EDP 480C 4: Correlation/Regression Methods

Unique: 13150

Fall 2025

Time:	Lecture: TTH 9:30 AM – 11:00 AM	**Location:**	SZB 4.410
	Lab: T 8:30 AM – 9:30 AM		
Credits	4 credits		
Instructor:	Man Chen, Ph.D.	**Office:**	SZB 5.308L
Email:	man.chen@austin.utexas.edu	**Office hours:**	T 3:30 – 5:00 PM
TA:		**Office:**	
Email:		**Office hours:**	

Course Description

This course provides an introduction to the theory and application of correlation and regression techniques and serves as a foundation for more advanced methods. The general objective is to familiarize you with the theoretical foundations of correlation and regression methods, as well as its application to real data sets. In this course, you will learn how to specify and interpret correlation analyses and regression models. All analyses will be done in R which is an open-source language and environment for statistical computing and graphics.

Pre-requisites

- EDP 380C.2 Fundamental Statistics
- EDP 480C.6 Statistical Analysis for Experimental Data
- Experience with at least one statistical software for data management and analysis (e.g., R, SAS, Stata, Python, SPSS). For example, you should be able to load a dataset, calculate summary statistics for a set of variables in a dataset, create new variables and add them to a dataset, and create graphs.

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Learning Outcomes

By the end of this course, students will be able to

1. Understand the main concepts of correlation and regression techniques,
2. Select and apply appropriate techniques for answering research questions,
3. Make appropriate statistical inferences in light of the underlying assumptions,
4. Interpret the results and communicate the findings.

Course Materials

Required Textbook

- Warner, R. M. (2013). *Applied statistics: From bivariate through multivariate techniques* (2nd edition). Los Angeles, CA: Sage
    - Or, Warner, R. M. (2020). *Applied Statistics II: Multivariable and Multivariate Techniques* (3nd edition). Los Angeles, CA: Sage

Recommended Textbooks

- Rasco, Danney (2020). *An R Companion for Applied Statistics II: Multivariable and Multivariate Techniques* (1st edition). Sage publications.
- Fox, J. (2016). *Applied Regression Analysis and Generalized Linear Models* (3rd edition). Sage publications.
  Online resources (appendix, data, etc.): https://www.john-fox.ca/AppliedRegression/index.html
- Fox, J., & Weisberg, S. (2018). *An R Companion to Applied Regression* (3rd edition). Sage.
  Online resources (appendices, scripts, etc.): https://www.john-fox.ca/Companion/index.html
- Cohen, J., Cohen, P., West, S. G. & Aiken, L. (2003). *Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences* (3rd Ed). New York: Taylor and Francis Group, Routledge Publishers.

Course Requirements and Grading

Statistical Computing

We will use the R environment (R and R studio) for demonstrations in this class. In principle, you are welcome to use any other programs instead, but I won't be able to provide examples and technical support for any software not demonstrated in class.

R: https://www.r-project.org

RStudio: https://www.rstudio.com

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Calculator

Students must have access to a calculator for performing mathematical computations (e.g., taking the square root, natural log, etc) during the midterm exam. Students can use a calculator or R for basic calculations during lectures or labs.

Getting Help with Technology

Students needing help with technology in this course should contact the ITS Service Desk.

Classroom Expectations

- **Class attendance** [Class attendance is not required but strongly encouraged. You will be responsible for the materials and announcements that you missed.]
- **Class participation** [Student participation is an integral component of this course and your feedback is important to me. Class participation is not included in the course grade but I strongly encourage you to participate actively in class activities and discussions.]
- **Respectful learning environment** [Please be respectful to each other and maintain a healthy learning environment in all course activities. Any concern in this regard should be brought to the attention of the instructor.]

Evaluation & Grading

- **Exit tickets (10% = 10 * 1%)**
    - There are 10 exit tickets given throughout the semester as a way to check whether the objectives of each lecture are met. Each exit ticket will include 1-3 short questions, which will be graded based on completion.
- **Assignments (40% = 5 * 8%)**
    - There will be **five** assignments designed to familiarize you with the correlation and regression methods and their applications in R. Each assignment accounts for 8% of the final grade. Assignments consist of several questions related to the statistical concepts learned in class. Students are expected to do some hand calculations, conduct analyses in R, and interpret the results. Assignments will be posted on Canvas and the deadlines will be specified in class. Assignments should be submitted through Canvas. Students may discuss the homework assignments with others but the responses should be your own work.
    - Assignments should be submitted on time for full credit. A late assignment will be accepted within two days after the due date but with a 20% of points deduction.

