

UEP 305 Urban Data Analysis

Fall 2024 Fulfills Core Program requirement CPMS

"You can't solve a problem until you first learn how to measure it." (Daniel Patrick Moynihan, four-term Democratic Senator from New York and adviser to President Richard Nixon)

Professor James Sadd jsadd@oxy.edu Office: HSC209 Office hrs MW 4:40 - 5:40PM
Lecture: Monday and Wed, 5:40-7:05pm PST in HSC210 Lab: Tuesday or Thursday 7:15-8:40pm PST in HSC210

Course Description: This is a course in data analysis, and not just a statistics class. I designed it to be very practical in terms of equipping you with a variety of tools and techniques to explore and understand the types of data, and "realworld" issues, that you encounter in the UEP major, and that are widely recognized as important.

You will learn methods that are useful to document and analyze urban and environmental problems and policies using quantitative data. Quantitative data provide an objective and compelling means to help understand realworld problems and who is impacted by them. Quantitative data can also help identify solutions and policies, and then be used to monitor progress and evaluate the effectiveness of those solutions. Ultimately, our task is to develop quantitative reasoning skills that will lead to a more accurate understanding of the realworld and, hopefully, smarter decision-making. UEP 305 will also prepare you for your senior comprehensive research projects and other courses focused on quantitative analysis.

Using, interpreting, and understanding quantitative data is the core of many professions and pursuits in both the urban and environmental realms. This course reviews the basic foundations of statistics and data analysis for univariate arguments, with an introduction to non-parametric and spatial statistics. Microsoft Excel is that main tool that you will use to manage and analyze data. There is a final research project where you will engage with a complex, realworld problem using realworld data.

Course Structure

- Two 1.5-hour lecture sessions each week
- One 1.5-hour lab session each week.
 - Attend your assigned lab day. If you have a need to attend the other lab day, email Prof. Sadd.
- Use class time effectively to get your questions answered; others will have the same questions as you.
- Readings, assignments, and in-class worksheets will be distributed as digital files
- You will turn in all assignments as files, in Microsoft Word or Excel format. ***Do not turn in assignments in PDF; do not use GoogleDrive or other online storage to "share" the document***
- You are individually responsible for turning in your own assignment except for explicit Group assignments
- **Readings & articles** assignments, and in-class worksheets **will be provided** as digital files.

If you have a laptop, bring it to lecture and lab with Microsoft Excel, Word, Power Point installed. PCs are available in the lab for your use, as well.

How to conduct yourself in class: Class meetings are a professional setting and the time for you to learn, work with others and receive feedback in realtime. They require your entire attention, so it is expected that you do not text or use your phone during class time (calls, email or web searching), nor should you leave class to use it. You are welcome to bring a beverage to class, but please refrain from eating. Please tell me how you wish to be addressed. Please address me as "Dr. Sadd" or "Professor Sadd". Do not address me generically as "Professor" - it is as disrespectful as if I addressed you as "Student". The reason for these rules is to help you learn soft skills that prepare you for the world outside of college, where these behaviors can help you succeed, or cause people to pre-judge you to your detriment. Your adherence to these rules/guidelines is part of the calculation for class participation.

