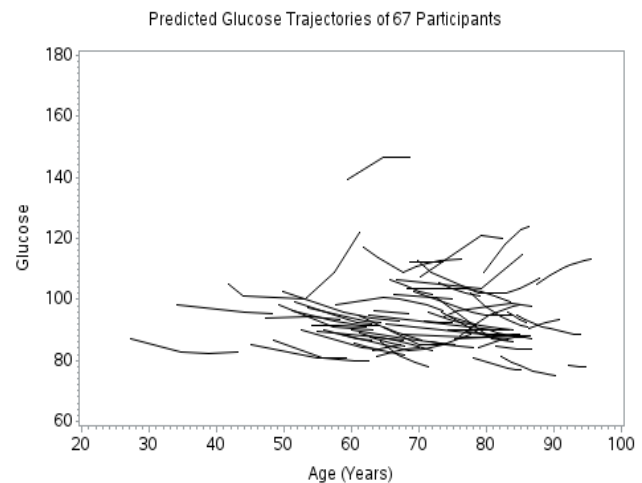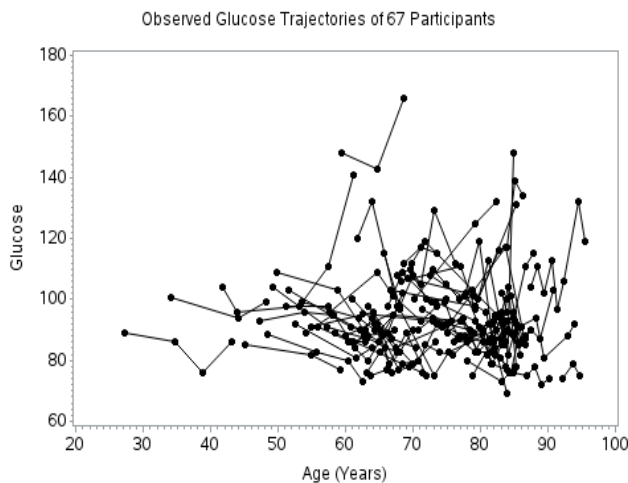*Departmental Seminar Series* presents:

Dr. Christopher Morrell

Loyola University Maryland
Mathematics and Statistics Department

September 26, 2018, 3:00 pm KH 309

Estimating Subject-Specific Rates of Change from Longitudinal Data

Abstract:
In a longitudinal study it is often of interest to study individual differences by estimating the rate of change in the response variable for each subject. If the data is modeled using a linear mixed-effects model that includes fixed and random effects for time, a subject specific rate of change can be obtained as the derivative of the model function with respect to time and can be estimated using the fixed and random effects for time. However, due to shrinkage these subject-specific rates can appear to have much less variability than might be anticipated. Conversely, if regression models are fit to each subject's data the resulting rates have too much variability due to the small number of observations for each subject. The goal of this talk is to combine these two estimates to obtain a better estimate of subject specific rates of change. This is accomplished by taking a weighted average of the two estimates using weights proportional to the reciprocal of the variances. Various approaches are investigated on how to implement this strategy and are illustrated using longitudinal data from the Baltimore Longitudinal Study on Aging.

This talk will be accessible to Juniors and Seniors.
Refreshments will be served.