Instructor: Dr. Sanjoy Sinha  
Office: HP 5221  
Office hours: Tues & Wed 11:30am–12:30pm  
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Marking Scheme:  
Assignments: 40%  
Project: 20%  
Final Exam (Take-Home, December 9, 2019): 40%

Textbook:  
Title: Analysis of Longitudinal Data  
Authors: P. J. Diggle, P. Heagerty, K. Y. Liang, and S. L. Zeger  

Statistical software: The statistical package R will be used for data analysis. R can be downloaded from the internet free of cost. It has many built-in functions that can be readily used for data analysis.

Prerequisite: Students are expected to have good background in statistical inference. It will be assumed that they are familiar with the basic concepts of point and interval estimation, hypothesis testing using model based likelihood methods as well as other nonparametric methods.

Course outline:  
We shall discuss methodologies for analyzing various types of biostatistical data including longitudinal and clustered correlated data from clinical experiments. Topics will include:

1. Generalized linear models  
2. Analysis of binary and Poisson count data  
3. Generalized linear mixed models for dependent data  
4. Analysis of clustered correlated data  
5. Modelling longitudinal data  
6. Marginal models  
7. Conditional models  
8. Methods for analyzing longitudinal data  
9. Missing data

Reference books:  
Notes:

1. Students wishing to see their final examination papers must make an appointment within two weeks of the examination.

2. The Paul Menton Centre for Students with Disabilities (PMC) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at 613-520-6608 or pmc@carleton.ca for a formal evaluation. If you are already registered with the PMC, contact your PMC coordinator to send me your Letter of Accommodation at the beginning of the term, and no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). After requesting accommodation from PMC, meet with me to ensure accommodation arrangements are made. Please consult the PMC website (www.carleton.ca/pmc) for the deadline to request accommodations for the formally-scheduled exam (if applicable).