

Course Syllabus

Visiting professor : Garrett Fitzmaurice

Course	Biostatistics		
Credit	1	Method of Teaching	Lecture
<p>Objective</p> <p>The emphasis of this course is on understanding basic concepts and methods and how they can be applied in the health sciences.</p>			
<p>Outline</p> <p>The aim of the course is to introduce modern methods for the analysis of longitudinal and repeated measures data which are commonly used in epidemiological studies and in clinical trials. Topics include an introduction to the analysis of longitudinal data, the analysis of response profiles, fitting parametric curves, covariance pattern models, random effects and growth curve models, generalized linear models for longitudinal data including generalized estimating equations (GEE), and generalized linear mixed models (GLMMs). The course is intended for all students interested in epidemiology, biostatistics and public health.</p>			
<p>Class Schedule (90 minutes each)</p> <p><u>Day 1 (Thursday, January 12, 2017)</u></p> <ol style="list-style-type: none"> 1. Introduction; Review of Basic Concepts; Examples; Notation; (9:00-10:30 am) Introduction to Correlated Data. <i>Readings: FLW, Chapters 1 and 2.</i> 2. Modelling the Mean: Analysis of Response Profiles. (11:00-12:30pm) <i>Readings: FLW, Chapter 5 (Sections 5.1-5.4, 5.8-5.9).</i> <p><u>Day 2 (Friday, January 13, 2017)</u></p> <ol style="list-style-type: none"> 3. Modelling the Mean: Parametric & Semi-Parametric Trends. (9:00-10:30 am) <i>Readings: FLW, Chapter 6.</i> 4. Modelling the Covariance, Strategies for Modeling the Mean and Covariance. (11:00-12:30pm) <i>Readings: FLW, Chapter 7.</i> 			

Day 3 (Saturday, January 14, 2017)

5. **Linear Mixed Effects Models for Longitudinal Data.** (9:00-10:30am)

Readings: FLW, Chapter 8.

6. **Introduction to Generalized Linear Models; Overview of Generalized Linear Models for Longitudinal Data.**
(11:00-12:30pm)

Readings: FLW, Chapter 11 (Sections 11.1-11.3, 11.6).

Day 4 (Sunday, January 15, 2017)

7. **Marginal Models for Longitudinal Data; Generalized Estimating Equations (GEE).** (9:00-10:30am)

Readings: FLW, Chapter 12 (Sect. 12.1-12.3); Chapter 13 (Sect. 13.1, 13.2, 13.4, 13.6).

8. **Generalized Linear Mixed Models; Contrasting Marginal and Mixed Effects Models.** (11:00-12:30pm)

Readings: FLW, Chapter 14.

Written Exam(Sunday, January 15, 2017): (14:00-15:30pm)

We may add seminars by Japanese teachers for each to assist students with difficulty in language/background knowledge

Text

Fitzmaurice, G.M., Laird, N.M., and Ware, J.H. (2011). Applied Longitudinal Analysis, 2nd Ed. Wiley & Sons. (FLW)

Related readings

Will be made available prior to the lecture.

Achievement evaluation

There will be a written final exam about contents in the class upon completion of the course.