

University of Florida
College of Public Health & Health Professions Syllabus
PHC6011: Epidemiology Methods II (3 credit hours)
Summer A/C 2019
Delivery Format: On-Campus
Mondays and Wednesdays 9:30am-1:45pm
Course Website: E-Learning in Canvas

Instructor Name: Lusine Yaghjian, MD, MPH, PhD
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Office Hours: by appointment (2004 Mowry Road, Room 4216)
Class TA: TBA

Prerequisites

PHC 6000, PHC 6052, and PHC 6053. Admission may be restricted to epidemiology concentration students, with others admitted as space is available. Students are required to have completed SAS course, preferably in PHC 6053. Students must have access to a laptop with either SAS version 9.2 or higher for in-class use. This class assumes an advanced competency with epidemiologic principles and vocabulary, in addition to a working knowledge of introductory statistical methods and regression techniques.

PURPOSE AND OUTCOME

Course Overview

This course provides students with working experience in designing and implementing secondary data analysis describes the implementation of common analytic methods in epidemiology. A course project helps build a foundation in applied epidemiologic analysis and develop experience in peer-review productivity based on secondary data.

Course Objectives and/or Goals

This course builds upon PHC 6000 (Epidemiology Methods I) to extend the understanding of epidemiologic concepts and methods by providing applied training in the conduct of secondary data analysis studies. Using data from the NHANES, students will identify a research question; describe a causal model, specific aims, and hypotheses based on a review of the literature; gain experience in data management; conduct epidemiologically sound analyses with regard to study design, confounding, and effect modification; and interpret results with respect to the strength and precision of estimates, potential selection and information bias, and generalizability.

Instructional Methods. We will meet for 11 sessions, each of which will last 4.25 hours. In general, sessions will consist of two parts: brief theory and application. The theory components will review epidemiologic methods. In the application sections, we will explore how the methods are implemented and interpreted in practice using SAS. Application sections will also include student presentations at key milestones in the course project. Upon completion of the course project, students will have generated a research question, compiled and analyzed data to address this question, and constructed a manuscript draft that would follow a structure of a peer-reviewed manuscript.

DESCRIPTION OF COURSE CONTENT

Topical Outline/Course Schedule

Class	Theoretical part/assigned readings	Practice	Assignment due
Week 1. 05/13/19	<ul style="list-style-type: none"> Course overview Introduction to NHANES data; How to work with data dictionaries Use of conceptual models in hypothesis generation <p>Readings: Paradies, Dunn</p>	<ul style="list-style-type: none"> Familiarization with NHANES data dictionary Review of available NHANES data/selection of the research topic literature review and summary table biological feasibility and conceptual model research hypothesis Presentation of conceptual models and hypothesis by working groups 	
Week 1. 05/15/19	<ul style="list-style-type: none"> Introduction to NHANES data; downloading and merging Guidelines for development of preliminary analysis plan Logistics of working with data and programming 	<ul style="list-style-type: none"> Identification of important variables: outcome, independent, covariates Development of preliminary analysis plan, including inclusion and exclusion criteria for the study sample Presentation by the working groups 	Project Part 1. Introduction and conceptual models
Week 2. 05/20/19	<ul style="list-style-type: none"> Data exploration and clean up outcome and independent variable modeling approaches/transformations methods for dealing with missing data variable recoding <p>Readings: Karahalios et al.; Sterne et al</p>	<ul style="list-style-type: none"> Data clean up (categorical, continuous variables) Selection of outcome and independent variable modeling approaches/decisions on transformations methods for dealing with missing data decisions on variable recoding identification of the final study sample 	Project Part 2. Analysis plan
Week 2. 05/22/19	<ul style="list-style-type: none"> Descriptive statistics (Table 1) GLR, LR, and survival models in SAS: dealing with assumption violations and reading SAS outputs 	<ul style="list-style-type: none"> Preparation of Table 1/summary of the findings Presentations of descriptive results by the working groups 	
Week 3. 05/27/19	NO CLASS		
Week 3. 05/29/19	<ul style="list-style-type: none"> Confounding overview Methods for identifying potential confounders: Table 1, univariate/multivariate analysis; literature review <p>Readings: Robins, Hernan</p>	<ul style="list-style-type: none"> Identification of potential confounders Summary table for univariate results Presentation of potential confounders by working groups 	
Week 4. 06/03/19 Holiday	<ul style="list-style-type: none"> Selection of parsimonious and full models/forcing variables into the models Table 2 basics (univariate, full, and parsimonious models) Tests for trend Bonferroi adjustment 	<ul style="list-style-type: none"> Model selection; parsimonious and full models Trend tests (if applicable) Table 2 and summary of the results Presentation of Table 2 by working groups 	
Week 4.	<ul style="list-style-type: none"> Interactions overview 	<ul style="list-style-type: none"> Identification of possible interactions 	