Week	Date	Lecture Topic	Assignments
1	28-Aug	Intro to course Introduce Final Project	
2	2-Sep	Labor Day - no class	Hand out project ideas
	4-Sep	Descriptive Statistics -	
	Lab	No Lab	
3	9-Sep	CalEnviroScreen	Project preferences due
	11-Sep	EJScreen	
	Lab	CES and EJScreen maps and data	
4	16-Sep	Variance and Standard Deviation, Normal Distribution	Assign Projects and Teams
	18-Sep	Standard Normal Calcs.	Assign Literature Review
	Lab	Excel Basics 1 and data import/editing	
5	23-Sep	Making sense of the Census	
	25-Sep	Confidence Intervals, Margin of Error	
	Lab	Excel: data plots	
6	30-Sep	Sampling	Literature Review Due
	2-Oct	Midterm 1	
	Lab	How to access ACS and Census data	
7	7-Oct	Intro to Regression	
	9-Oct	Regression Inference and Residuals	
	Lab	Excel: Pivot Tables, conditional formatting	
8	14-Oct	Fall Break - no class	
	16-Oct	Midterm 2	
	Lab	No Lab	
9	21-Oct	Parametric Statistical Tests: z-test	
	23-Oct	Parametric Statistical Tests: t-test	
	Lab	Excel: Correlation and Interpretation	Project data report due
10	28-Oct	Chi Squared tests for categorical data	
	30-Oct	Non Parametric Statistics and their use	
	Lab	Excel Regression and interpretatons	
11	4-Nov	Spatial Statistics - measuring spatial distribution	
	6-Nov	Spatial Statistics - analyzing patterns	
	Lab	Cluster and hot spot analysis	
12	11-Nov	Project updates - presentations	
	13-Nov	Project updates - presentations	
	Lab	Project updates - presentations	
13	18-Nov	Applied Spatial Statistics	
	20-Nov	Project Work - no class meeting	
	Lab	Project Work - no class meeting	
14	25-Nov	Project final presentations	
	27-Nov	Thanksgiving no class	
	Lab	No Lab	
15	2-Dec	Project final presentations	

Course Requirements and Grading

Attendance and active participation (15%)

- Active, engaged and significant participation is also part of this grade, and you will receive credit according to your contributions of this type. This includes asking thoughtful questions, contributing to class discussion, replying during lecture when I ask for ideas or responses, and refraining from using your phone during class.
- This class meets 27 times for you. The college allows you to be absent from class – a “lecture” or “lab” session - twice during the semester without any explanation required. However, you must notify me by email and make up the work missed by the end of the next day. If you do not notify me, you cannot make up the work from that missed day. If you have a third or fourth absence, you will lose credit at the rate of 2.5% of your final course grade per absence. ***If you miss more than 4 class meetings you likely will not pass the course – seniors take note.***
- Being late to a class is counted as one half of a class absence – see “Class Attendance” below.
- The pace and content of the course is determined, in part, by your completing assignments on time, as you will use the skills and content you learn in the following part of the class, so in essence attendance is part of your “regular and substantive participation”

Midterm Exams (30%)

- There are two during the semester
- There are no makeup quizzes. If you anticipate an absence from a scheduled quiz, contact me ASAP
- Midterm Exam 1 15%
- Midterm Exam 2 15%

Final Project (55%)

- | | |
|-------------------------|-----|
| ○ Literature Review | 5% |
| ○ Data Report | 10% |
| ○ Group presentation | 15% |
| ○ Final PowerPoint file | 25% |

For Group Project assignments, you will turn in one assignment per group, and each student will receive the same grade for that portion of the assignment.

Grading calculation:

A: 93-100; A-: 90-93; B+: 87-90; B: 83-87; B-: 80-83; C+: 77-80; C: 73-77; C-: 70-73; D+: 67-70; D: 63-67; F: 0-63.

About attendance: (“Eighty percent of success is showing up” quote attributed to Woody Allen) You deserve an explanation of my rationale on attendance and its role in the course. Regular attendance is expected, recorded and part of your grade. The content of each class and lab meeting is essential to the learning goals and mastery of the subject; missed classes/activities cannot “made up” in a way that that is comparable to your being present. Reliable and on-time attendance is not only crucial for success in this class, it will be for the rest of your professional life, so do not expect me to be flexible on this aspect of your grade. On time attendance is expected– “on time” means you are at your desk, ready to begin class at the required time, **not** walking in at that time or slightly after. This class meets just 28 times during the semester, and if you miss more than 10% of those times you will likely not pass the class.

