

UEP 305: Urban Data Analysis
Urban & Environmental Policy Department, Occidental College
Fall 2026

Course Instructor: Professor Madeline Wander (she/her), mwander@oxy.edu

Lecture: Tuesday and Thursday, 1:20-2:40pm, Johnson 302

Lab: Tuesday or Thursday, 2:50pm-4:15pm, Johnson 302

Student Hours: Tuesday 4:30-6pm and Wednesday 9-10:30am in

Office #203 in the UEP Building (1882 Campus Rd). Sign up [here](#).

If these times do not work for you, email Prof. Wander to find a time.

Canvas Sites: [Lecture](#), [Tuesday Lab](#), [Thursday Lab](#)

Course Description

Data are powerful. Data help us understand the magnitude of urban and environmental problems—as well as the people who, and places that, disproportionately suffer from such problems. Data also help us identify solutions, including public policies, and evaluate the effectiveness of such solutions. In this course, students will learn how to document and analyze urban and environmental problems and public policies using quantitative data. Toward this end, this course reviews the basic foundations of statistics for social science applications. Additionally, students will learn how to use statistical analysis programs to manage and analyze quantitative data, particularly for applied research. The concepts and skills that students learn in this course will prepare them to conduct their senior comprehensive research projects and act as a steppingstone toward other courses focused on quantitative analysis. But ultimately, as a methods course in the UEP department, our task is to develop quantitative reasoning skills to use in organizing, advocacy, and leadership toward a more just and equitable society.

Student Learning Objectives

1. Build critical thinking skills related to quantitative data and analysis, including the ability to assess quantitative research through lenses of rigor and justice
2. Develop technical and statistical analysis skills using Excel and Stata
3. Understand the research design process from a social science perspective

4. Learn to work with a team on research projects and presentations on topics in urban and environmental policy

Classroom Community

We—the instructor and the students—share the responsibility of creating an inclusive space for learning that: 1) recognizes and respects our differences, and 2) acknowledges the broad range of knowledge and experience that we each bring.

I, the professor, am responsible for structuring and facilitating a space for learning and achieving course goals. In so doing, I strive to foster an inclusive classroom environment, consistent with College [policy on discrimination, harassment, and retaliation](#). On the first day of class, I borrow the community organizing practice of co-developing shared classroom agreements with students toward practicing mutual respect, which we will adjust throughout the semester if necessary. If you feel comfortable doing so, please feel free to communicate with me about any concerns, questions, or ideas regarding this process.

You, the students, are responsible for attending and participating in class, completing assignments in a timely manner, being prepared to discuss readings and material in class, and contributing to a robust learning environment and community. With this goal, students are also responsible for engaging in respectful, open, and thoughtful discussion with each other and the instructor.

Course Requirements & Grading

Here is a summary table of requirements, assignments, and due dates for this course—followed by a more detailed explanation of each component.

<i>Requirement</i>	<i>% of Course Grade</i>	<i>Due Date</i>
1) Participation	20%	
2) Problem Sets	20%	
<i>a. Problem Set #1</i>	5%	Sept. 11
<i>b. Problem Set #2</i>	5%	Oct. 2
<i>c. Problem Set #3</i>	5%	Oct. 30
<i>d. Problem Set #4</i>	5%	Nov. 24
3) Midterm Exam	20%	Oct. 13
4) Group Project	20%	
<i>a. Memo #1: Project Proposal</i>	5%	Sept. 25

<i>b. Memo #2: Descriptive Analysis</i>	5%	Oct. 23
<i>c. Memo #3: Regression Analysis & Conclusion</i>	5%	Nov. 12
<i>d. Presentation</i>	5%	Nov. 17 or 19
5) Final Exam	20%	<i>Date/Time TBD</i>

Participation (including Attendance Policy) [20% of course grade]

Participation is 20 percent of students' course grade and includes:

- 1) In-class attendance: Attending class is critical to understanding of the course material, as lectures, discussions, and in-class exercises draw on yet go beyond readings. I take and track attendance, which factors into the participation grade. However, I recognize that things in life can arise unexpectedly. If there is a medical issue or personal emergency, please communicate with me. Similarly, if you must miss class due to an official Oxy event, or due to [reasons of faith or conscience](#), please communicate this to me as early as possible.
- 2) In-class engagement with course material and others: While I never cold call, I ask questions of students during lectures and discussions—and I highly encourage students to ask questions and make comments, including in response to peers. It is also critically important to recognize that in-class engagement is not about speaking for the sake of speaking; it is about being present and engaged, which includes active listening.
- 3) Submission of completed lab assignments, to be completed during labs.