- **Exams (50%)**
    - **Midterm (20%):** There is an in-class midterm exam covering correlation, simple linear regression, and multiple linear regression.
    - **Final exam (30%):** There will be a take-home exam in the end of the semester that evaluates your knowledge of correlation and regression techniques. The final take-home exam will be cumulative, covering all topics that we discuss during the semester. **The exam will be distributed on Tuesday, December 2rd, 2025 and will be due by December 12th, 2025.** Students are expected to complete the exam individually without discussing the exam materials with other students. Students may ask clarification questions to the instructor.
    - There is no makeup for for missed exams, unless arrangements were made with the instructor in advance.

Grade Breaks

A tentative rubric for assignment of final grades is provided below. The instructor reserves the right to modify the rubric.

Grade	A	A−	B+	B	B−	C+	C	C−	D+	D	D−	F
Cutoff	93%	90%	87%	84%	80%	77%	74%	70%	67%	64%	60%	<60%

Sharing of Course Materials Is Prohibited

No materials used in this class, including, but not limited to, lecture notes, lab hand-outs, assessments (quizzes, homework assignments, exams), in-class materials, review sheets, and additional problem sets, may be shared online or with anyone outside of the class without the explicit, written permission from the instructor. Unauthorized sharing of materials may facilitate cheating. The University is aware of the sites used for sharing materials, and any materials found online that are associated with you, or any suspected unauthorized sharing of materials, will be reported to Student Conduct and Academic Integrity in the Office of the Dean of Students. These reports can result in initiation of the student conduct process and include charge(s) for academic misconduct, potentially resulting in sanctions, including a grade impact.

Academic Integrity Expectations

Students who violate University rules on academic misconduct are subject to the student conduct process. A student found responsible for academic misconduct may be assigned both a status sanction and a grade impact for the course. The grade impact could range from a zero on the assignment in question up to a failing grade in the course. A status sanction can include a written

warning, probation, deferred suspension or dismissal from the University. To learn more about academic integrity standards, tips for avoiding a potential academic misconduct violation, and the overall conduct process, please visit the Student Conduct and Academic Integrity website at: http://deanofstudents.utexas.edu/conduct.

Religious Holy Days

By UT Austin policy, you must notify me of your pending absence for a religious holy day as far in advance as possible of the date of observance. If you must miss a class, an examination, a work assignment, or a project in order to observe a religious holy day, you will be given an opportunity to complete the missed work within a reasonable time after the absence.

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Course Outline & Tentative Schedule

All instructions, assignments, readings, rubrics and essential information will be on the Canvas website at utexas.instructure.com. Check Canvas regularly. **Changes** to the schedule may be made at my discretion if circumstances require. I will announce any such changes in class and will also communicate them via a Canvas announcement. It is your responsibility to note these changes when announced, and I will do my best to ensure that you are notified of changes with as much advance notice as possible.

Week	Date	Lab Topics	Lecture Topics	Readings
Week 1	Aug. 26	Introduction to R	Course introduction	Syllabus; Warner Ch. 1-3
	Aug. 28		Review of statistical concepts	
Week 2	Sep. 2	Examining data	Bivariate relationship: correlation	Warner Ch. 7-8
	Sep. 4			
Week 3	Sep. 9	Bivariate relationship	Multivariate relationships: multiple correlation, (semi)partial correlation	Warner Ch. 10 (p. 471-496), Ch. 11 (p. 530-536)
	Sep. 11			
Week 4	Sep. 16	Multiple relationships	Simple linear regression	Warner Ch. 9; Fox Ch. 5.1, 6.1, 11-12
	Sep. 18			
Week 5	Sep. 23	Simple linear regression	Simple linear regression	
	Sep. 25			
Week 6	Sep. 30	Simple linear regression Cont.	Multiple linear regression	Warner Ch. 11 & 14; Fox Ch. 5.2, 6.2, 13
	Oct. 2			
Week 7	Oct. 7	Multiple linear regression	Multiple linear regression	
	Oct. 9		Review	
Week 8	Oct. 14	Example questions	Regression with categorical predictors	Warner Ch. 12; Fox Ch. 7.1-7.2
	Oct. 16		**Midterm**	

