

University of Florida
College of Medicine
Department of Health Outcomes and Policy

GMS 6829, Fall 2017
Longitudinal Research Designs

Time: Mondays 2:30-4:30pm
Location: HPNP, Room G-109
Credits: 2 credits

Instructors: Mildred M. Maldonado-Molina, Ph.D.
Associate Professor
CTRB Building, 2004 Mowry Road, Suite 2250
Tel: (352) 294-5797
Email: mddd@ufl.edu
Office Hours: By appointment

COURSE DESCRIPTION

This course provides instruction in the design, evaluation, and implementation of repeated measures and longitudinal research designs. It is an advanced methods course focused on details of various research designs. This course is designed for advanced masters-level and doctoral-level students in Medicine, Public Health, and other health professions, as well as advanced students in public policy, sociology, psychology or other social sciences with plans for a career in research. Prerequisites are a graduate course in epidemiology or related field, a graduate course in statistics, and permission of instructor.

COURSE OBJECTIVES

By the end of this course, the student will be able to:

1. Explain key concepts in cross-sectional and longitudinal research designs.
2. Identify the appropriateness of cross-sectional and longitudinal designs to address specific research questions.
3. Identify and evaluate strengths and weaknesses of cross-sectional and longitudinal research designs with respect to threats to internal and external validity.
4. Discuss methodological issues associated with the selection and implementation of research designs (e.g. measurement, internal and external validity, causality, attrition, bias, analysis of change over time, repeated measures designs, intensive longitudinal designs, etc.).
5. Critique epidemiological research in different areas of substantive interest by describing strengths and weaknesses of design choices made by published investigations.
6. Discuss methodological considerations in modeling longitudinal data (e.g. repeated measures, nested, multilevel, and other analytical approaches to the study of epidemiological data).
7. Evaluate and critique interdisciplinary research studies by identifying conceptual, sampling, measurement, research design, and data analytical considerations.
8. Demonstrate awareness of statistical considerations in analysis of data from cross-sectional to intensive longitudinal research designs.

METHODS OF INSTRUCTION:

Each class session will include two components: a presentation of a major topic for about half the session, and class discussion of the presentation and readings. Attendance and active participation in all class discussions is required, and will be evaluated as part of the student's grade for the course. Students must read the required readings prior to each class session. This course is a graduate seminar where students are expected to take an active role in initiating and leading discussions and debates.

TESTS

No midterm or final exam will be required in this course.

TERM PAPER

No term paper will be required.

EVALUATION AND GRADING

- Grades will be based on attendance and class participation and assignments above. All deadlines must be met.
- Any assignment turned within 24 hours after the deadline will receive one grade below what it would have earned had it been submitted on time.
- After 24 hours, no assignments will be accepted (unless extraordinary circumstances).
- The following grading system will be use: A (95-100), A- (90-94), B+ (87-89), B (83-86), B-(80-82), C+(77-79), C (73-76), C-(70-72), D+ (67-69), D(63-66), D-(60-62), E (59 or below).

CLASS ATTENDANCE

- Class attendance is mandatory.
- Excused absences follow the criteria of the UFL 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. UFL rules require attendance during the first two course sessions, and students also must attend all course sessions of student presentations for this class. Missing more than three scheduled sessions will result in a failure.
- Regardless of attendance, students are responsible for all material presented in class and meeting the scheduled due dates for class assignments.
- Students should read the assigned readings prior to the class meetings, and be prepared to discuss the material for each session.

E-LEARNING

Course information, readings, and grades are available on E-Learning at <http://elearning.ufl.edu/>. You must have a Gatorlink account to log on. To use the system, please make sure to check if your browser settings are properly configured. Use the "E-Learning Browser Tuneup" link from the main page under "E-Learning Resources". Please disable pop-up blockers. Make sure that the Java system on your computer is from Sun Microsystems. Vista does not use Java from Microsoft. Without Java, certain tools in Vista will not function correctly. You can do a check on your Java status from the main page under "E-Learning Resources." Have Adobe Acrobat Reader installed.

STUDENTS WITH DISABILITIES

Students requiring accommodations must first register with the Dean of Students' Office. The Dean of Students' Office will provide documentation to the student who must then provide this documentation to the faculty member when requesting accommodation. The College is committed to providing reasonable accommodations to assist students in their coursework.

