



Course	Introductory Statistics for Life Sciences
Class number	Stat 2332.002, Fall 2021
Professor	Sy Han (Steven) Chiou
Schedule	Tuesday, Thursday, 11:30 am-12:45 pm
Location	ECSS 2.410

Professor's Contact Information

Office phone	972.883.6362
Office location	FO 2.410A
Email address	schiou@utdallas.edu (I don't read eLearning mails)
Office hours	Tuesday, Thursday, 2:00 pm - 3:00 pm or by appointment.

General Course Information

Prerequisite	MATH 1325 or MATH 2312 or equivalent. May not be used to satisfy degree requirements for mathematics, engineering, or computer science majors.
Course description	This course provides an introduction to statistical methods used in biological and medical research and covers elementary probability theory, basic concepts of statistical inference, sampling theory, regression and correlation methods. The course will motivate statistical methods through data application and visualization instead of theory. The course does not have any pre-requisites in statistics, but students who have taken an Advanced Placement course in statistics or calculus will likely find the course easier. The course will be useful for students planning to attend medical school or to do graduate work in the life sciences.
Learning outcomes	<p>As a result of completing this course, students should have a working knowledge of basic statistical methods used in life sciences and a readiness to conduct statistical discussions. Some of the primary goals are to:</p> <ol style="list-style-type: none">1. Understand some basics of experimental designs.2. Have familiarity with the most basic probability models.3. Recognize which statistical method (confidence interval or hypothesis testing) is appropriate for a given typical problem.4. Apply statistical procedures to data and interpret the results.5. Critically read statistical work in published literature.
Expectations	Students should attend the lectures, take notes, and complete all assignments at the designated time. Students are not allowed to collaborate with classmates or people outside of this class (including on-line forum) on quizzes and exams.
Textbook	<p>Freedman, D., Pisani, R., and Purves, R. <i>Statistics</i>, 4th edition, ISBN-13: 978-0393929720 (The international edition is also acceptable).</p> <p>Although students are encouraged to read the recommended textbook, lecture notes will provide sufficient material for the course.</p>
Course materials	All course related materials, including lecture notes, will be posted on eLearning.
Other requirements	<p>All computing for the course will be done using the statistical software - R:</p> <ul style="list-style-type: none">• Online R compiler https://rdr.io/snippets/• The Comprehensive R Archive Network https://cran.r-project.org/• Rstudio https://www.rstudio.com/

Grading policy

Homework (15%)	<ul style="list-style-type: none"> • There will be 11 open-book 30-minute homework assignments. • The lowest grade will be dropped. • You will have two attempts. • Each homework consists of 10 multiple-choice questions.
Quizzes (25%)	<ul style="list-style-type: none"> • There will be 8 closed-book 30 minute quizzes. • The lowest grade will be dropped. • Quizzes (except for quiz 1) should be taken at the UTD testing center. • You will have one attempt. • Each quiz consists of 10 multiple-choice questions.
Exams (20% × 3)	<ul style="list-style-type: none"> • There will be 4 closed-book 75 minute (non-cumulative) exams. • The lowest grade out of exams 1 – 3 will be dropped. • Exams should be taken at the UTD testing center. • You will have one attempt. • We will have in-class review sessions during the last lecture before each exam. • Each exam consists of 25 multiple-choice questions.
Due dates	All assignments will be made available on Thursday, 1:00 pm and should be completed by Monday, 11:59 pm the following week.
Letter grades	<p>The final grades are not curved and the letter grade will be determined with the standard boundaries:</p> <p>A+: 97 – 100 A: 93 – 96.99 A-: 90 – 92.99</p> <p>B+: 87 – 89.99 B: 83 – 86.99 B-: 80 – 82.99</p> <p>C+: 77 – 79.99 C: 73 – 76.99 C-: 70 – 72.99</p> <p>D+: 67 – 69.99 D: 63 – 66.99 D-: 60 – 62.99</p> <p>F: 0 – 59.99.</p>
Extra credits	No extra credit will be given. Late submission of online homework, quiz, or exam results in a grade of zero.