Week	Date	Lab Topics	Lecture Topics	Readings
Week 9	Oct. 21	Regression with categorical predictors	Regression with categorical predictors	Warner Ch. 12; Fox Ch. 7.1-7.2
	Oct. 23		Modeling interactions	Warner Ch. 15; Fox Ch. 7.3-7.4
Week 10	Oct. 28	Interaction	Modeling interactions	
	Oct. 30			
Week 11	Nov. 4	Interaction Cont.	Mediation	Warner Ch. 16
	Nov. 6			
Week 12	Nov. 11	Mediation	Logistic regression	Warner Ch. 23; Fox Ch. 14.1
	Nov. 13			
Week 13	Nov. 18	Logistic regression	Model building, comparison, and selection	Fox Ch. 22
	Nov. 20			
Week 14	Nov. 25 Nov. 27	Fall break/Thanksgiving; no classes		
Week 15	Dec. 2	Model building	Power	
	Dec. 4		Wrap-up	

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How Will You Learn?

Teaching Modality Information

This is a fully in-person course. The lectures and labs will be held in-person throughout the semester. As such, in-person attendance is expected, other than normal emergency accommocations. There will be no course recording.

Communication

The course Canvas site can be found at utexas.instructure.com. All the readings, lecture notes, assignments, exams, and announcements are posted on Canvas. You are responsible for ensuring that the primary email address you have recorded with the university is the one you will check for course communications because that is the email address that Canvas uses.

Asking for Help

Learn as much as possible. You're welcome to ask questions during class. If there is not enough time, please come to the office hours. If you can't make it to the office hours, please make arrangements with me or the TA in advance.

University Policies and Resources for Students

Disability & Access (D&A)

The university is committed to creating an accessible learning environment consistent with university policy and federal and state law. Please let your instructors know if you experience any barriers to learning so they can work with you to ensure you have equal opportunity to participate fully in your courses. If you are a student with a disability, or think you may have a disability, and need accommodations please contact Disability & Access (D&A). Please refer to the D&A website for more information. If you are already registered with D&A, please deliver your Accommodation Letter to your instructors as early as possible in the semester so you can discuss together your approved accommodations and needs in your courses.

Title IX Reporting and Support Disclosure

The Title IX Office uses information provided in reports to reach out to individuals in need, provide them with support and resources, and discuss options available to them related to a formal grievance process. For students, examples of support include academic accommodations, safety support, and connection with other campus and community resources.

Texas Education Code, Section 51.252 requires all employees of Texas universities, including faculty, to report to the Title IX Office any information regarding incidents of sexual harassment, sexual assault, dating violence, or stalking that is disclosed to them. Texas law requires that all employees who witness or receive information about incidents of this nature (including, but not limited to, written forms, applications, one-on-one conversations, class assignments, class discussions, or third-party reports) must report it to the Title IX Coordinator. Before talking with me, or with any faculty or staff member about an incident of this nature, please be aware that I will be required to report this information.

Graduate teaching and research assistants are also designated as mandatory reporters and are required to report behaviors that are considered sexual misconduct, including the types of misconduct described above.
Pregnant and parenting students, faculty and staff are also eligible to receive support and resources from the Title IX Office. Support and resources may include supportive measures, medically necessary periods of leave, and leaves of absence. Case managers from the Title IX Office connect with students, faculty, and staff to provide one-on-one, individualized support. If you would like to speak with a case manager for support, please email: supportandresources@austin.utexas.edu.
For more information about reporting options and resources, please visit the Title IX website, contact the Title IX Office via email at: titleix@austin.utexas.edu, or call 512-471-0419.

Names and Pronouns

Class rosters are provided to the instructor with the student's legal name, unless they have added a chosen name with the registrar's office.

- For instructions on how to add your pronouns to Canvas, visit this site.
- If you would like to update your chosen name with the registrar's office, reference this guide.
- For additional guidelines on changing your name on various campus systems, see the Resources page under UT Resources here.

Counseling and Mental Health Center (CMHC)

We all benefit from support during times of struggle. Remember, you are not alone. If you are experiencing signs of stress, anxiety, depression, academic concerns, loneliness, difficulty sleeping, or any other issues affecting your well-being, we encourage you to contact the Counseling and Mental

Health Center. The center is conveniently located on campus and provides a wide range of mental health services to all UT students. These services include support through assessment and referral, group and individual counseling, psychiatry, crisis services, and access to valuable well-being resources. In addition, CARE Counselors available within each academic school and college understand the unique concerns of their respective students and offer tailored assistance. Also, TimelyCare is a virtual mental health platform offering 24/7 support, scheduled counseling, psychiatric services, health coaching and self-care content. For more information, visit the CMHC website.

