

THE UNIVERSITY OF TEXAS AT EL PASO
COLLEGE OF SCIENCE
DEPARTMENT OF MATHEMATICAL SCIENCES

Course #: STAT 5428/ STAT 6428
(CRN: 22876/ 27551)
Course Title: Introduction to Statistical Analysis
Credit Hrs: 4
Term: Spring 2023 (Instruction 01/17/2023-05/04/2023)
Course Meetings & Location: 09:30am – 10:50am TR Bell Hall 130
11:00am – 11:50am TR Bell Hall 130
Prerequisite Courses: STAT 2480 with a grade of C or higher.
Instructor: Ritwik Bhattacharya
Office Location: Bell Hall 223
Contact Info: Phone: (915) 747-5761 [O]
ritwik@utep.edu
Fax: (915) 744-6502
Office Hours: 12:00-12:50pm TR
Class Web page: UTEP Blackboard Portal
Textbook(s), Materials: Required: None.
Recommended: Daniel, W. W. and Cross, C. L. (2013).
*Biostatistics: A Foundation for Analysis in the
Health Sciences*, 10th Edition. Hoboken, NJ: John
Wiley & Sons, Inc.
ISBN-13: 978-1-118-30279-8

Kerns, G. J. (2010). *Introduction to Probability
and Statistics Using R*. ISBN: 978-0-557-24979-4.
Available at
[https://www.atmos.albany.edu/facstaff/timm/ATM
315spring14/R/IPSUR.pdf](https://www.atmos.albany.edu/facstaff/timm/ATM315spring14/R/IPSUR.pdf)

Course Description and Learning Outcomes: Fundamental techniques for statistical data analysis, including basic probability concepts, inference about means and variances of two populations, analysis of variance and covariance, least squares and logistic regression, categorical data analysis, nonparametric tests and experimental design. Analysis of data sets from biological and other application areas using statistical software packages, checking validity of modeling assumptions, and alternatives when modeling assumptions are not satisfied. Computer simulations are used to illustrate concepts such as power and confidence level. Open to students of all disciplines.

Topic Outline The course is aimed to provide coverage of commonly used statistical methods and show how to use them with R to analyze data and interpret results. This course schedule below is tentative, and the actual coverage may vary from it when necessary. Please use this primarily as an outline of the course materials throughout the semester and refer to the class web site for updated information.

1. Introduction and Reviews – The basics and preliminaries
2. Introduction to R
3. Describing data: descriptive statistics and statistical graphics
4. One-Sample Inferences
 - a. Statistical Inference: Estimation and hypothesis testing
 - b. Continuous data - mean/median, variance, skewness, and kurtosis
 - c. Categorical data – proportion, one-way contingency tables
5. Two-Sample Inferences (similarly aligned)
6. Designs of experiments and ANOVA
7. Simple/Multiple Linear Regression
8. Model Selection and Diagnostics
9. Logistic Regression (if time allows)

Course

Activities/Assignments: Lecture Component (class instructions) plus Lab Component (mostly on programming and exercise problems)

Course Schedule:	01/17	Class starts
	03/30	Class drop deadline
	05/08 - 05/12	Final Exam Period
	<u>Holidays</u>	
	03/13-03/17	Spring Break
	03/31	Cesar Chavez Holiday

Grading Policy: There will be three midterms and one comprehensive final exam, plus several computer projects, which, in together, add up to the final grade. Homework, assignments will be made available on the course web page. No homework will be collected or graded. But you are highly recommended to do homework regularly and independently.

	Date and Time	Proportion
Midterm Exam I	02/23 Thursday 9:30-10:50am	20%
Midterm Exam II	03/23 Thursday 9:30-10:50am	20%
Midterm Exam III	04/20 Thursday 9:30-10:50am	20%
Computer Project I	TBA	10%
Computer Project II	TBA	10%
Final Exam	TBA	25%

Letter grades are determined according to the following scale below. Note these raw final scores are out of 105 with five extra credits. However, the extra credits are only applicable to those who complete all assignments and exams without any unexcused absence and having more than 90% attendance; otherwise, the final score will be calculated on the 0-100 scale.

