manage public
health data (ranging from survey data to administrative data such as electronic health records). The
course covers data import, export, and visualization; basic descriptive analysis, working with
numerical, character, and date variables, SQL and relationship database, SAS macro, do-loop, and
array. Brief introductions to coding in R and Python will also be covered, but the primary focus is on
SAS.

Relation to Program Outcomes
This two-credit course is an epidemiology core course for Ph.D. students under the category
"Statistics & Data Management" This course will teach students the necessary skills how to work
with different data formats and prepare raw data for different statistical analyses. The course
contributes to the Ph.D. program student learning outcomes "Design epidemiologic research studies
and analyzes data to answer health-related research questions that are currently relevant to the
population."

Course Objectives and/or Goals

The overall goal of this course is to develop SAS programming skills in epidemiological database management. Upon successful completion of the course, students will be able to:

1. Import and Export data with the SAS Wizards; create and use SAS library, examine database structure.
2. Use different functions to work with numerical, character, and date variables; create dummy variables; generate basic descriptive analyses for continuous and categorical variables.
3. understand relational databases, gain experience and skills with SQL, discriminate between different types of SQL joins and unions.
4. use SQL to merge two or more data sets together, merge data at aggregate level and individual level.
5. Utilize SAS macro variables, functions, programs, and do-loops to simplify repetitive coding structures.
6. perform data transformation between long and wide formats with different methods
7. understand the structure and components of Electronic Health Records (EHR) and biomedical ontologies, such ICD, LOINC, and RxNorm, with the ability to apply this knowledge in health informatic projects.

Instructional Methods

We will meet for 13 weeks, between 3:00 PM – 4:55 PM on Tuesday. Students will be expected to bring on their own laptops to all classes and the midterm unless otherwise required. Grades will be based on homework assignments (40%), mid-term exam (30%), and final project (30%).

What is expected of you?

You are expected to actively engage in the course throughout the semester. You are expected to attend classes on time and actively participate in the 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

Date	Agenda	Assignment Due (40% of Final Grade)	Project Due/Exam (60% of Final Grade)
Jan 9, 2024	Week 1 Course overview		
Jan 16, 2024	Week 2 SAS BASIC	Assignment 1: posting on Canvas discussion board (60 pts, ~4.8%)	
Jan 23, 2024	Week 3 Basic SQL (including SQL application in R and Python)		
Jan 30, 2024	Week 4 Working with numeric variables	Assignment 2: covers weeks 2 and 3 (100 pts, ~7.9%)	
Feb 6, 2024	Week 5 Working with character and date variables		
Feb 13, 2024	Week 6 SQL and relational database 1	Assignment 3: covers weeks 4 and 5 (100 pts, ~7.9%)	
Feb 20, 2024	Week 7 SQL and relational database 2		
Feb 27, 2024	Week 8 Hands-on experience working with Electronic Health Record data	Assignment 4: covers weeks 6 and 7 (115 pts, ~9.1%)	Project proposal (5%)
Mar 5, 2024	Week 9 Midterm Exam		Mid-term exam (30%)
March 12, 2024	Spring Break, no class		
Mar 19, 2024	Week 10 SAS macro I Macro variable, function, and program		
Mar 26, 2024	Week 11 SAS macro II		

	Macro Do Loop		
Apr 2, 2024	Week 12 SAS array Transformation between long and wide data format	Assignment 5: covers weeks 10 and 11 (130 pts, 10.3%)	
Apr 9, 2024	Week 13 Guest lecture by Mark Britton on the topic of "a crash course on R" Student presentation 1		Final presentation (15%)
Apr 16, 2024	Week 14 Student presentation 2		Final project report (10%)

Course Materials and Technology

In this class, we will use SAS 9.4 for programming. SAS can be accessed from the PHHP SAS server or UF APPs. There is no required textbook. Here is a textbook that might be helpful to you:

Learning SAS by Example: A Programmer's Guide. Author: Ronald P Cody (2018)

This book is available from UF library ProQuest E-book Central.

For technical support for this class, please contact the UF Help Desk at: Learning-support@ufl.edu, (352) 392-HELP – select option 2, or https://lss.at.ufl.edu/help.shtml.

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/

For technical support related to PHHP SAS server, please contact PHHP Information Technology (IT) support at:
- support@phhp.ufl.edu
- (352)-273-6200
- https://it.phhp.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.

ACADEMIC REQUIREMENTS AND GRADING

Assignments *Five assignments total, each account to 8% of the total score. Assignment 1 is a discussion post. Assignments 2 to 5 will be SAS programming works. For assignments 2-5, you will need to submit your 1) labeled SAS program in .sas format, and 2) a word document that includes a copy of your SAS codes, a screenshot of the SAS log, a screenshot of the results (if applicable) and your response (if application) for each question.*

Grading composition

- Homework: 40% (5 assignments)
- Mid-term Exam: 30%
- Project Proposal: 5%
- Final project presentation: 15%
- Final project report: 10%

Homework assignments. A total of 5 assignments will be given. Assignment 1 is a discussion post. Assignments 2 to 5 are small SAS programming projects. Each assignment has its own points value based on the skills covered, and the assignments together are 40% of the final grade.

