

Syllabus

General Information

Instructor: Yili Hong, Professor of Statistics

Office: 213 Hutcheson Hall; Email: yilihong@vt.edu

Course modality: Face-to-Face Instruction

Class time and place: TR 8:00am-9:15am; Smyth 232

Office hours: TR 9:30am-10:30am, or by appointment.

Available both in office and via zoom.

Zoom link for office hours: <https://virginiatech.zoom.us/j/87845658966>

Attendance policy: Regular in-person attendance is expected.

Backup zoom link for lectures: <https://virginiatech.zoom.us/j/82963842666>

Recorded lectures: Each lecture will be recorded and will be made available on the following day after the class via the following Google Drive link (Sign in with your VT Email).

https://drive.google.com/drive/folders/1UyZDZ5_MV3EhrktuuAfbBg9oFXjv_nOB?usp=sharing

Resources

- The course will be based on lecture notes.
- Textbook: Linear Models in Statistics, 2nd ed., by Alvin Rencher and Bruce Schaalje. Recommended, but not required.
- Course website: <https://canvas.vt.edu/>

Description

This is primarily a theory course. The material is fundamental to a proper understanding of how linear models work, the essential role of linear models in statistical modeling, and the connections with many other statistical models used in data science.

The topics include introduction to linear models, matrix algebra, the distributions of linear combinations and quadratic forms involving normal random variables, and estimation and testing theory of the general linear models. We will also cover linear mixed models, regularization, prediction, and the connections to generalized linear models and nonlinear models, if time permits.

Evaluation

- Letter grade will be given based on homework (25%), the first mid-term (20%), the second mid-term (20%), and the final exam (35%).
- Homework: On a regular basis. Due electronically via Canvas. No late homework will be accepted.
- First Mid-term: close-book, in-class, on Thursday, February 17th, 2022.
- Second Mid-term: close-book, in-class, on Thursday, April 14th, 2022.
- Final exam: close-book, comprehensive, scheduled for Friday, May 06, 2022, 7:45am-9:45am.

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.