Active, engaged and significant participation are also part of this grade, and you will receive credit according to your actual contributions of this type. This includes asking thoughtful questions, contributing to class discussion, replying when I ask for ideas or responses. The content of this class is highly linear, requiring you to learn and practice skills in order to do assignments and lab projects that follow.

I understand that serious and difficult life issues sometimes arise unexpectedly - a serious medical problem, family emergency, or a similar situation. Here is what you need to know - ***you can be absent twice for any reason, be they “for reasons of faith and conscience without academic consequence”, serious illness, athletics competition or artistic***

performance, conference attendance, field trip for another course, or participation in another activity important to you.

This is your own business; you do not have to justify it to me as all I am doing is keeping score. If your absence from class results in your missing an assignment due date, see the late assignment policy described below.

If there is a medical or family emergency, or if you are too ill to be in class inform me as soon as possible via email. If you miss class for a non-academic event (this includes athletics), you will be counted absent. If you plan to miss a class meeting for reasons of faith or conscience, please let me know as early in the semester as possible. Please familiarize yourself with the college policy: <https://www.oxy.edu/policy-directory/academic-accommodations-reasons-faith-and-conscience>

Being "late" means not seated and ready to work at the scheduled time that the class begins – so we agree on the definition of “time” please use the National NIST Internet Time Signal as the standard (<https://www.time.gov/>). If you slip into the room just at the start of class, or are minute or two late, you are late. My advice is to heed the old adage “if you are early, you are on time; if you are on time, you are late.”

Late Assignment Policy

Timely submission of all assignments are crucial for UEP 305, since the material builds on itself. If you miss an in-class assignment or lab assignment, you must make up that work and turn it in within one day of your absence in order to receive partial credit, and you can do this a maximum of three times during the semester. Not all in-class assignments and quizzes are announced in advance, so you should have a “note-taking partner” to brief you on what you miss.

Everyone gets a break: Fairness is fundamental to my teaching. I value your ideas, opinions and preferences, and will consider them seriously in making my decisions. Each of you will be treated equally, as individuals, and with respect. In a semester-long course, things happen in our lives. For this reason, everyone is entitled one “break”. We will not define this too specifically at this time, but if you feel you “need a break”, contact me and together we will decide what your “break” should be. Examples include allowing more time for an assignment that is due, allowing you to redo an assignment without penalty, or something similar depending on the circumstances. You cannot “skip” an assignment. We will be fair and understanding with you, but also must be fair to the entire class. Everyone gets a break – just one.

Tips on how to succeed - spend LESS time studying and get better grades:

- Attend all class meetings, and on time.
- Keep up with the class; do not fall behind; the further behind you are, the harder it is to catch up.
- Take good class notes. You will often have the lecture recording, but you should also create a set of written notes (preferably hand written so you can include sketches) – this is not to create busywork for you, it is because research in cognition and learning shows that people who take notes, and then within a day or two reread, edit, and recopy the notes remember significantly more information and understand it better than those who passively listen the lectures alone. This must be done every class day to get the benefits, and it takes only about 15-30 minutes. Doing this, you are studying for the first time, and will have notes that later you can actually read.
- Keep up with the reading; We assume that you have done the reading during the week it is assigned and are ready to discuss and ask questions when we meet. You will bring any questions to class for discussion. This material is part of the course and you must understand it.
- Create a study group – this consists of maximum 3 people who meet regularly to go over the course material and quiz one another on it, and recopying your notes together. Most people think they understand course material better than they actually do, and this is a way to discover what you need to review. In that context, the quizzers learn as much as the quizzed, so it is in everyone’s interest to do this.

- Check your Oxy email account at least twice a day, preferably before lecture or lab begins, as important information and assignments will be delivered this way and email is an official mode of coursework communications at this College – use your “@oxy.edu” account for all class purposes.