University Health Services (UHS)

Your physical health and well-being are a priority. University Health Services is the on-campus medical facility providing medical care and patient education to UT students. Services offered include general medicine, specialty clinics including the gynecology clinic, sports medicine, nutrition services, allergy, immunization and travel health, physical therapy, urgent care, a 24/7 nurse advice line; STI screening; and lab, x-ray, and ultrasound services. For additional information, visit the UHS website or call 512-471-4955.

Sanger Learning Center (SLC)

Did you know that over one-third of UT undergraduate students use the Sanger Learning Center yearly to strengthen their academic performance? All students can take advantage of Sanger Center's classes and workshops, private learning specialist appointments, peer academic coaching, public speaking, and tutoring for more than 70 courses in over 15 subject areas. For more information, please visit the SLC website (JES A332).

Dean of Students - Student Emergency Services (SES)

Our staff help students and their families during difficult or emergency situations. Assistance includes outreach, advocacy, intervention, support, and referrals to relevant campus and community resources. If you need to be absent from class due to a family emergency, medical or mental health concern, or academic difficulty due to crisis/emergency, and your instructor requires confirmation of your absence, we can help. We will document your situation and notify your instructors. Visit the SES wesbite to learn more, or call 512-471-5017 to speak with our staff.

Behavior Concerns and Advice Line (BCAL)

If you have concerns about the safety or behavior of fellow students, TAs, professors, or anyone at UT Austin, BCAL (the Behavior Concerns Advice Line) can help. Anyone can call BCAL (512-232-5050) 24/7 to share a concern about a UT person, or to get advice on how to talk with the person

about your concern. More information and an online report form are available on the BCAL website. Callers can remain anonymous, and confidentiality will be maintained as much as possible, however the university may be required to release some information to appropriate parties.

UT Outpost and Student Emergency Fund

Any student who faces challenges securing their food or housing and believes this may affect their performance in the course is urged to visit UT Outpost for support. UT Outpost is the free on-campus food pantry and career closet for all currently enrolled UT students. Any student in need is encouraged to visit UT Outpost (2609 University Avenue, 3.108) for free groceries, personal care items, and gently-used professional clothing for interviews, internships, or other needs. To learn more, visit the UT Outpost website.

The Student Emergency fund exists to provide financial support when a verified emergency has impacted a student's health, safety, or wellbeing. An emergency is an urgent, sudden, and serious event that necessitates immediate action to remedy harm to life, health, or property. To learn more about eligibility or apply, visit the Student Emergency Fund website.

Important Safety Information

Carrying of Handguns on Campus

Students in this class should be aware of the following university policies related to Texas' Open Carry Law:

- Students in this class who hold a license to carry are asked to review the university policy regarding campus carry.
- Individuals who hold a license to carry are eligible to carry a concealed handgun on campus, including in most outdoor areas, buildings and spaces that are accessible to the public, and in classrooms.
- It is the responsibility of concealed-carry license holders to carry their handguns on or about their person at all times while on campus. Open carry is NOT permitted, meaning that a license holder may not carry a partially or wholly visible handgun on campus premises or on any university driveway, street, sidewalk or walkway, parking lot, parking garage, or other parking area.

Campus Safety

The following items are recommendations regarding emergency evacuation from the Office of Emergency Management, 512-232-2114:

- Students should sign up for Campus Emergency Text Alerts at the Office of Emergency Management.
- Occupants of buildings on The University of Texas at Austin campus must evacuate buildings when a fire alarm is activated. Alarm activation or announcement requires exiting and assembling outside.
- Familiarize yourself with all exit doors of each classroom and building you may occupy. Remember that the nearest exit door may not be the one you used when entering the building.
- Students requiring assistance in evacuation shall inform their instructor in writing during the first week of class.
- In the event of an evacuation, follow the instruction of faculty or class instructors. Do not re-enter a building unless given instructions by the following: Austin Fire Department, The University of Texas at Austin Police Department, or Fire Prevention Services office.
- For more information, please visit the Office of Emergency Management.