Class	Theoretical part/assigned readings	Practice	Assignment due
06/05/19	<ul style="list-style-type: none"> Modeling approaches Modeling joint effect variables <p>Reading: https://www.ncbi.nlm.nih.gov/books/NBK19918/</p>	<ul style="list-style-type: none"> Stratified analysis Joint effects 	
Week 5. 06/10/19	<ul style="list-style-type: none"> Secondary analyses approaches Power calculation with PS Power and Sample Size Calculation (available for download at http://biostat.mc.vanderbilt.edu/wiki/Main/PowerSampleSize) 	<ul style="list-style-type: none"> Identification of needed secondary analyses Preparation of supplementary tables Power calculations (if applicable) 	Project part 3 (Methods and Results)
Week 5. 06/12/19	<ul style="list-style-type: none"> Discussion section guidelines interpretation of the findings Biases 	<ul style="list-style-type: none"> Development of discussion sections 	
Week 6. 06/17/19	<ul style="list-style-type: none"> Poster development 	<ul style="list-style-type: none"> Poster presentations by the students 	
Week 6. 06/19/19		<ul style="list-style-type: none"> Student final project presentations 	Final paper due

Course Materials and Technology

Text/Readings

No required text.

[Recommended] Rothman K, Greenland S, and Lash T. Modern Epidemiology, Third Edition. Philadelphia, PA: Lippincott Williams & Wilkins, 2008.

Additional article-length readings will be assigned as needed.

Throughout the course, we will analyze data from the National Health and Nutrition Examination Survey (NHANES). De-identified, publicly-accessible versions of this data are available through the CDC website (<https://www.cdc.gov/nchs/nhanes/index.htm>). In general, IRB considerations when analyzing health data are very important, and one must obtain IRB approval when conducting human subjects research. For the purposes of this course only, IRB approval for use of the NHANES data is not needed, since we are not conducting research (we are not contributing to generalizable knowledge, rather, we are simply completing course exercises). If, however, you wish to use more advanced analysis techniques and present your findings anywhere outside this classroom, you will need to apply for an IRB exemption through <https://my.irb.u.edu>. Applying for an exemption from full IRB board review is easier and faster than asking for a full panel review; the reason your research will qualify for exempt status is that the data is anonymous and in the public domain.

For all class sessions, students are expected to bring a laptop with either SAS version 9.2 or higher. Materials related to use of NHANES Data can be found at the following links:

<https://www.cdc.gov/nchs/tutorials/NHANES/downloads/intro.htm>

<https://wwwn.cdc.gov/nchs/nhanes/analyticguidelines.aspx>

We will also use PS Power and Sample Size Calculation software which can be downloaded for free at: <http://biostat.mc.vanderbilt.edu/wiki/Main/PowerSampleSize>

For technical support for this class (not related to SAS or R programming), please contact the UF Help Desk at: Learning-support@u.edu, (352) 392-HELP - select option 2, or <https://lss.at.u.edu/help.shtml>.

Canvas

Canvas is accessible at lss.at.ufl.edu or through my.ufl.edu. You must have a valid Gatorlink ID and password. For assistance, call the UF Help Desk at 392-HELP.

Required: All materials will be posted in Canvas or Web site links will be provided. Students are responsible for all course material, including required readings prior to each class.

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

Course Requirements

1. Read assigned articles before lectures;
2. Completed all project parts throughout the semester;
3. Prepare a poster summarizing the study
4. Complete and present the final project at the end of the semester.

