

BIOL 3379 Introduction to Biostatistics for Biologists

Fall 2025

Meeting time: Tuesday and Thursday 12:30 PM – 1:50 PM

Meeting classroom: BEP 139

Instructor: Matthew Greenwold, Ph.D., Assistant Professor of Biology

Office: HPR 117

Office Hours: Tuesday and Thursday 10:00 AM – 12:00 PM or by appointment.

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Course Description: Students will learn introductory statistics and data visualization using the R programming language with a focus on the application of statistical thinking to solving biological questions.

Course Learning Objectives: By the end of the course, students should be able to:

- Define and calculate standard statistics used in biology.
- Manipulate, analyze, and visualize data in R.
- Compute and interpret descriptive and inferential (hypothesis testing) statistical analyses.
- Explain the use of data collection and statistics as tools to reach reasonable conclusions in biology.

Required Course Materials: No textbook required.

Optional Course Materials: TI-30 calculator is suggested but not required.

Technology:

1. Use of the statistical programming language R is required. You may also optionally use interface RStudio. Both can be freely downloaded and installed by following the instructions in the following links:
 - R (install first): <https://cran.r-project.org/>
 - RStudio Desktop (install second): <https://www.rstudio.com/products/rstudio/>
2. Course materials and grades are maintained in Canvas, and students should check Canvas regularly.

Grading: Your grade will be based on two semester exams, a final exam, six in class assignments, and attendance.

Exam 1 = 20%

Exam 2 = 20%

Final Exam = 20%

In class assignments = 30%

Attendance =	10%
Total	100%

Grading	
Percentage	Grade
90-100%	A
80-90%	B
70-79%	C
60-69%	D
< 59%	F

Exams: There will be two semester exams and a final exam each worth 20% of your grade. The exams will include defining terms, short answer questions, and performing statistical calculations. Please see the Course Calander below for exam dates. The final exam will be administered during the designated day and time as determined by the university.

In class assignments: There will be 6 in class assignments throughout the semester worth 5 points each (30% of your final grade). These will be either written assignments or exercises in R. You will be required to answer questions and/or submit results such as graphs by the end of the class meeting.

Attendance: Attendance is mandatory and worth 10% of your final grade. You may miss TWO class meetings without losing points. I am required to provide attendance data for Financial Aid, midterm, and final grade submissions; therefore, it is critical that you attend class meetings. If you cannot attend for reasons of illness or other acceptable situations, please contact me to determine the best course of action.

Course Calander	
Date	Topic
Week 1 – August 26 th	Introduction to Course
Week 2 – September 3 rd	Introduction to Data Analysis
Week 3 – September 9 th	Introduction to Probability
Week 4 – September 16 th	Probability Distributions – Exam 1 - September 9th
Week 5 – September 23 rd	Sampling Distributions
Week 6 – September 30 th	Introduction to Hypothesis Testing
Week 7 – October 7 th	Hypothesis testing – One sample
Week 8 – October 14 th	Hypothesis testing – Two samples
Week 9 – October 21 st	Exam 2 – October 21st
Week 10 – October 28 th	Hypothesis testing - ANOVA
Week 11 – November 4 th	Two-Factor Analysis
Week 12 – November 11 th	Linear regression
Week 13 – November 18 th	Linear Correlation
Week 14 – November 25 th	<i>Fall/Thanksgiving Holiday</i>

Week 15 – December 2 nd	Goodness of Fit Tests
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*Final Exam – TBD by the university

Artificial Intelligence Statement

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.

In this course, AI is permitted only for specific assignments or situations, and appropriate acknowledgment is required. This course has specific assignments where artificial intelligence (AI) tools (such as ChatGPT or Copilot) are permitted and encouraged. When AI use is permissible, it will be clearly stated in the assignment directions, and all use of AI must be appropriately acknowledged and cited. Otherwise, the default is that AI is not allowed during any stage of an assignment.