

College of Public Health & Health Professions

PHC 7065: Analysis of Longitudinal Data

Spring 2015

Thursdays, Periods 7-9

1:55pm – 4:55pm, Room CTRB 5235

Course Website: [lss.at.ufl.edu](http://lss.at.ufl.edu)

**Instructor Information**

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**Course Overview**

Longitudinal studies are common in biological and medical research. This course covers both the theory and application of common statistical models and methods for analysis of longitudinal data. Students will learn in-depth technical details on model description, estimation and statistical inference. They will also learn to use SAS to carry out each specific analysis.

**Prerequisites**

Students must have taken STA 6246 (Theory of Linear Models) and STA 7249 (Generalized Linear Models). Permission of the instructor is needed if these courses have not been taken. Knowledge of linear and matrix algebra is required. Students are expected to be familiar with the basic operations of SAS.

**Course Objectives and/or Goals**

Upon successful completion of the course, students will be able to:

- Formulate the marginal model, conditional model and transition model for the analysis of longitudinal data,
- Specify and interpret models for the correlation structure,
- Derive the ML, REML, and GEE estimation procedures,
- Assess methods for longitudinal statistical inference,

- Incorporate time-dependent covariates,
- Handle missing data in longitudinal data analysis,
- Select appropriate models and methods and apply those using SAS.

### **Course Materials**

Required text: *Analysis of Longitudinal Data* (2002), 2<sup>nd</sup> Edition, by Peter Diggle, Patrick Heagerty, Kung-Yee Liang, and Scott Zeger. Oxford University Press, Oxford, UK.

### **Course Requirements/Evaluation/Grading**

Students are expected to be actively involved in each class, including sharing comments of required reading, discussing answers and questions to homework assignments, and participating in class discussion. Grades for homework will be assessed by leading and participating in the discussion. Students are not expected to hand in their answers.

The overall grade will include class participation and two exams (with the possibility of a group project in the final exam). Class participation will include weekly attendance, sharing reading comments, and leading and participating in discussion. Students are encouraged to discuss either in groups or with the instructor on homework assignments, but are expected to complete homework on their own.

Class participation: 50%

Exam 1 (mid-semester): 25%

Exam 2 (final day of classes): 25%

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

93% - 100% = A (4.00)

90% - 92% = A- (3.67)

87% - 89% = B+ (3.33)

83% - 86% = B (3.00)

80% - 82% = B- (2.67)

77% - 79% = C+ (2.33)

73% - 76% = C (2.00)

70% - 72% = C- (1.67)

67% - 69% = D+ (1.33)

63% - 66% = D (1.00)

60% - 62% = D- (0.67)

Below 60% = E (0.00)

## Tentative schedule

Week	Date	Topic(s)	Textbook Chapter(s)
1	Jan 8	Introduction, examples, design issues	D1-2
2	Jan 15	Exploring Longitudinal data	D3, 5.2
3	Jan 22	General linear models	D4, A2-A4
4	Jan 29	General linear models: case studies	F5-7
5	Feb 5	Linear mixed models	F8
6	Feb 12	LMM: model building and diagnosis	F10
7	Feb 19	Review	
8	Feb 26	1 <sup>st</sup> exam	
9	Mar 5	Spring break	
10	Mar 12	Generalized linear models	D7, McCullagh 2,6
11	Mar 19	Random effects model	D9
12	Mar 26	Transition model	D10
13	Apr 2	Likelihood methods for categorical data	D11
14	Apr 9	Time-dependent covariates	D12
15	Apr 16	Missing data	D13
16	Apr 23	2 <sup>nd</sup> exam	

## **Statement of University's Honesty Policy (cheating and use of copyrighted materials)**

**Academic Integrity** - Students are expected to act in accordance with the University of Florida policy on academic integrity (see Student Conduct Code, the Graduate Student Handbook or this web site for more details:

**[www.dso.ufl.edu/judicial/procedures/academicguide.php](http://www.dso.ufl.edu/judicial/procedures/academicguide.php)**).

Cheating, lying, misrepresentation, or plagiarism in any form is unacceptable and inexcusable behavior.

*We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity.*

## **Policy Related to Class Attendance and Late or Missed Assignments:**

Attendance of all class sessions is required. Failure to attend these classes may result in a failing grade or an incomplete. Please see the instructor as early as possible regarding possible absences. Personal issues with respect to class attendance or fulfillment of course requirements (e.g., reading, assignments, exams, class discussion) will be handled on an individual basis.

## **Accommodations for Students with Disabilities**

If you require classroom accommodation because of a disability, you must first register with the Dean of Students Office (<http://oss.ufl.edu/>). The Dean of Students Office will provide documentation to you, which you then give to the instructor when requesting accommodation. The College is committed to providing reasonable accommodations to assist students in their coursework. We all learn differently: however, if you have experienced problems in university classes with writing, in-class exams, understanding or concentrating in class; please talk to us or access a learning or education testing resource at the University or in another professional setting.

## **Counseling and Student Health**

Students may occasionally have personal issues that arise in the course of pursuing higher education or that may interfere with their academic performance. If you find yourself facing problems affecting your coursework, you are encouraged to talk with the instructor and to seek confidential assistance at the University of Florida Counseling and Wellness Center at 352-392-1575 or <http://www.counsel.ufl.edu/>.

The Student Health Care Center at Shands is located on the second floor of the Dental Tower(Room D2-49) in the Health Science Center. It and its satellite clinic, located in the J. Hillis Miller Health Science Center (Jacksonville), offer a variety of clinical services, including primary care, women's health care, immunizations, mental health care, and pharmacy services. For more information, contact the clinic at 352-294-5700 or check out the web site at: <http://shcc.ufl.edu/>.

Crisis intervention is always available 24/7 from:  
Alachua County Crisis Center: (352) 264-6789.

*BUT – 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.*

**Class Demeanor Expected by the Professor (late to class, cell phones) :**

Students are expected to show up for class prepared and on time. Cell phones are to be silenced during class unless there is an emergency, in which case please inform the instructor.