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 5:00pm - 6:15pm, Torgersen Hall 3100

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/85862010049`

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/1HYwvdetrFPb3q6cfjV7ckf5p5PQTOyT8?usp=sharing`

Resources

Course webpage: `https://canvas.vt.edu/`

Slides: Classes are based on lecture slides provided.

Text: "The Practice of Statistics in the Life Sciences" by Baldi and Moore, 3rd Edition (or any other edition works fine). W. H. Freeman & Company. Recommended.

Software: JMP, required. Purchase JMP directly from Software Distribution.

`https://itpals.vt.edu/softwarelicensingcenter/studentsoftware.html`

Description

This course teaches introductory statistical techniques used to collect and analyze experimental and observational data from health sciences, molecular, cellular, environmental, and biology. Specific topics include exploration of data, linear regression, experimental and observational studies, probability and sampling distributions, basic statistical inference for means and proportions, and frequency table analyses.

Objectives

Our objective is to provide both an understanding of, and hands-on experience with data-driven statistics. This class is like a regular statistics class except that we focus on concrete and realistic examples from a wide array of biological problems. By the end of this course, you should be able to:

- present real data sets graphically and numerically

- design experiments and conduct observational studies

- apply simple linear regression

- analyze real data sets using statistical methods and models

- use probabilities to describe and assess random events

- use hypotheses testing to answer biological questions and other questions of scientific nature

- analyze data using a statistical software, such as JMP.

Evaluation

- Letter grade will be given based on homework (35%), the first mid-term (15%), the second mid-term (15%), and the final exam (35%).

- The anticipated course grading scale will be:

  $F < 50 \leq D^- < 56 \leq D < 59 \leq D^+ < 62 \leq C^- < 65 \leq C < 68 \leq C^+ < 70 \leq B^- < 72 \leq B < 75 \leq B^+ < 80 \leq A^- < 90 \leq A$

  Depending on the final score distribution, those standards may be lowered but will not be higher.

- Homework: There will be regular homework. Students need to submit their homework online via Canvas. NO late homework will be accepted. Students are allowed to drop the lowest score on homework.

- First Mid-term: The form of the exam is open book and take-home. Students need to submit their midterm exam online via Canvas. The time for the exam is from Thursday 5pm, February 17, 2022 to Friday 5pm, February 18, 2022.

- Second Mid-term: The form of the exam is open book and take-home. Students will have 24 hours to complete the exam and need to submit their midterm exam online via Canvas. The time for the exam is from Thursday 5pm, April 14, 2022 to Friday 5pm, April 15, 2022.

- Final exam: The final exam is comprehensive. The form of the exam is open book and take-home. Students need to submit their final exam online via Canvas. The time for the final exam is from Saturday 7pm, May 7, 2022 to Sunday 7pm, May 8, 2022.

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.