Grade Score

- A > 90
- B 80-89
- C 70-79
- D 60-69
- F <60

Make-up Policy: There is NO make-up exam; if you must miss a midterm exam, e.g., with a university excuse or due to illness, the percentage of that exam will be re-distributed to other or future exams. All exams will be taken in class; online exams will not be allowed unless doing so is the last resort.

Incomplete grades are given only in extreme instances and only with prior permission of the instructor. All assigned projects must be turned in on time. No late coursework or project will be accepted, except extreme scenarios.

Attendance Policy: Class attendance is required. Students are expected to actively participate in class discussions and group activities. A late arrival of 15 minutes or more will be considered as an absence. Class attendance is REQUIRED and helpful to decide borderline grades. If a student must be absent from a particular class, he/she will be responsible for notifying the instructor and catching up with course material. FOUR or more unexcused absences will result in an instructor-initiated drop or grade failing / reduction. Your academic advisor will be consulted before final action is decided and taken. If you expect to miss TEN or more class hours for ANY REASON, please don't consider taking this course.

Academic Integrity Policy: The University policy is that all suspected cases or acts of alleged scholastic dishonesty must be referred to the Dean of Students for investigation and appropriate disposition. Any student who commits an act of scholastic dishonesty is subject to discipline. Scholastic dishonesty includes, but is not limited to cheating, plagiarism, collusion, submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts. Each student is responsible for notice of and compliance with the provisions of the Regents' Rules and Regulations, which are available for inspection electronically at <http://www.utsystem.edu/bor/rules/homepage.htm>

All students are expected and required to obey the law, to comply with the Regents' Rules and Regulations, with System and University rules, with directives issued by an administrative official in the course of his or her authorized duties, and to observe standards of conduct appropriate for the University. A student who enrolls at the University is charged with the obligation to conduct himself/herself in a manner compatible with the University's function as an educational institution.

Any student who engages in conduct that is prohibited by Regents' Rules and Regulations, U. T. System or University rules, specific instructions issued by an administrative official or by federal, state, or local laws is subject to discipline, whether such conduct takes place on or off campus or whether civil or criminal penalties are also imposed for such conduct.

Civility Statement: Calculators may not be shared during quizzes and exams. Please do not use cell phones, pagers, iPods, MP3 players, blue tooth devices, etc. during class or exam time. Cell phones and pagers should be set to silent or vibrate, and any calls should be taken outside of class. Please do not wear headsets or blue tooth devices during class. Please don't talk in class. Cell phone calculators may not be used on quizzes or exams. Active participation in class is expected, teamwork in class will be implemented.

Disability Statement: If a student has or suspects she/he has a disability and needs an accommodation, he/she should contact The Center for Accommodations and Support services (CASS) at 747-5148 or at <cass@utep.edu> or go to Room 106 Union East Building. The student is responsible for presenting to the instructor any CASS accommodation letters and instructions.

Military Statement: If you are a military student with the potential of being called to military service and/or training during the semester, please contact me by the end of the first week of class.

UTEP College of Science Policies: The UTEP Spring 2023 drop/withdraws deadline is March 30th, 2023. The College of Science will remain aligned with the University and not approve any drop requests after that date.

All grades of Incomplete must be accompanied by an Incomplete Contract that has been signed by the instructor of record, student, departmental chair, and the dean. Although UTEP will allow a maximum of one year to complete this contract, the College of Science requests it be limited to month based upon completion data. A grade of Incomplete is only used in extraordinary circumstances confined to a limited event such as a missed exam, project, or lab. If the student has missed a significant amount of work (e.g., multiple assignments or tasks), a grade of Incomplete is not appropriate or warranted.