You are required to compliant with the following assignment rules:

- Your assignment must be turned in no later than the due time.
- Late homework assignments will not be accepted unless you have a formal proof of the exception (e.g., a written doctor's note, a police ticket, etc.).
- No handwritten assignment. All assignments need to be submitted electronically on Canvas (will be clarified at the beginning of the course).
- For assignments 2-5, you will need to submit a word document that includes the following elements for each question in the assignment:
  1) the original question for the assignment
  2) copy and paste your SAS codes for each question
  3) a screenshot of the SAS log from your submitted code
  4) a screenshot of the SAS result output (if specified)
  5) your response to the question (if specified)
- DO NOT COPY OTHERS' HOMEWORK. There is zero-tolerance. The one who copies the homework will receive 0 points; and the one who is copied will get only 50% of the points that he/she should have received.
- You can work with others (e.g., discuss, consult, etc.) on a homework assignment. And, if you work on a homework assignment with other students in the course, you are required to list their names when you turn in the assignment. Plagiarism will receive 0 points.
- Searching for a solution on the web or from a previous student—and then submitting it as your answer for a homework assignment—will be considered a violation.

Course project. The final product of the course is a course project, which consists of 30% of the final grade and includes three part: a proposal, a presentation, and a final report. Each student is required to complete a course project individually (that is no group project). In this final project, you will practice the SAS codes taught in the class with real research data. You will need to apply at least one code from EACH week's class before the midterm (weeks 2 to week 8) and at least one code from ANY courses after the midterm (weeks 9 to 11) to a dataset you are currently working on or a dataset of your interests.

1. Project proposal requirements:

   Submit a one-page proposal and include (50 pts)

   a. Descriptions of Data Source you wish to work on: such as what study is the dataset associated with, how it can be accessed, any associated IRB, what are the data formats, and which variables you intend to work with (20 pts)
   b. Which SAS codes you are considering using from each week's lecture before midterm (This could be your tentative plans. You can make changes to it when implementing them) (20 pts)
   c. Proposed timeline for coding (10 pts)
2. Project presentation requirements:

   Prepare a ~ 15 minutes of presentation to demonstrate your project followed by a 5 minutes Q&A. (150 pts)

   You will be scored based on:

   1. Well-described data source (30 pts)
   2. Clearly marked which part of the codes corresponds to which week's lecture (30 pts)
   3. Clearly described all the steps involved in the data programming (30 pts)
   4. Understandable presentation and appropriate organization (30 pts)
   5. Timing of the presentation (20 pts)

3. Project final report requirements:
   Submit the final project including your SAS codes and slides for the final presentation (100 pts)

   1. Clearly comments in your program which part of the codes corresponds to which week's lecture (20 pts)
   2. Appropriate application for SAS codes from each week (80 pts total)
      1) Week2 (10pts)
      2) Week3 (10pts)
      3) Week4 (10pts)
      4) Week5 (10pts)
      5) Week6 (10pts)
      6) Week7 (10pts)

7) Week8 (10pts)
8) Any week after midterm (10pts)

Point system used

Points Earned	93-100	90-92	87-89	83-86	80-82	77-79	73-76	70-72	67-69	63-66	60-62	<60
Letter	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E
Grade	4.0	3.67	3.33	3.0	2.67	2.33	2.0	1.67	1.33	1.0	0.67	0.0

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

More information on UF grading policy may be found at:
http://gradcatalog.ufl.edu/content.php?catoid=10&navoid=2020#grades
https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/

Exam Policy

The midterm exam will cover course lectures from week 1 to week 7. The exam will include multiple choices, true/false, or fill in the blank questions.

A two-stage assessment will be used for the midterm exam. In the first stage, you will be asked to answer all questions as a closed-book exam. After you submit your exam, you complete the first-stage of the exam and can continue to the second stage. You will not know which questions you got wrong or right after submitting the first stage of the exam. In the second stage, you will be asked to answer exactly the same questions you saw in the first stage. But this time, it will be an open-book exam and you could review all past course materials to help you answer the questions. Your total exam score will be the sum of your score in both stages (the first stage account for 50% of the grade and the second stage will account for the other 50%).

For example, there are 25 questions in the exam, and each question is worth 4 points. In the first stage of exam, you correctly answer 20 questions. Your score for the first stage of the exam will be 80 points (20*4 points) . In the second stage, you reviewed course slides and correctly answer 24 questions. Your score for the second stage of the exam will be 96 points (24*4 points). Your final score for the exam will be 80*50% + 96*50% = 88.

Policy Related to Make up Exams

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

Class attendance is mandatory. Excused absences follow the criteria of the UF Graduate Catalogue (e.g. illness, serious family emergency, military obligations, religious holidays), and should be communicated to the instructor prior to the missed class day when possible. UF rules require attendance during the first two course sessions. Each unexcused absence results in a 1.5% point deduction from the final grade. Missing more than three scheduled sessions without excuse (each live recitation session is about 1 hour) will result in a failure. Students are responsible for all material presented in class and meeting the scheduled due dates for class assignments.

Please note all faculty are bound by the UF policy for excused absences. Excused absences must be consistent with university policies in the Graduate Catalog (https://catalog.ufl.edu/graduate/regulations/#text). 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

Please come to class on time and be prepared to stay until the time scheduled as the end of class. We think your investment in the degree is worth maximizing your in-class experience, and we expect to provide materials that utilize the full, scheduled class times. The use of cell phones is not permitted. Please turn them off or, if you expect urgent calls, set them to "vibrate." Please do not engage in "side conversations" while the instructor or a presenter is leading the class. If the material is unclear, other students are likely to have a similar question; you are strongly encouraged to ask in-class questions so that all students may benefit from the discussion.

Communication Guidelines

Assistance with course material is available during scheduled office hours or by appointment. Canvas message is the preferred way for communication, and we aim to address all such inquiries within 24 hours of receipt (or on Monday if the email was sent on Friday). Please do not re-send the same question until the appropriate time frame has elapsed (24 hours or end of day Monday for emails sent on Friday). Student success and understanding is of the utmost importance, so each email receives careful consideration.

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.

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. On line 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