The assessment is primarily based on assignments that guide students through conduct of their secondary data analysis studies (project parts 1-3) and their final paper and presentations. Most projects will use the NHANES data, although students are welcome to use their own data with instructor (and IRB) approval. Even though use of NHANES data requires probability weighting procedures, these will not be required for the class as it is an exercise and does not aim to produce manuscript quality results. However, if you would like to learn the weighing procedure and apply it to your project, you are welcome to do so. Relevant documentation on the use of these procedures can be found at <https://www.cdc.gov/nchs/nhanes/analyticguidelines.aspx>. Each project part consists of an oral presentation and a written component. The written components should include the code used to generate any results; this forms part of the grade for the written pieces. Students are also assessed on feedback provided by their peers. Some topics covered in the course are not required to be used in the course project (e.g. survival analysis), but if you are using your own data, you are welcome to apply this method.

The course project includes the components listed below. Project components are due by the start of the class time as on the day of deadline, as listed in the table below. Late submission will receive an automatic score of 0 unless I have given prior approval. Failing to try each project part and/or failing to contact the TA or me if you are having trouble with the problem set can result in a grade of "0". Project parts are not graded for perfect grammar or spelling, but making your writing clear is important. The practice of epidemiology is enhanced by clear communication and because this is a graduate school course, competent writing *is important*.

Project Part 1-Introduction and conceptual model. This project component will present the conceptual model (in the form of a causal diagram) with an accompanying brief literature review including a summary table and synopsis of the evidence. Because of time constraints in the course, the literature review does not need to be as extensive as typically done for peer-reviewed literature; however, some justification of the proposed study should be presented. Written aims and hypotheses should complement the conceptual diagram. A data table that presents main features of reviewed articles, including relevant population characteristics, main methods, main findings, analytical approach and covariates used for adjustment is required. Maximum length: 2 double-spaced pages not including tables, figures, and references.

Project Part 2. Analysis proposal

This piece will summarize your proposed analysis plan including population selection (inclusion and exclusion criteria) and analytical approach, including statistical technique, preliminary modeling approach, and definition of outcome, independent variable, and covariates.

Project Part 3: Methods and Results

In this part, you will summarize the study design and the methods and describe the main results of the study. These should include: study population, inclusion and exclusion criteria, outcome and independent variable definitions, covariates, and analytical approaches. The results should include population characteristics (Table 1), regression analysis (univariate, multivariate, and parsimonious), interaction results, and any secondary analyses. Maximum length: 4 double-spaced pages not including tables, figures, and references.

Project poster. During week 6, students will develop scientific-style posters and present them to the class (as power point, no printing). The posters need to be set to 3' x 4' format. Right after the presentation, the poster file will be e-mailed to the instructor and the group will receive a common grade for this assignment based on the poster design and content.

Final paper and presentation. The final paper will include the previous section as well as added abstract, discussion, and any supplementary materials. The abstract should contain the following sections: Background and objective, Methods, Results, and Conclusion. Maximum length for the abstract is 350 words. The discussion needs to include a few sentence summary of the main findings, comparison with previous studies, explanation of plausible mechanisms, study strengths and limitations and conclusion and future directions. **Maximum length for the entire final paper:** 10 double-spaced pages not including tables, figures, and references. All figures and tables need to be placed after the references. Any supplementary materials need to be labeled and referenced in the text.

Each group will have 25 minutes for their in class presentation. Presentations should be developed as team work and at least 2 team members need to be involved in the oral presentation. Presentation should not include more than 20-22 slides and should be consistent with the final paper. Presentation files should be e-mailed to the instructor **no later than 9am on 06/20/2018**. Each team will receive a common grade for the presentation.

All completed assignments (except poster and presentation) need to be uploaded as Word files via Canvas. Files uploaded in a different format will not be graded. Presentations need to be e-mailed directly to the instructor as Power Point files. Do not e-mail your presentation via Canvas!

Class participation assessment will include attendance and participation in discussions. As this class requires regular team work, your participation and contribution to the team project is very important. Non-attendance will result in a one-point reduction in your class participation grade for each occasion it occurs. If you are present but do not participate in your team's work you will be deducted one point for each such occasion. In addition, each team member will evaluate contributions of other team members to the final project. The final participation grade will be the average of the instructor's and team members' scores.

Grading

Grading will be based on attendance, class participation, and project assignments.