ACADEMIC INTEGRITY

Each student is bound by the academic honesty guidelines of the University and the student conduct code printed in the Student Guide and on the University website. The Honor Code states: "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity." Cheating or plagiarism in any form is unacceptable and inexcusable behavior.

POLICY ON STYLE FOR CITATION 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, he or she may receive an "E" in the course. The faculty member may also recommend further sanctions to the Dean, per College disciplinary action policy. 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.

TEXTBOOK

There is no required textbook.

SCHEDULE OF TOPICS

- A list of readings and activities is available in E-learning.
- Additional readings might be required

ASSIGNED READINGS/COURSE MATERIALS:

Available in E-learning: <http://elearning.ufl.edu/>

Module	Date	Topics	Assignment
1.	8/21/17	Intro to GMS 6829	
2.	8/28/17	Frameworks of Change Introduction to Repeated Measures and Longitudinal Designs Overview of Longitudinal designs	Assignment #1 - Statement of Interest – due 8/27
3.	9/3/17	No class – Labor Day	
4.	9/11/17	Measurement Reliability Validity	Assignment #2 - Identify a recently published longitudinal study - (Upload in Canvas by 9/10)
5.	9/18/17	Sampling Non-response Attrition & Missing data	
6.	9/25/17	Temporal Design Stability and Change Monthly vs Yearly data Data Structures Visualization of Repeated Measures	
7.	10/2/17	Study Critiques Checklist – Longitudinal and Observational Studies Group Exercise - Critiques of Longitudinal Studies	Assignment # 3 - Critique of a Longitudinal Study – (due 10/1)
8.	10/9/17	Proposal Development NIH Reporter	Assignment #4 - NIH Reporter (due 10/8)

9.	10/16/17	Power Analysis Diagnostics Model selection	
10.	10/23/17	Quasi-Experimental Minimizing selection bias Time Series Analyses	
11.	10/30/17	Trajectory Longitudinal Studies Latent trajectory analyses Group-based modeling	
12.	11/6/17	Multilevel Longitudinal Studies Linear Mixed modeling and Multilevel analyses Mediation and Moderation	
13.	11/13/17	Ethical Considerations <i>Sampling</i> <i>Recruitment</i> <i>Data Linking</i>	Assignment # 5 - Bring draft of proposal for Q/A
14.	11/20/17	Intensive Longitudinal Data	
15.	11/27/17	Group Meeting	
16.	12/4/17	Presentations & Course Wrap-up	Assignment #6 - Presentation

Assignments

1. Statement of Interest

In 1-page (single-spaced), answer the following questions:

- Describe an area of research interest and why this is an important public health problem.
- Identify an outcome (dependent variable). Why is longitudinal research important to study of this outcome?
- Identify 2-3 research questions that you can address with a longitudinal research design that you would not be able to address with a cross-sectional design.
- When and how often should we measure your outcome of interest?

2. Review recent (up to 3 months) peer-reviewed journals and **select one paper from a published longitudinal study in your area of interest.** Be prepared to provide a brief summary (2-3 minutes) of the research question, overall study aims, and a description of the research design. We will engage in a class/group discussion.

3. Write a critique of the study you selected on Assignment #2. You should focus on integrating the material discussed in class, with special emphasis to research design issues. Your 1-2-page (single-spaced) critique should include:

- Development and statement of research questions
- Identification of threats to validity and description of sampling and measurement
- Description of the research design
- Description of weaknesses and strengths of the longitudinal research design
- Description of the appropriateness of the analytical technique

4. NIH Reporter. Review NIH reporter and identify 2-3 studies recently funded studies in your area of study (if your field of study is more aligned with NSF or PCORI, you can expand your search to include a wider scope of work). NIH: <http://report.nih.gov/>

5. Proposal development. 6-pages (single-spaced) following NIH format.

6. Presentations. Students will be assigned a proposal (from Assignment #5) to review. Your task is to evaluate the research design of the original study and present to the class a review of your assigned review. After the presentation, we will engage in a collegial discussion.

Your presentation should include the following:

- Evaluate clarity of specific aims, research questions, and hypothesized relations
- Evaluate significance and innovation of proposed study
- Describe and evaluate the research design (measurement and sampling)
- Description of weakness and strengths of proposed project as well as suggestions on how to improve the research design of the proposal
- Time-management (15-20 minutes!)