Assignments [40% of course grade]

- 1) Problem Sets [20% of course grade]: Students will complete and submit four problem sets (each worth 5% of the course grade). Problems sets allow students to: a) Apply statistical concepts learned in lecture, class discussions, in-class exercises, and readings; b) Practice technical skills learned in lab; and c) Learn how to read and understand research articles employing quantitative analyses.
- 2) Group Project Memos [20% of course grade]: In groups, students will undertake a quantitative data analysis project focused on a topic related to urban and environmental policy. The Group Project includes the following deliverables, each worth 5 percent of the course grade:
 - Memo #1: A project proposal, describing why the topic is important, naming the research question, and describing the data

- Memo #2: A write-up of revisions to the project proposal and the descriptive statistical analysis
- Memo #3: A write-up of the regression analysis and conclusions and/or recommendations based on findings
- In-Class Presentation: The presentation is the culmination of the group project. The presentation will be based on the memos and will ultimately allow students to practice “telling a story” with quantitative data about critical topics in urban and environmental policy.

All assignments are to be submitted through Canvas. For Group Project assignments, students will submit one assignment per group, and each student will receive the group grade.

Exams [40% of course grade]

The midterm and final exams [each worth 20% of the course grade] will assess students’ understanding of the course material. Both exams will be timed and held in class, and students will take exams by hand (i.e., on paper with a writing utensil, not on a computer or tablet). Calculators will be provided.

Grading (including Late Assignment Policy)

For assignments and exams, I care more that students make a sincere effort and show their work than simply write down the answer. My grading reflects this. Grade percentages are as follows:

A	94-100	B-	80-82	D+	67-69
A-	90-93	C+	77-79	D	63-66
B+	87-89	C	73-76	F	0-62
B	83-86	C-	70-72		

Late assignments will be marked down one letter grade (e.g., from A to A-) for each 24-hour period that they are late. If you are unable to submit an assignment on time, please communicate with me.

Course Materials

- Textbook: Moore, David S., William I. Notz, and Michael A. Fligner. *The Basic Practice of Statistics*. Dublin: Macmillan. 7th, 8th, or 9th edition. ([On reserve at the Oxy library.](#))
- Laptop with Microsoft Excel and Parallels Client installed (to use during Lab, not Lecture). Note that students may request a loaner laptop from the Library Information Desk at the Academic Commons.
 - All Oxy students can download the Microsoft Office Suite (including Excel) on to their computers; [here are instructions](#) on how to do so.

- Parallels Client provides access to the [Oxy Virtual Computer Lab](#), through which you can access the statistical analysis software Stata.

Electronic Devices Policy

During lecture, students will not be allowed to use laptops, tablets, or phones (with the exception of specific accommodations). There is well-established research that shows how note-taking on laptops and other electronic devices impedes learning. Such devices also distract us during class, making it difficult to develop and sustain a community of inquiry. Please come to class prepared to take notes by hand. This means bringing a notepad and a writing utensil to each class. Lecture notes will be available on Canvas to guide and supplement note-taking. On the flip side, as the express purpose of this course's lab is for students to learn and practice using statistical software—and interpreting the output of their analyses—students are required to bring laptops to lab (see “Course Materials” section above).

Artificial Intelligence (A.I.) Policy

A.I. tools like ChatGPT and Claude may not be used to complete any assignment. The use of such tools hinders, rather than enhances, the student learning objectives of this course, which center around developing one's own critical thinking and technical skills. (I also encourage you to educate yourself about [the harm of AI on the environment](#), if you haven't already.)

Mid-Semester Progress Reports

Mid-semester progress reports are not intended to be used as determinative or predictive of the final grade in a course, but to provide an opportunity for faculty to communicate an approximate estimation of progress by the students in the course by the midpoint of the current semester. Fall 2026 mid-semester progress reports submission window is October 6-19.

Credit Hour Policy

UEP 305 is a 4-unit course with a 0-unit lab associated with the course. On average, you should expect to spend at least (12) hours a week (including in-class time and in-lab time) on this course.

Core Program Requirements

UEP 305 fulfills the [Core Program Math or Science \(CPMS\) requirement](#).

College Policies

See the [UEP305 Canvas site](#) for information on college policies.

Course Schedule

This course schedule includes topics by date (including lab topics), required readings, assignment deadlines, and exam dates. Unless otherwise specified, the readings draw from *The Basic Practice of Statistics* (see the “Course Materials” section above).