Student Learning Outcomes:

1. Critically evaluate quantitative data: how it is used and where it comes from
2. Develop technical and statistical skills using Excel
3. Understand the research design process and steps to take for objectively analyzing a research question
4. Conduct a research project focusing on a topic in urban and environmental policy
- 5.

Supplemental Texts

LANE Online Statistics Education: A Multimedia Course of Study (<http://onlinestatbook.com/>). Project Leader: David M. Lane, Rice University. free: <http://onlinestatbook.com/2/index.html>

I&D. Illowsky and Dean. Introductory Statistics. free: <https://openstax.org/details/books/introductory-statistics>

- Download free: https://d3bxy9euw4e147.cloudfront.net/oscms-prodcms/media/documents/IntroductoryStatistics-OP_i6tAI7e.pdf

You should expect to spend about twelve (12) hours a week (including in-class time and in-lab time).

Academic Integrity is a shared community value. It is built around trust and respect between members of the Occidental Community, and embodies a commitment to honesty and integrity in every aspect of one's academic life. All members of the Occidental community are committed to uphold the highest degree of academic integrity. Unless stipulated otherwise, the academic work done for all assignments is expected to be the student's own; students are expected to give proper credit to the ideas and work of others. Signing the Academic Integrity Commitment at the beginning of every semester represents a student's affirmation to uphold the shared values of honesty and integrity. When signing the Integrity Commitment associated with work in a course, students are affirming that they have not cheated, plagiarized, fabricated, or falsified information; nor assisted others in these actions.

[Link](#) to Student Handbook (which includes the framing of the commitment, definitions of Academic Ethics, and Process for alleged violations of the commitment).

Civil Rights & Title IX statement ([Link to Civil Rights & Title IX Office](#))

In the event that you write or speak about having experienced discrimination or harassment on the basis of a protected characteristic or sexual misconduct (including sexual assault, dating/domestic violence, stalking, sexual exploitation or any other form of sexual and/or gender-based harassment), as a designated Responsible Employee, We must inform the Civil Rights & Title IX Office. They will contact you to let you know about resources and support services at Oxy, as well as reporting options both on and off-campus. You have no obligation to respond to the Civil Rights & Title IX Office or to meet with them to discuss support services and reporting options.

If you do not want the Civil Rights & Title IX Office contacted, instead of disclosing this information to your instructor, either through conversation or a class assignment, you can speak confidentially with:

- Oxy's Survivor Advocate, Project SAFE (survivoradvocate@oxy.edu)
- Emmons Counseling (For appointments, call: 323-259-2657)
- Rev. Dr. Susan Young, Office of Religious and Spiritual Life (young@oxy.edu)
- Oxy 24/7 Confidential Hotline (323-341-4141)

The College's civil rights policies, along with additional resources, can be found at: <https://www.oxy.edu/civil-rights-title-ix>. If you would like to contact the Civil Rights & Title IX Office directly, you may email Civil Rights & Title IX Coordinator afulcher@oxy.edu or 323-259-1338.

Language on Special Accommodations/Learning Differences ([Link to Disability Services](#))

- *All academic and housing accommodation requests are managed by Disability Services & Student Support (DSSS). It is a student's responsibility to contact DSSS if they need accommodations or additional support. Any student who has, or thinks they may have, a physical, learning, or psychological disability may contact Disability Services at accessibility@oxy.edu to learn about available services and support. More information is available at <http://www.oxy.edu/disability-services>.*

Accommodations for Reasons of Faith and Conscience ([Link to the policy in Catalog](#))

- *Consistent with Occidental College's commitment to creating an academic community that is respectful of and welcoming to persons of differing backgrounds, we believe that students should be excused from class for reasons of faith and conscience without academic consequence. While it is not feasible to schedule coursework around all days of conviction for a class as a whole, faculty will honor requests from individual students to reschedule coursework, to be absent from classes that conflict with the identified days. Information about this process is available on the ORSL website: <https://www.oxy.edu/student-life/resources-support/orsl/academic-accommodations>*