Tentative Course Schedule (subject to change)

	Coverage	Key topics
Week 1 (8/24)	Chapters 1 – 2	Controlled experiments & observational studies.
Week 2 (8/31)*	Chapters 3 – 5	Plots, average, median, standard deviation, and percentiles.
Week 3 (9/7)*	Chapters 5 – 9	Normal approximation, correlation, outliers, and association.
Week 4 (9/14)*	Chapters 10 – 12	Regression lines and residuals.
Week 5 (9/21)*	Chapters 13 – 14	Probability, counting outcomes, conditional probability.
Week 6 (9/28)	Chapters 13 – 15	Independence, addition/multiplication rule, permutation, and combinations.
Week 7 (10/5)*	Chapters 15	Common probability distributions.
Week 8 (10/12)*	Chapters 16 – 17	Law of averages, expected value, and standard error.
Week 9 (10/19)	Chapters 18	Central limit theorem.
Week 10 (10/26)*	Chapters 19 – 20	Sample surveys, chance errors in sampling.
Week 11 (11/2)*	Chapters 21 – 23	Estimation and confidence interval for population mean/percentage.
Week 12 (11/9)	Chapters 26 – 27	Hypothesis testing, significance level, p -values, z -test, and t -test.
Week 13 (11/16)*	Chapter 27	Matched data test.
Week 14 (11/23)*		Thanksgiving break
Week 15 (11/30)*	Chapter 28	Chi-square test for independence.
Week 16 (12/7)	Final review	Exam window: Thursday (12/9) to Monday (12/13).

Blue marks the quiz weeks, red marks the exam weeks, * marks the homework weeks.

Testing center policies

Information that you need to know before taking an assignment at the testing center.

- The testing center is located in SP2 across Waterview Parkway from Residence Halls NW and N.
- You must register for a seat using RegisterBlast (<https://www.RegisterBlast.com/utdallas>) at least 72 hours in advance for each assignment (registration closes 72 hours before an assignment begins).
- You need to present your comet card to take the assignments.
- Registration to all assignments opens on the first day of the semester.
- More information can be found here: <https://ets.utdallas.edu/testing-center/students/>.

COVID-19 Guidelines and Resources

Classroom de-densification	For the first three weeks of the fall semester, in-person courses will be taught at a lower density. To accommodate this, students may choose to attend class synchronously via Microsoft Teams.
Recordings	All lectures will be recorded and be made available on Microsoft Teams.
Office hours	Office hours will be held online via Microsoft Teams during the first three weeks of the fall semester.
Resource	Check https://www.utdallas.edu/covid/ frequently for new updates.

More Policies

Incomplete grades	As per university policy, incomplete grades are granted only in the case of work unavoidably missed (and excused) and not already covered by the professor's policy on missed work or activities, and only if at least 70% of the course work has been completed. An incomplete grade must be resolved within eight weeks from the first day of the subsequent long semester. If the required work to complete the course and to remove the incomplete grade is not submitted by the specified deadline, the incomplete grade becomes changed automatically to F.
Academic integrity	The faculty expects from students a high level of responsibility and academic honesty. Scholastic dishonesty includes, but is not limited to, cheating, plagiarism, collusion, and falsifying of records. Violators face disciplinary proceedings.
Withdrawal	Deadlines for withdrawal from courses are published in each semester's course catalog. A faculty member cannot drop or withdraw a student. It is the student's responsibility to handle withdrawal procedures from any class to avoid receiving a grade of "F".
Student conduct and discipline	The University of Texas System and The University of Texas at Dallas have rules and regulations for the orderly and efficient conduct of university business. See the UTD publication, A to Z Guide, issued to each registered student.
Syllabus policies	The information contained in the following link constitutes the University's policies and procedures segment of the course syllabus. Please go to http://go.utdallas.edu/syllabus-policies for these policies.
Copyright notice	A UTD student is required to follow the UTD copyright policy. See http://www.utsystem.edu/ogc/intellectualproperty/copypol2.htm .