WEEK 1

Tuesday, August 25: Introduction to the Course and Each Other

Thursday, August 27: Types of Research and Variables

- Reading:
 - Cokley, Kevin, and Germinie H. Awad. 2013. “In Defense of Quantitative Methods: Using the ‘Master’s Tools’ to Promote Social Justice.” *Journal for Social Action in Counseling & Psychology* 5(2):26–41.
 - Chapter 1 “Picturing Distributions with Graphs”

LAB: Excel Basics

WEEK 2

Tuesday, September 1: Descriptive Statistics

- Reading: Sections 2.1-2.6 in Chapter 2 “Describing Distributions with Numbers”

Thursday, September 3: Descriptive Statistics (continued) and the Normal Distributions

- Reading:
 - Section 2.7 in Chapter 2 “Measuring Variability: The Standard Deviation”
 - Chapter 3 “The Normal Distributions”

LAB: Charts and Descriptive Statistics in Excel

WEEK 3

Tuesday, September 8: Research Design and Ethics

- Reading: Chapter 10 “Data Ethics”

Thursday, September 10: Sampling and Standard Normal Calculations

- Reading:
 - Sections 8.1-8.5 in Chapter 8 “Sampling”
 - Sections 15.1-15.4 in Chapter 15 “Sampling Distributions”

LAB: Variance, Standard Deviation, and Conditional Formatting in Excel

Assignment: Problem Set #1 DUE on Friday, September 11

WEEK 4

Tuesday, September 15: Central Limit Theorem and Confidence Intervals

- Reading:
 - Sections 15.5-15.6 in Chapter 15 “Sampling Distributions”
 - Chapter 16 “Confidence Intervals: The Basics”

Thursday, September 17: Introduction to Data Sources with [Social Sciences & Data Literacy Librarian Kristin Peace](#)

LAB: Data Management and Pivot Tables in Excel

WEEK 5

Tuesday, September 22: Scatterplots and Correlation

- Reading:
 - Chapter 4 “Scatterplots & Correlation”
 - Chapter 6 “Two-way Tables”

Thursday, September 24: Introduction to Regression Analysis

- Reading: Chapter 5 “Regression”

LAB: Scatterplots and Correlation in Excel

Assignment: Group Project Memo #1 DUE on Friday, September 25

WEEK 6

Tuesday, September 29: Linear Regression Modeling (continued)

Thursday, October 1: Probability

- Reading:
 - Chapter 12 “Introducing Probability”
 - Chapter 13 “General Rules of Probability”

LAB: Introduction to Stata

Assignment: Problem Set #2 DUE on Friday, October 2

WEEK 7

Tuesday, October 6: Midterm Review

Thursday, October 8: NO CLASS AND NO THURSDAY LAB (NOTE: Thursday Lab will find an alternative meeting time this week)

LAB: Introduction to Stata continued

WEEK 8

Tuesday, October 13: Midterm Exam

Thursday, October 15: NO CLASS (Fall Break)

NO LAB THIS WEEK

WEEK 9

Tuesday, October 20: Linear Probability and Logit Regression Modeling

- Reading: Çetinkaya-Rundel, Mine, and Johanna Hardin. 2024. [“Chapter 9: Logistic Regression.”](#) Pp. 155-168 in *Introduction to Modern Statistics (2e)*. Second. OpenIntro.

NOTE: If the link prompts you to “Sign in,” just click “Cancel” and it will still allow you access to the chapter.

Thursday, October 22: Statistical Tests and Hypotheses

- Reading:
 - Chapter 17 “Tests of Significance: The Basics”
 - Chapter 18 “Inference in Practice”
 - Section 22.3 in Chapter 23 “Inference about a Population Proportion”

LAB: Regression in Stata

Assignment: Group Project Memo #2 DUE on Friday, Oct. 23

WEEK 10

Tuesday, October 27: Statistical Tests and Hypotheses (continued)

- Reading: Chapter 20 “Inference about a Population Mean”

Thursday, October 29: Statistical Tests and Hypotheses (continued)

LAB: Regression in Stata continued

Assignment: Problem Set #3 DUE on Friday, October 30

WEEK 11

Tuesday, November 3: Regression Inference

- Reading: Chapter 26 “Inference for Regression”

Thursday, November 5: Two-sample t Statistic

- Reading: Chapter 21 “Comparing Two Means”

LAB: Significance Tests in Stata

WEEK 12

Tuesday, November 10: Chi-Square Tests

- Reading: Chapter 25 “Two Categorical Variables: The Chi-Square Test”

Thursday, November 12: Using Quantitative Data Analysis for Equity and Justice with Guest Speaker Chelsea Kirk, [Strategic Actions for a Just Economy \(SAJE\)](#) and [The Rent Brigade](#); sponsored by the Remsen Bird Fund.

LAB: Work on Group Project

Assignment: Group Project Memo #3 DUE on Thursday, November 12

WEEK 13

Tuesday, November 17: Group Presentations

Thursday, November 19: Group Presentations

Lab: Work on Problem Set #4

WEEK 14

Tuesday, November 24: Final Exam Review

Assignment: Problem Set #4 DUE on Tuesday, November 24

Thursday, November 26: NO CLASS (Thanksgiving Break)

Lab: NO LAB

FINALS WEEK

DATE/TIME TBD (sometime between Dec 3-10): Final Exam