Assignment	Due date	Points or % of final grade
Project part 1	05/15/2019	5% (10 points)
Project part 2	05/20/2019	5% (10 points)
Project part 3	06/10/2019	20% (20 points)
Poster presentation	06/17/2019	10% (20 points)
Final paper	06/19/2019	30% (30 points)
Final presentation	06/19/2019	10% (20 points)
Attendance and in-class participation	NA	20% (10 points)

This course will be graded following the policies described here

<http://gradcatalog.ufl.edu/content.php?catoid=4&navoid=907&hl=grades&returnto=search#grades>

Percentage or points earned in class	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 equivalent	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E

A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E	WF	I	NG	S-U
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

For greater detail on the meaning of letter grades and university policies related to them, see the Registrar's Grade Policy regulations at:

<http://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Policy Related to Make up Work

Make-up work will be allowed by the course instructor on an individual basis after an excused absence (see above). Students should consult with the professor for new deadlines for assignments. Please consult the

university guidelines for more information on makeup policies:
<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>.

Policy Related to Required Class Attendance

This is an interactive class and students are expected to be present and to participate in all class sessions. Students who know they will need to miss a class session should discuss this with the instructor prior to the date of the class, or on the day of the absence for illness or emergency. According to the UF Catalog (link below) "In general, acceptable reasons for absences from class include illness, serious family emergencies, special curricular requirements, military obligation, severe weather conditions, religious holidays, and participation in official University activities. Absences from class for court-imposed legal obligations (e.g., jury duty or subpoena) must be excused. Other reasons also may be approved."

Please note all faculty are bound by the UF policy for excused absences. For information regarding the UF Attendance Policy see the Registrar website for additional details:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

STUDENT EXPECTATIONS

Communication Guidelines. Assistance with course material is available by appointment. Emailed questions are also welcome, 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. Because the number of students in the course is not small, substantial time may be spent by the instructor and TA on emailed concerns; your patience and understanding is appreciated. When emailing a question, please also copy the TA, as this may increase your chances of getting a quick reply!

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.

Citations and Plagiarism

The two key purposes of citation are to: 1) give appropriate credit to the authors of information, research findings, and/or ideas (and avoid plagiarism), and 2) facilitate access by your readers to the sources you use in your research.

Quotations: When directly quoting an outside source, the borrowed text, regardless of the amount, must be surrounded by quotation marks or block quoted. Quoted text over two lines in length should be single-spaced and indented beyond the normal margins. Every quote must include a source—the author, title, volume, page numbers, etc.—whether an internal reference, footnote, or endnote is used in conjunction with a bibliography page.

Paraphrasing or Citing an Idea: When summarizing an outside source in your own words or citing another person's ideas, quotation marks are not necessary, but the source must be included. This includes, but is not confined to, personal communications from other students, faculty members, experts in the field, summarized ideas from published or unpublished resource, and primary methods derived from published or unpublished sources. Use the general concept of “when in doubt – cite.”

Plagiarism is a serious violation of the academic honesty policy of the College. If a student plagiarizes others' material or ideas, UF Policies on Honesty and honor code violations, noted above, will be followed.

Generally speaking, the three keys of acceptable citation practice are: 1) thoroughness, 2) accuracy, and 3) consistency. In other words, be sure to fully cite all sources used (thoroughness), be accurate in the citation information provided, and be consistent in the citation style you adopt. All references should include the following elements: 1) last names along with first and middle initials; 2) full title of reference; 3) name of journal or book; 4) publication city, publisher, volume, and date; and 5) page numbers referenced. When citing information from the Internet, include the WWW address at the end, with the “access date” (i.e., when you obtained the information), just as you would list the document number and date for all public documents. When citing ideas or words from an individual that are not published, you can write “personal communication” along with the person's name and date of communication.

Use of unauthorized assistance resources

As graduate students at the UF, you are expected to present your own work for grading. Unauthorized sources of help, including commercially available software and services are not allowed. Even though the students will not be graded on their grammar, it is expected that as graduate students you will have sufficient English language skills to convey your thoughts in organized and understandable manner. If the assignment is unreadable, it will not be graded and will be assigned zero points. Use of unauthorized assistance sources will result in zero points on the written assignment and a report to the Dean of Student's Office. If you need assistance with improving your English writing skills, you may visit the UF Writing Program Website to learn about available help.

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. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/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>

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.
