

## Syllabus

### General Information

Instructor: Yili Hong, PhD

Office: 213 Hutcheson Hall; Phone: 540-231-9710; Email: [yilihong@vt.edu](mailto:yilihong@vt.edu)

Class time and place: TR 11:00am-12:15pm; Seitz 313.

Office hours: TR 9:30am-11:00am, or by appointment.

### Resources

Required Textbook: Hedeker, D. R. and Gibbons, R. D. (2006). *Longitudinal data analysis*, Hoboken, NJ: Wiley-Interscience.

Recommended Textbook: Diggle, P. J., Heagerty, P., Liang, K. Y., and Zeger, S. L. (2002). *Analysis of Longitudinal Data*, 2nd Edition. New York: Oxford University Press.

Course webpage: <https://scholar.vt.edu/portal>

### Description

Statistical techniques for analyzing longitudinal data (repeated measures) will be taught in this course. The primary focus of this course is on application of the various statistical models. The use of statistical software is also illustrated. The underlying statistical theory of models for longitudinal data analysis, including derivation and estimation of model parameters, will also be covered. After completing this course, students will learn how to analyze longitudinal data and interpret the results from such analysis. Students will also have a good understanding of the underlying statistical theory.

### Outline

The following lists some of the models and topics for longitudinal data analysis that will be covered:

- Univariate and multivariate analysis of variance for repeated measures
- Random-effects models
- Covariance pattern models
- Generalized estimating equations (GEE) models
- Random-effects logistic regression models
- Missing data in longitudinal studies
- Nonlinear mixed model (time permits)

**Evaluation**

Letter grade will be given based on homework (40%) and a final project (60%).

Homework: There will be four homework. Turn them in at the beginning of the class on the date it is due. NO late homework will be accepted.

Project: Students are expected to complete a project in which they acquire and analyze a set of longitudinal data, and write a comprehensive report.

**Academic Integrity**

Students are expected to abide by Virginia Tech's Community Standard for all work for this course (<http://www.honorsystem.vt.edu/>). Violations of the Standard will result in a failing final grade for this course and will be reported to the Dean of Students for adjudication. Ignorance of what constitutes academic dishonesty is not a justifiable excuse for violations.

**Special Accommodation**

As supported by Virginia Tech's Principles of Community (<http://www.vt.edu/diversity/principles-of-community.html>), all students will be treated equally. Those with special needs can be accommodated and should refer to the website <http://www.ssd.vt.edu/> for specific questions.