Instructor: Leanna House
Email: Lhouse@vt.edu
Office: 404 Data and Decision Sciences (DDS)
Office Hours:
11:15pm-12:15pm near classroom or on zoom, https://virginiatech.zoom.us/my/drhousecall
By appt: Email Leanna House to set a time to meet
With GTA: TBD
Class Time/Location: MWF 10:10am – 11:00am, Litton-Reeves 1860
Exams: Wed, Oct 15, 10:10-11am; Mon, Dec 15 3:25-5:25pm

Course Overview

Course Summary
Basic principles and methodology of statistical learning, including data analysis under uncertainty, modeling of statistical learning problems, modern statistical methods in regression, classification, and some unsupervised learning.

Prerequisites Graduate standing required. Students must be familiar with intermediate linear algebra, calculus, probability, basic statistics (standard errors), regression, and coding in a higl-level language, like R, Python, or Matlab. (Basically, you need mathematical and computational maturity, and this can't be your first course in stats!)

Course Materials

- **Canvas:** It is extremely important that you check Canvas on a regular basis. I strongly recommend that you change your settings to receive an email when things are updated on Canvas. I will use Canvas to post announcements and assignments. It is your responsibility to check Canvas on a regular basis.
- **Statistical Software:** We will be using statistical software in this class. You are welcome to use the software of your choice, but class demonstrations will be in R. All help with software in office hours will be limited to R. I use RStudio as the IDE for R.
- **Textbooks**: All are available instantly and for free.
  - ELS: Hastie, T., Tibshirani, R. and Friedman J. (2001). *The Elements of Statistical Learning*, 2nd Edition. Springer. Available online via VT library or https://hastie.su.domains/ElemStatLearn/
  - ISL: James, Witten, Hastie & Tibshirani. (2023) "An Introduction to Statistical Learning with Applications in R" . Springer. Available on canvas, online via VT Library, or https://hastie.su.domains/ElemStatLearn/
  - Schabenberger, O. (2025). *Statistical Learning: Beyond the Numbers.* Available on canvas or https://oschabenberger.github.io/oschabenberger-github.io-sl/.

Miscellaneous

- Zoom Lectures: Aug 25-Sept 5, possibly Sept 8-10
- MANDATORY (attendance taken) lectures: Sep 12 (I'm in Blacksburg); Dec 3, 5, 8, 10 (Presentations).
- Cancelled Class: Wed, Sept 17; Fri, Nov 21

Course Breakdown

Homework Assignments

- Homework will be assigned approximately every two-three weeks via Canvas and mostly due at 11:59pm on Sundays or Wednesdays (there may be some exceptions). Notice, 11:59pm is not midnight (12:00am) the next day. I will be **strict on due dates and time**, even when students have simple computer glitches or mistakes. But…
    - The lowest homework grade for the semester will be **dropped** before calculating final grades. This accounts for things that happen in life; e.g., family emergencies, sickness, computer glitches, etc.
    - Late assignments *are* accepted up to *one* week past the due date. However, late assignments will receive a 20% penalty. Assignments will *not* be accepted after 7 days past due.
- Note, at times, only *random* subsets of the homework assignments will be graded. The class is simply too big for grading entire assignments. The TA will let you know when this happens.
- Homework grades will be penalized on the basis of incomplete, incorrect, or unclear responses.
- Students are encouraged to work together, but the work turned-in MUST be your own. PLEASE work with each other! We all can learn from each other!

Exams: Wed, Oct 15, 10:10-11am; Mon, Dec 15 3:25-5:25pm

Project

- There will be 1 group project due Dec 2 at 11:59pm.
- Class presentations will take place Dec 3-10, thus attendance is mandatory.
- Projects will rely on group work and require videos that you upload, in case we do not have time for everyone to present.
- Details will be provided later in the semester.

Attendance:

- On mandatory days, attendance will be taken and graded.

Evaluation

You will receive a letter grade of A, B, C, D, F with the plus or minus adjustments based on the following weights:

Homework	20%
Exam 1	25%
Exam 2	25%
Project	25%
Attendance	5%

A	93% - 100%	B-	80% - 82.99%	D+	67% - 69.99%
A-	90% - 92.99%	C+	77% - 79.99%	D	63% - 66.99%
B+	87% - 89.99%	C	73% - 76.99%	D-	60% - 62.99%
B	83% - 86.99%	C-	70% - 72.99%	F	0% - 59.99%

*Cut-offs are firm. Rounding up will not be applied to grades.

Student Expectations

Communication

- When corresponding with the instructor or TA through email, please use the following as your Subject in the email: **`YourFirstandLastName:Stat5525 <topic>`**. For example, if I needed help on homework 1, I might write in the subject of my email: `LeannaHouse:Stat5525 HW1 help`. Following these directions is important! I get a lot of email!
- I will make every attempt to respond to students' emails within 48 hours. If a student has not received a response from the instructor after 48 hours, the student should resend the email, and keep doing so.
- All individuals associated with this course will be civil and respectful of the diverse backgrounds of the class participants, with the goal of promoting a professional environment. All Forum Discussion Board posts, emails, and other correspondence are expected to be polite and constructive. And written correspondence needs to adhere to Standard English constructs with attention to grammar and spelling.

Honor Code

The Undergraduate Honor Code pledge that each member of the university community agrees to abide by states:

"As a Hokie, I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do."

Students enrolled in this course are responsible for abiding by the Honor Code. A student who has doubts about how the Honor Code applies to any assignment is responsible for obtaining specific guidance from the course instructor before submitting the assignment for evaluation. Ignorance of the rules does not exclude any member of the University community from the requirements and expectations of the Honor Code.

For additional information about the Honor Code, please visit: https://www.honorsystem.vt.edu/

With respect to the honor code and course assignments in this class:

- **Homework assignments: Students may work with others, but all students must submit their own answers for grading.**
- **Exams: Students MUST work <u>alone</u>.**

Use of AI
In this course, you may use generative Al tools like ChatGPT and Copilot. However, you are expected to use these tools to support your work, not to replace your work. We will discuss what is acceptable and what is not ethical practice when using generative Al. The ultimate metric is this: When you submit an assignment, I should be grading your work and not grading something created by generative AI. Therefore, your voice and work should be prominent even when using Al tools as support.

Accommodations
If for any reason you need special accommodations, please contact me as soon as possible (within the first two weeks of the semester). I will make sure you needs are met. All requests must be approved by the university.

Changes to the Syllabus

All policies in this syllabus are subject to adjustment as the class progresses. In such instances, the instructor will provide the students with sufficient notice.

Good luck & ask for help when you need it!