Mathematical Statistics (MATH 5352)

Meeting Times: 10:10-11:05 am MWF in RBN 4032

Last day to withdraw: Monday, March 31, 2025.

Instructor: Nathan Smith

Office: RBN 4007

Contact: nsmith@math.uttyler.edu

Office Hours: Tentatively 11:15-12:10 MWF

Text: We will be using free online electronic materials.

Course Topics: Mathematical stats continuing from the fall, through the Neyman-Pearson Theorem, then statistical modeling, emphasizing regression and classification models.

Student Learning Outcomes: By the end of the course students should be able to:

1. Fit explanatory models appropriate to a data set and draw conclusions from the model produced.

2. Fit predictive models appropriate to a data set and make predictions from the model produced.

3. Analyze models for violation of assumptions, make appropriate necessary transformations, and compare and contrast competing models.

Computing: Statistics today is done on a computer. We will be using the statistical package/programming language R, which is an implementation of the S programming language designed at Bell Labs. R is available for free from http://www.r-project.org/ for windows, mac, and unix platforms, and is available for your use in the computer lab in RBN 4021. R is the lingua franca of modern statistics. If you have a laptop or a computer available to you for use at home, you are encouraged to obtain and install R for use in this course.

Grading: We will have two tests and a final exam, each of which will be worth 1/4 of your semester grade. The remaining 1/4 will be based upon homework and class assignments.

Missed work policy: Don't.

Student Academic Conduct: It is your responsibility to learn the material in this course for your own benefit. You should not let this discourage you from working together on your homework but in the end what you turn in should reflect your understanding, not just be copied from someone else. *During the midterm exams and the final exam, a code of honor will apply under which students are to work alone and neither give help to others nor receive help from any sources.* Students are also expected to help enforce this code. Students are

encouraged to obtain a copy of *A Student Guide to Conduct and Discipline at UT Tyler*, available in the Office of Student Affairs.

Artificial Intelligence: UT Tyler is committed to exploring and using artificial intelligence (AI) tools as appropriate for the discipline and task undertaken. We encourage discussing AI tools' ethical, societal, philosophical, and disciplinary implications. All uses of AI should be acknowledged as this aligns with our commitment to honor and integrity, as noted in UT Tyler's Honor Code. Faculty and students must not use protected information, data, or copyrighted materials when using any AI tool. Additionally, users should be aware that AI tools rely on predictive models to generate content that may appear correct but is sometimes shown to be incomplete, inaccurate, taken without attribution from other sources, and/or biased. Consequently, an AI tool should not be considered a substitute for traditional approaches to research. You are ultimately responsible for the quality and content of the information you submit. Misusing AI tools that violate the guidelines specified for this course (see below) is considered a breach of academic integrity. The student will be subject to disciplinary actions as outlined in UT Tyler's Academic Integrity Policy.

For this course, you may not use AI tools to produce anything turned in for a grade.

University Policies: We will follow all University policies concerning Withdrawing from Class, Final Exmas, Incomplete Grades, Grade Appeals, Disability/Accessibility Services, Military Affiliated Students, Academic Honesty and Academic Misconduct, FERPA, Covid, Absences, and Campus Carry. See canvas for details (https://uttyler.instructure.com/courses/34488/pages/university-policies-and-information).